

Schools Lead the Way but the System Must Change: Rethinking Career and Technical Education

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About this Report

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About the Center on Reinventing Public Education

CRPE is a nonpartisan research and policy analysis center at the University of Washington Bothell. We develop, test, and support bold, evidence-based, systemwide solutions to address the most urgent problems in K-12 public education across the country. Our mission is to reinvent the education delivery model, in partnership with education leaders, to prepare all American students to solve tomorrow's challenges. Since 1993 CRPE's research, analysis, and insights have informed public debates and innovative policies that enable schools and students to thrive.

Introduction

Educators across the country are attempting to reinvent career pathways by developing learning opportunities that prepare students for careers *and* college. They are expanding opportunities for students to learn in the workplace through internships, apprenticeships, and job shadowing. And, with appropriate supports, they are making these opportunities accessible to any student.

These shifts reflect a desire to infuse secondary schools with practical skills that students can use in the workforce, and to move away from the tracking and low rigor that has historically accompanied many vocational and technical programs. These aspirations are enshrined in new federal legislation: the fifth reauthorization of the federal Carl D. Perkins Career and Professional Education Act (Perkins V), which goes into effect on July 1, 2019. Perkins V emphasizes workplace-based learning, post-secondary training, industry credentials, access for students from special populations, and programs that prepare students for careers in science, technology, engineering, and math (STEM).

CRPE's *Thinking Forward* series argued for another urgent reason to rethink career pathways: as the economy rapidly shifts toward automation, there is growing consensus that while new jobs will be created, change is the new normal. Youth need training in soft skills alongside preparation for lifetime learning. Systemic change, not minor improvements, will be necessary.

States, districts, and schools are adjusting to the aspirations of “new CTE”—as many are calling this rethinking of career and technical education—and searching for examples of what this can look like. CRPE has identified 32 programs around the country that represent the variety of efforts being used to reinvent career and technical education. We profile district schools, charter schools, after-school programs, and a tuition-free independent school. Some started in the early 1900s, others opened their doors just a few years ago. The range of models provides a glimpse into the diverse ways educators across the country are attempting to reinvent career pathways.

Use our project website to explore:

- examples of 32 CTE programs in a [searchable landscape](#)
- five [case studies](#) of schools that are reinventing CTE
- six [videos](#) that explore the qualities CTE programs should aspire to

In our sample we found encouraging examples of educators breaking down institutional barriers to expand CTE. Schools are breaking down the boundaries between school and community by partnering closely with industry, trade unions, and four-year institutions. And schools have formed partnerships with one another to open institutions that focus on career training, which are then paid for through a share of student enrollment. Programs are dismantling tracking by making sure students are in control; students select a pathway only after taking exploratory coursework and working with a counselor, with the option to change programs.

But we also identified trends that must be addressed for CTE to fulfill its promise. Educators and policy leaders must push harder to:

- Develop systematic training for in-demand careers.
- Provide accessible information about employment prospects to guide student choice.
- Create consistent work-based learning opportunities.
- Improve the quality of basic education.
- Improve access to high-quality schools and programs.
- Identify outcomes and student demographics, especially for part-time programs.
- Leverage opportunities from post-secondary and business partnerships.

Understanding New Career and Technical Education

In recent years [school system](#) leaders and the [federal government](#) have launched a new [generation](#) of career and technical initiatives that connect students to the world of work in ways that deepen their academic learning *and* broaden the options available to them after graduation. While these efforts have brought new opportunities for some students, others are in learning environments that look nearly identical to the vocational / technical classroom of the 1950s.

The variety of today's CTE stems in large part from a convergence of the different policy streams that form it:

- Traditional voc/tech education, which started in the early 1900s to prepare students for blue-collar jobs such as manufacturing and the building trades.
- Newly branded CTE, which has intentionally tried to correct for past mistakes such as [tracking](#), [lack of rigor](#), and low-wage career pathways (although they still continue).
- Curricular trends intended to increase student preparation for today's careers—many of which require a college degree—such as dual enrollment and STEM.
- A reaction against the college-for-all movement, which has left many students [with debt](#) and few career prospects.
- Student-centered instructional practices such as project- and competency-based learning, which complement the traditional hands-on approach of voc/tech training.

While CTE can mean many different things in practice, there is general consensus among educators and policymakers about what it should look like. In the table below, we draw on recent research and policy (see Appendix A) to compare older voc/tech education with the aspirations of new CTE.

TABLE 1. How Is Traditional Vocational/Technical Education Different from New CTE?

Focus	Voc/Tech Education	New CTE
Training for living-wage, in-demand careers	Single, unconnected classes.	Sequential course of study.
	Emphasis on technical skill-building in the trades.	Technical training is supplemented with the intentional development of soft skills important to the workplace, such as cooperation and persistence. Not all careers are technical—some are based in the humanities.
	Preparation for low-wage jobs with few options for advancement.	Preparation for careers that can provide a living wage for a family.
Academic preparation	Academic classes within CTE pathways lack rigor.	Academic classes are rigorous and prepare students for the possibility of attending a four-year college. Students are guided through the practical application of academic concepts.
Curriculum and instruction	Most learning happens in the classroom or through school-based assignments.	Students apply theoretical concepts through real-world projects developed by industry partners. Learning happens in the workplace through job shadowing, internships, and/or apprenticeships.
Access	Tracks students considered unlikely to succeed in college.	The student-driven approach is available to anyone. Students can move in and out of pathway options.
Community partnerships	Pathways developed because of teacher or school interest.	Programs use nonprofits to offer career pathways learning, partner with community colleges for theoretical coursework, and coordinate closely with industry during program design and implementation.
Program development	Career and technical education is mainly offered through CTE centers, dedicated CTE schools, or as a single program within a comprehensive school.	Career and technical training can be offered by any school or district. Entire schools can be organized as career pathways.

Six core qualities from this table define the aspirations of new CTE:

1. Connect students to in-demand, living-wage careers

Whether they emphasize computer programming or construction, new CTE programs develop students' competence across a wide range of technologies and skills. Some are 21st-century careers, but others are not technical at all; they may be humanities-based fields, such as performing arts and law. All programs should connect students to living-wage careers that are in demand regionally and/or nationally. This may include traditional voc/tech pathways, such as the building trades. To do this, school system leaders must review demand data and collaborate with industry representatives to design curricula with competencies that matter to

the fields in which their students learn. Preparing students for careers—rather than jobs—also requires coherent sequences of courses that build toward recognized credentials, not just one or two basic classes.

2. Prepare students for post-secondary success

Rather than provide alternatives to students considered unlikely to succeed in post-secondary education, new CTE programs intentionally prepare students for career and college. Schools perform well on traditional measures of academic success while offering students new opportunities. They prepare students for several possibilities after graduation: going directly to college, working while attending college, or attending college later in life. Most schools offer multiple pathways to careers and college, including AP classes, industry credentials, and credit recovery. Some schools take advantage of the technical expertise among community college faculty, partnering with two-year institutions so students can take college classes and earn credit while still in high school.

3. Deliver a relevant learning experience

Career and technical coursework is typically hands-on and interactive. New CTE programs often let students drive their own educational experience. Some programs offer project-based, problem-based, or place-based curricula that make each student's education relevant and applicable. Others use a competency-based curriculum allowing students to progress at their own pace. Programs also ensure students have the opportunity to learn the soft skills important to success in work and life. And schools adjust schedules so students have hands-on experience with practical projects in their community, at their school, or on job sites.

4. Focus on equity

Vocational education used to be a track for students considered unlikely to succeed in a traditional education program. Innovative CTE programs recognize the value of career-connected learning for any student and ensure that they are not excluded from high-value, CTE opportunities. Where necessary, students are connected to the social supports and wrap-around services they need to achieve success.

5. Use community resources

New CTE challenges the notion that education must happen within school walls by pushing the boundaries between schools and the community. These programs collaborate with employers, universities, trade unions, city agencies, and others to design learning experiences that result in industry-recognized skills. They also leverage community assets and resources to launch and sustain learning experiences.

6. Develop responsive, sustainable programs

Innovative career pathway providers know that credentialing standards and careers change over time. They regularly review the relevancy of their curricula and update their offerings when needed. But at the same time, these programs are built to last, with sustainable funding models and plans for long-term impact. Some have sought out creative governance models to deliver a high-quality education at scale or make programs accessible across district boundaries.

Our Systems Must Adapt

Career and technical education has existed for more than 100 years, making it an unlikely place to look for innovation. But in reality new CTE challenges fundamental assumptions about the structure of secondary schooling. Students are taught through hands-on projects that make learning relevant and practical. Programs are challenging assumptions about what schooling can and should look like by developing a student-centered educational experience that is not bound to classroom learning.

We reviewed 200 schools, districts, and nonprofits to compile a final list of [32 programs](#) that aspire to the six qualities of new CTE. In the course of our search, we talked to researchers, school leaders, and advocacy organizations, and followed up on schools, districts, and networks nominated by the field.

We found examples of educators across the country delivering on the aspirations of new CTE. Some leverage district or state policy designed to enable high-quality CTE, while others are entrepreneurs operating on the margins of policy. Whichever the case, both point to the system-level changes that will be needed to sustain new CTE.

Below are examples of how programs are leading the way:

Governance structures often cut across school district boundaries. Educators and school system leaders are seeking to more effectively connect students with career training through a variety of organizational types and models. Some use regional voc/tech programs. Others seek partnerships across multiple schools or districts. And some are not schools at all: they may be nonprofits that offer after-school programming, or a part-time program offered by the district. These organizations are paving the way for rethinking who can provide learning—but even more creativity is possible.

Programs break down the barriers between school and community. Students have access to learning opportunities outside school walls in the form of internships and real-world projects with municipal agencies, community-based organizations, and employers. Many programs are inviting community members into their schools to consult on curricula and assessments. Some business leaders facilitate projects or co-teach classes.

Funding, which includes how seat-time is counted, can be flexible. We found examples of high schools paying other schools a percentage of their per-pupil funding for career training. Some part-time CTE programs are funded out of the district budget so students at multiple schools can take advantage of them. Some nonprofits are free to students, sustained through industry support or county funds. This is just the start of the discussion about how funding must adapt and cross barriers between institutions—as students often do when they take advantage of career training.

Schools are seeking creative ways to award credit for learning opportunities outside traditional classrooms. State policies help by allowing schools to award credit for work-based learning, such as internships and job shadowing. Some states also allow districts to apply for waivers to award credit for independent learning and community service. And some states award credit based on student competency, rather than seat-time in a class, which allows schools to be creative in how students can earn credit for traditional subjects such as English, math, or science.

Programs overturn conventional views of academic tracking. They complement and integrate—rather than replace—academically rigorous, college-preparatory coursework. Many schools offer post-secondary coursework and AP classes, which students take as part of their career curricula. In schools with more than one pathway, students decide where to direct their learning only after completing exploratory coursework and one-on-one consultations with a counselor. And students can switch pathways if their original choice isn't a good fit.

Basic features of schooling are being reinvented to accommodate learning outside the classroom.

This is most obvious in the way school schedules are organized. In some schools, students learn in hands-on settings for half the school day or every other week. Other schools dedicate certain days of the week to community projects and work-based learning, such as internships.

These themes highlight changes that are still needed within CTE, but they also alert us to the fact that the fundamentals of schooling must be addressed. New CTE is not a superficial fix: incorporating career training into secondary schooling is a more profound shift than rearranging curricula or adding a new program. It should be a chance for us to rethink what has not worked so far in our K-12 system, such as unengaging curricula, undifferentiated instructional practice, low academic quality, inaccessible programs and schools, and poor links between secondary and post-secondary institutions.

The programs in our landscape analysis point the way to how we might get there, but they also highlight what is still needed. We identified seven issues that educators and system leaders must attend to in order to fulfill the aspirations of new CTE:

1. Systematic training for in-demand careers. We reviewed about 200 schools and programs. To be included, the majority of the schools' offered pathways had to be in living-wage, in-demand careers (see Appendix A). This was one of the primary reasons that certain programs were not included. Even among programs that made our sample, a quarter have added newer pathways without altering traditional offerings—such as culinary arts, cosmetology, or early childhood, which have a [national average salary](#) of between \$25,000 and \$30,000. This points to challenges with fully transforming existing CTE schools, which have teachers, business partners, and even [community](#) members invested in long-standing programs. It also highlights challenges in pivoting to needed careers—like K-12 teachers—even while low-paying, related pathways persist. Of our 32 programs, 3 offer aviation, an exciting pathway with a STEM focus, but with a slower than average [projected growth rate](#). Our analysis is consistent with a [recent study](#) that found CTE programs in 10 cities are not aligning with national demand or increases in local wages.

On the other hand, we found evidence of schools across the country adding high-paying, in-demand career pathways, such as engineering, law, or environmental science. But in nearly every case, the curricula consist of a couple of AP classes without specific career training or industry connection. Most of these careers will require a college degree, but more systematic career training will be needed at the secondary level for students to gain the benefits of career and technical training—such as career exploration and relevant curricula.

2. Information to guide student choice. Undercutting this trend is a lack of readily available information about employment prospects associated with a particular career. Students may decide they want to pursue a pathway, despite its low-paying prospects. But students and families should have the information to make that choice. None of the 200 schools we reviewed had information—such as national and regional demand, average salary, or opportunities for advancement.

3. Consistent work-based learning opportunities. Work-based learning (WBL) includes opportunities such as internships, apprenticeships, job shadowing, and school-based enterprises. WBL can [offer](#) numerous benefits. It helps build the soft skills needed for success in any workplace—communication, reliability, and teamwork. It provides an opportunity for students to practice the academic and technical skills they have learned at school. And it gives students a chance to test whether a career makes sense. To be part of our landscape analysis,

schools had to offer either WBL or an industry-connected project, in addition to intensive career training. However, we identified few schools that consistently offered both WBL and career training.

Only 5 of the 32 programs in our landscape analysis ensures that every student has access to WBL. In all other cases, WBL is optional, with opportunities depending on the pathway and student. Schools that did not make our list include those that require WBL for graduation, but do not connect these opportunities with any career training at the school. This is somewhat concerning: research finds WBL [achieves](#) its goals only through careful planning and alignment. More analysis is needed about the barriers to integrating WBL across all career pathways, as well as [work-arounds](#) that schools and systems can implement.

4. **Quality of basic education.** We included in our landscape analysis only schools that demonstrated at least average growth and proficiency rates on English and math assessments, as defined by that state's department of education. Providing a good, basic education matters in new CTE. Career pathways for some students will require further training at a two-year or four-year institution. And a shifting economic landscape means that some students may need to undergo retraining or even switch careers later in life.

Low outcomes in English and math were the principal reasons that we cut schools from our final list. We looked at several districts and national networks that are perceived as models of how schools can incorporate career pathways, but academic outcomes varied wildly across individual schools in almost every case. A more systematic analysis is needed—but a focus on how to better deliver basic academic skills in new CTE schools will still be needed.

5. **Accessibility of high-quality schools and programs.** Other schools did quite well on academic measures but were not inclusive of all students. We cut about 10 percent of our schools because of high suspension rates or because of a large gap between the share of economically disadvantaged students at the school and district. Some of these schools appeared to be transformed district magnets that had added career pathways. Others, like CTE schools in Massachusetts, use a selective-admissions process based on grades and recommendations. A handful of schools in our landscape analysis are open enrollment and successful at serving students with a range of needs. Schools like these may help point the way to the supports both inside and outside of school that are needed to help all students achieve academic success alongside career training.
6. **Measuring career and technical education, especially for part-time programs.** State test assessments are not ideal measures of academic attainment, but they do provide some indication of student learning. Some educators believe that state test assessments should not be used as a measure when looking at the quality of CTE schools. This extends to some state departments of education, such as Utah, which do not include CTE schools in their report card systems. On the other hand, there are no commonly agreed-upon set of measures for assessing the quality of career training. We were not able to use alternate measures of success during our national search because there is no common measure used across states. Perkins V requires progress monitoring for CTE programs; as states opt for different measures, these can be monitored and assessed to identify best practices for the field.

Demographic information and outcomes for part-time district and charter school programs are not reported by any state, even though all programs offer high school graduation credit. This is concerning because of the prevalence of part-time programs in delivering CTE: in 2017,

districts [reported](#) that 43 percent of students receive CTE training through part-time programs. Increasingly, nonprofits are offering career training to students after school or during the summer. We profiled four such programs that have opened in the past couple of years. Some type of public reporting for nonprofits—who is attending and how they are doing—may be needed if this trend continues.

- 7. Leveraging opportunities from post-secondary and business partnerships.** Many schools and programs across the country are working with community colleges and, in some cases, four-year institutions. Instead of building entirely new curricula from scratch, organizations are leveraging expertise that already exists. Students gain from these opportunities by earning college credit, typically at no cost, while simultaneously working toward high school graduation. Among the 32 programs in our landscape analysis, only 7 did not offer some kind of college credit. However, our interviews suggested that most college credit has limited transferability outside the institution that offered the course, resulting in students repeating classes or earning only elective credits.

And while many schools and programs reported on their websites that they are working with industry professionals, collaboration did not obviously result in generalizable opportunities for students. In our review and limited set of interviews, schools typically collaborate with a single business partner within that industry to develop curricula and projects. It was not clear how well schools are preparing students for general employment in an industry versus preparing workers for one particular company. Certain pathways—nursing, the building trades, and IT—can offer licenses or industry credentials that will ensure student learning is recognized by a range of potential employers. But as this recent [report](#) points out, there is often misalignment between which credentials employers care about and which ones schools are offering. Our analysis was limited but suggests a need for further, productive coordination between post-secondary and industry partners.

The reexamination of career and technical education in the United States is long overdue. Educators and policymakers now have the opportunity to address shortcomings in CTE. But we also have the opportunity to rethink what our secondary education system could look like. What if all students had access to work-based learning and career exploration in high school? What if all schools leveraged existing community services and learning opportunities? What if all students had access to high-quality academics that prepared them for college or life-long learning? With pioneering schools and programs leading the way, this future is not as distant as it may seem. However, policymakers and education system leaders must pay close attention to systemic barriers and program expansion to realize the true promise of new CTE.

Appendix A. Program Selection

Our search took us to rural America, the suburbs, and urban centers. We looked at places thought of as traditional schools, as well as organizations that offer uncredited career training. The programs in our landscape analysis and case studies are intended to provide insight into the variety of ways that educators are approaching new CTE. This resulted in a non-representational sample of programs. Of note, our sample includes a disproportionate number of charter schools and nonprofit organizations. Most students participating in CTE are enrolled in a district school and of those, the [majority](#) obtain their CTE education at a comprehensive high school.

Our search was a two-stage, exploratory process to find non-LEA programs, schools that may not advertise themselves as CTE, and schools that are not receiving Perkins funding. During the first stage, we used a combination of nominations and researcher web searches. During the second stage, we excluded programs that did not meet our six qualities of programs with reinvented career pathways: (1) Connect students to high-demand, high-wage careers. (2) prepare students for post-secondary success. (3) Deliver a relevant learning experience. (4) Focus on equity. (5) Use community resources. (6) Develop a responsive, sustainable program. For more information about each of these qualities [visit the research site](#).

We started by seeking nominations from a range of experts in the CTE field, including funders who have been interested in and have made investments in CTE programs, as well as individuals who have worked in CTE policy, program development, and research.

During the first stage we conducted Google web searches using terms such as “career technical education school,” “new career technical education,” “innovative CTE,” and “career-connected learning” to identify programs to investigate. We also used search terms such as “education innovation” and searched the [4.0 Schools](#) and [Education Reimagined](#) websites to identify student-centered models with a CTE focus. We read newspaper articles and reports, and reports from organizations such as Jobs for the Future that have done work in CTE, as well as recent reports from education research and policy centers, including the Center for American Progress, Brookings, Fordham, and others.

Our reading and nominations pointed us in the direction of specific districts and states. These included but are not limited to New York City; Nashville, TN; Charlotte, N.C.; Cleveland, OH; Philadelphia, PA; and Long Beach, CA. We also looked at regional CTE centers in Massachusetts, Colorado, Pennsylvania, and West Virginia. We reviewed schools that use the national CTE models P-Tech, NAF, Big Picture, and Linked Learning.

During the second stage we used a set of criteria to identify the extent to which the programs on our list met the six qualities of reinvented career pathways. To be included in our landscape analysis and case studies, each organization must:

1. Serve 9th to 12th grade students as a district school, charter school, or nonprofit.

- For a description of the models, [see the landscape terms](#) on the research site.

2. Prepare students for careers that are in-demand and provide a living wage.

- We considered two factors using The Bureau of Labor Statistics’ projected [demand](#) and current average [wage](#). First, we identified jobs projected to add at least 10,000 new workers, and job growth with “little or no change,” “as fast as average,” “faster than average,” or “much faster than average” for the period of 2016 to 2026. Second, we identified careers that have a mean national annual wage of more than \$30,001. (Note that this is a low bar. The U.S. Department of Health and

Human Services set the 2018 federal poverty level at \$28,870 for a family of four.) The following careers are low growth or are not adding new jobs between 2016 and 2026: agriculture, architecture, aviation, computer programming, graphic design, journalism, legal support, machine operation and assembly, and performing arts. The following careers have high projected demand, but the pay is below \$30,001: child care, cosmetology, culinary arts, and hospitality. Programs could prepare students for one or more of these careers as long as they did not represent the majority of available pathways. While it would be ideal, we did not have the capacity to conduct an analysis of regional demand for each school. This criteria was used to identify programs meeting Quality 1, *Connect students to high-demand, living-wage careers*.

3. Have clearly articulated career pathways within the CTE program of study.

- Includes at least three sequential courses in a single career pathway. We excluded programs that have career exploration, internships, or project-based learning at employer sites that are not accompanied by articulated career pathways. This criteria was used to identify programs meeting Quality 1, *Connect students to high-demand, living-wage careers*.

4. Offer either work-based learning or community-based projects.

- This criteria was used to identify programs meeting Quality 3, *Deliver a relevant learning experience*.

5. Enroll students who are representative of their region in terms of income level.

- We identified whether a school is enrolling economically disadvantaged students (as defined by each state) within 20 percentage points of the district or regional average. The majority of programs in our analysis (N=25) are within +/-10 percentage points of the district average. This criteria was used to identify programs meeting Quality 4, *Focus on equity*.

6. Not use exclusionary discipline practices.

- We excluded programs with high suspension rates relative to their district or state (where these data were available in state accountability systems). This criteria was used to identify programs meeting Quality 4, *Focus on equity*.

7. Meet or exceed expectations according to state performance rankings.

- This was not a rigorous evaluation: we did not conduct a statistical analysis, look at outcomes across student subgroups, or use commonly defined outcomes across all programs. Therefore, we likely excluded programs that would be identified as successful, and vice versa, using a more rigorous methodology. Outcomes measures differed from state to state, but typically included proficiency rates, growth rates, and graduation rates. Individual schools were compared to district averages, while CTE districts were compared to state averages. We chose to use state data because new CTE is an evolving field, and some schools would not be captured in federal databases. This criteria was used to identify programs meeting Quality 2, *Prepare students for post-secondary success*.

For the first five criteria, we looked at the school's website. For the last three criteria, we used state report cards for all schools except those located in New York City and Washington, D.C. We used district reports for New York City because of the detail they provided. We used the D.C. Public Charter School Board's reports for one school with an adult and preschool program, Briya Public Charter School, because the Office of the State Superintendent of Education does not report outcomes for these programs.

We excluded schools that had no publicly available outcomes data, either because they had just opened or because the state does not report outcomes for alternative schools. However, we did include nonprofits

and LEAs with only career training that lacked public data, under the assumption that students were attending their home school for academic preparation.

We have tried to present each school as accurately as possible, given the constraints of the project. We attempted to contact every program to give them an opportunity to respond to our summary or case study. We welcome feedback and additional nominations from the field. Please contact us at crpe@uw.edu.

Reports and resources we used to develop our six qualities and selection criteria:

- [Career and Technical Education in High School: Does It Improve Student Outcomes?](#)
- [Career and Technical Education in the Second Decade of the 21st Century.](#)
- [Creating Pathways to Employment: The Role of Industry Partnerships in Preparing Low-Income Youth and Young Adults for Careers in High-Demand Industries.](#)
- [Job Training Programs Curriculum Study.](#)
- [New Pathways to Careers and College: Examples, Evidence, and Prospects.](#)
- [OECD Reviews of Vocational Education and Training.](#)
- [The Path Least Taken II: Preparing Non-College Goers for Success.](#)
- [Perkins Collaborative Resource Network.](#)
- [The Role of Career and Technical Education in Facilitating Student Transitions to Postsecondary Education.](#)
- [Unlocking Doors and Expanding Opportunity: Moving Beyond the Limiting Reality of College and Career Readiness in California High Schools.](#)
- [What Works for Disconnected Young People: A Scan of the Evidence.](#)
- [Work-Based Learning: Model Policy Components.](#)
- [Work-Based Learning Opportunities for High School Students.](#)

Examples of New CTE

Many challenges come with developing programs that reinvent career pathways. This is even more the case for schools, which operate as LEAs and must provide a quality, basic education in addition to career-connected learning.

Schools and the systems they exist within must shift their thinking to value secondary career pathways. Counselors and schools must start to see voc/tech not as a rigid pathway for those unlikely to attend college, but as an option that does not preclude college—either right after high school or later in life. Schools must connect with industry to identify the right competencies, credentials, and work-based learning experiences. They need resources for facilities and equipment. And state policies related to graduation requirements, school finance, and awarding credit are still major barriers to new CTE.

While some leaders respond to these challenges by rebranding rather than rethinking CTE, the school leaders in the following case studies are directly grappling with these challenges. Below are the stories of five charter and district schools, selected from our landscape of 32 programs. Their stories of successes, and setbacks, provide a view into the work ahead for any program that hopes to offer new CTE.

The MiLL National Training Center

Building and sustaining an innovative program within a rural setting.

Location: Colorado Springs, Colorado

School Type: District extension offering classes to multiple districts

Grades: 9th through 12th

Enrollment: 115

Target Industries: Woods Manufacturing, Construction, Woodworking

Open Since: 2017

Program Overview

Peyton is like many small rural districts in the mountain west. With only 600 students, it lacks the resources a larger district offers. But over a few short years, Peyton's entrepreneurial superintendent, Tim Kistler, established the Woods Manufacturing Program in 2015 with the backing of international manufacturers. And in 2017, in collaboration with nearby Widefield School District, he developed a CTE extension site, known as the MiLL (Manufacturing Industry Learning Lab). Here, students from eight neighboring high schools can enroll in one of three CTE pathways: woods manufacturing (the program that originated at Peyton), construction, or woodworking (Widefield programs)—all of which combine college credit, apprenticeships, and hands-on training.

Kistler saved money for 16 years with a vague hope of creating a CTE program. After visiting a nationally renowned woods manufacturing program in Salem, Oregon, he used his rainy day fund to hire the consultant who had set it up. In 2015 the consultant secured an initial partnership with a nationally recognized machine manufacturer. Other manufacturers soon followed. The district now has MOUs with companies throughout the United States, Canada, Mexico, and Europe to receive equipment every several years.

Woods manufacturing isn't a regional industry, but Colorado businesses were eager to partner on curriculum and internships because students could graduate already trained on the most up-to-date fabrication machinery. The skills they learn extend to local industries such as plastics and carbonite. In addition to local work experience, students in woods manufacturing earn nationally recognized credentials developed in partnership with the Woodworking Career Alliance: students graduate with the ability to secure work in their immediate region or beyond. Apprenticeships are an important component of the program, and a feature that Kistler hopes to expand. He believes apprenticeships provide students with soft skills and help them specialize in ways they can't through classroom learning alone.

Transitioning from a Single CTE Program to a Community Resource

Two years after setting up his Woods Manufacturing Program, Kistler worked with Widefield Superintendent Scott Campbell to create the MiLL. Housed in an abandoned facility across from Widefield's transportation building (about 40 miles from Peyton), the MiLL is an extension of both districts' CTE programs—combining Peyton's Woods Manufacturing Program with Widefield's construction and woodworking pathways. At the MiLL, students from area high schools enroll in one of these CTE pathways part-time, attending classes about two hours a day. The building is open from 7:30 A.M. to 2:30 P.M., with students rotating through at different times. The programs fulfill elective and some basic education credits, depending on the program. Students can also take dual-enrollment classes in the evenings from instructors at Red Rocks Community College.

Upkeep of the MiLL facility and programs has been possible because governance and costs are shared by the Peyton and Widefield districts. A board made up of local businesses and both the districts' superintendents operate the facility. The 115 students enrolled at the MiLL come from the two founding districts as well as six high schools in other districts. Peyton and Widefield created a common application for their districts that they hope to extend to the 20 districts in their region. Participating districts pay the MiLL on a per-student basis, which the MiLL's board uses to employ teachers and maintain the facility.

The MiLL has aspirations to be a national and community resource, which will ensure financial sustainability for years to come. It also offers training to CTE teachers from around the country. In the future Kistler hopes to rent the MiLL to local organizations, with faculty providing training on the MiLL's machinery. For example, the MiLL is planning to partner with a local homeless shelter to provide workforce training. As Kistler says, "The concept of education is expanding... We are becoming a whole bunch of different things to different people. But for now, we believe the hub needs to be a school."

Policy and Community Context

The MiLL exists within a unique context. Colorado state policy has many structures that encourage experimentation, such as competency-based graduation requirements and K-12 apprenticeship supports. Peyton has long been a four-day school district, so its students can use Fridays and Saturdays for apprenticeships. Though surrounded by a rural area, the MiLL is located outside of Colorado Springs, a resourced community with post-secondary institutions.

Despite Peyton's unique environment, the recipe for the district's success can be replicated by any small, rural district: building partnerships with non-local businesses, developing relationships with local colleges (online if necessary), and collaborating with neighboring districts. Instead of seeing size as a detriment, Kistler leverages the benefits: "Being a small district allows for a lot of funding flexibility. I have a lot of trust built up with my board and community. They have that connection with me if a decision needs to happen."

Kistler explains that being able to create both Peyton's Woods Manufacturing Program and the MiLL is a dance between state departments, insurance companies, and higher education institutions. Peyton was

able to secure waivers for teachers to provide CTE instruction by making its case to the Colorado State Board of Education. “We had to bring to the state the newest certifications and guidelines that we had been working with and saying, ‘The instructors we have out of the industry have much better training than the old standard,’” Kistler said. With the backing of the Woodworking Career Alliance, Peyton was able to prove that instructors had the necessary content knowledge. Insurance companies typically have a minimum age requirement to use manufacturing equipment; by leveraging their relationships with major manufacturing companies, the district convinced insurance companies to allow high school students to gain experience with the same machinery they would be using on-the-job.

Outcomes

Last year, Peyton graduated its first ten students from the woods manufacturing program. The district knew the fate of eight: five went directly into employment, while three others went on to college. CTE programs at Peyton and Widefield are founded in a solid education at the elementary level, although secondary school proficiency and growth rates lag slightly behind state averages. However, two-year college (Widefield) and CTE post-secondary (Peyton) matriculation rates exceed state averages. As the MiLL’s CTE programs expand, each participating high school must pay attention to the quality of basic education at the home district. This will ensure students have full access to opportunities following high school.

Briya Public Charter School

Combining CTE and comprehensive supports to serve adult students and their children.

Location: Washington, D.C.

School Type: Charter School

Entrance Requirements: Open enrollment

Grades: Preschool and adult education

Enrollment: 673

Target Industries: Health Care, Early Childhood Education

Open Since: 1989 (formerly a U.S. Department of Education demonstration project)

Program Overview

For many recent immigrants who live in Washington, D.C., the barriers to education and employment can be formidable. Since its founding in 1989, Briya Public Charter School has sought to ease this transition by coupling job training in high-demand sectors with a wide range of other services for first-generation adult students and their families. The charter school fulfills a need in D.C. for high-quality adult learning that prepares first-generation residents for transition to the U.S. workforce, and pushes the boundaries of what we think of as publicly funded education by offering preschool and adult education, but no K-12 credits.

Briya evolved from a U.S. Department of Education demonstration program, Even Start, into a D.C. public charter school in 2006. It has developed a unique, two-generation program that provides job training to adults along with instruction in English as a second language, digital literacy, and child development, as well as early childhood education to the students’ children. Briya students may choose to pursue

professional training as either medical assistants or child development associates. Both programs are hands-on, require hundreds of hours of training, and culminate in an industry-recognized certification.

In the medical assistant track, students learn to draw blood, give injections, and complete a 160-hour externship program at a local hospital or clinic. When students graduate and pass the nationally recognized medical assistant exam, they are certified as registered medical assistants and are prepared to enter a competitive workforce. D.C. has the second-highest average salary in the country—\$40,570—for medical assistants. The city also has higher than average salaries for preschool teachers—averaging \$42,060—and child care workers.

Briya’s infant, toddler, and Pre-K education programs are authorized under the same charter as the adult education program. Briya’s two-generation model allows adult students and their children to learn side-by-side, eliminating what adult education director Elizabeth Bowman describes as “one of the biggest barriers to adult education.” The adult education program also includes opportunities for students to take English classes and earn a high school diploma through the National External Diploma Program, which offers credit for work, life experience, and demonstration of core academic competencies. These are open to all students with children, regardless of whether or not they take CTE courses.

A Comprehensive Set of Supports

At the core of Briya’s approach to career and early childhood education is a deep partnership with Mary’s Center, a community health center that has served D.C. since 1988 with a range of social services, from counseling and dental health to legal services for immigrants. Briya serves as Mary’s Center’s education wing: all Briya staff members are also Mary’s Center employees. The two organizations share space, and staff meet weekly to coordinate the delivery of services.

This coordination is essential to supporting student success. A student with a counseling appointment at Mary’s Center can easily step out of their Briya class to attend. The nurses at Mary’s Center teach Briya’s medical assistant courses, which gives students the added benefit of learning from practitioners.

Policy and Community Context

Washington, D.C., is home to citywide universal preschool, which has been in place since 2009 and has garnered attention for its positive impact on the maternal workforce. While early childhood education is a low-wage—albeit in-demand—career in many cities, the wages for these careers in D.C. are among the highest in the country.

Briya operates all its programs under a single charter, which Bowman describes as “an incredible asset,” helping the school to provide a consistent set of services to students and their families. The certainty of funding that comes with being a school, as opposed to a nonprofit job training center, allows Briya to think strategically and plan for the future.

In D.C., both the preschool and adult education programs are part of the same common application system that hosts public K-12 schools, making Briya a seamless part of the city’s portfolio of schools. Briya has partnerships with the district-run school Bancroft Elementary and Bridges Public Charter School. Many children who attend Briya as infants and toddlers transition into one of these two schools for their elementary education.

Briya’s model offers lessons for other schools pursuing CTE programs, particularly those that serve nontraditional students and immigrant populations. By forming deep and robust partnerships, schools can provide streamlined wraparound services, expanding their capacity to not only teach job skills but to equip students with everything they need to achieve prosperity for themselves and their families.

Outcomes

The city's sole charter school authorizer, the D.C. Public Charter School Board (DCPCSB), sets a high bar for opening a school and maintaining its charter. Since 2015, DCPCSB has awarded Briya **Tier 1**, the highest ranking in the three tier system. After graduating from Briya, **76 percent** of students found jobs, entered post-secondary education, or continued with career training, beating the 40 percent target set by its board. Briya also exceeded its performance targets for students at 4 of the 5 English language learner levels. The early childhood program has demonstrated equally impressive results, earning a Tier 1 designation over the last two years—since DCPCSB began tier ranking for Pre-K programs—and scoring 77 out of a possible 100 points.

Center for Advanced Learning

Continuously improving to meet local need.

Location: Gresham, Oregon

School Type: Charter school, contracts with districts

Grades: 11th and 12th

Enrollment: 500

Target Industries: Computer Information Systems, Product Design Creation and Development, Health Sciences, Mechanical Engineering and Manufacturing, Digital Media & Design, Entrepreneurship.

Open Since: 2003

Program Overview

The Center for Advanced Learning (CAL) began with a simple proposition: to develop a gifted and talented program that would prepare high-performing students for the regional economy. In the early 2000s, the Gresham area had low college enrollment rates and high unemployment rates. Local businesses and area superintendents met at that time to discuss education options but none of the small districts could afford to implement a new program.

Instead, a district-city-community partnership formed, which spearheaded the development of a new school that had the flexibility to fulfill their vision. Using the new state charter law, the group applied for and was granted the ability to open CAL in 2003. Communities agreed to a bond to pay for facility construction, and the city of Gresham donated a small parcel of land for parking. The local community college, Mt. Hood, bought 15 percent of the building, which they use as a satellite campus.

Sixteen years later, CAL still provides high-quality education to students at area high schools. Currently, junior and senior students from three districts can apply to any of the school's programs: Computer Information Systems, Product Design Creation and Development, Health Sciences, Mechanical Engineering and Manufacturing, Digital Media & Design, and Entrepreneurship. During morning or afternoon half-day sessions, students take classes within their pathway and complete their English graduation requirement. Home districts pay CAL a 0.5 FTE rate per student, which CAL uses to fund operations. Home districts provide free transportation, deliver special education services, and offer courses that fulfill most of a student's graduation requirements. All students take dual-enrollment CTE courses with Mt. Hood Community College, and have the option to "earn" a job shadow with companies

in their chosen field. Students in four of the six programs graduate with both college credit and industry certificates that are embedded into the curriculum. (There are no certifications for the Entrepreneurship and Product Design pathways.) Students in the Health Sciences pathway can also elect to pursue certification to be a Certified Nursing Assistant, which CAL offers in partnership with the local Caregiver Training Institute.

Improving Access and Program Relevancy

The school's current director, Carol Egan, arrived about seven years ago with a vision of improving student access and program relevancy. CAL's student body didn't reflect the surrounding community: the school's legacy as a gifted and talented program posed academic and perceptual barriers to students. Egan has cut the GPA and reference letter requirements for admittance. The school instituted a boot camp for students who are behind in English or math, allowing them to earn up to one full high school credit in an intensive week-long course. Teachers are now trained in trauma-informed practices and differentiation so students with any background can succeed with support. The principal shared internal data that showed 64 percent of CAL's students are people of color.

Much of what students learn, believes Egan, are intangible skills that will prepare students for life after high school. She sets up her school to provide students with supported independence. "We don't have hall passes or bells, we treat them as responsible young people. Every year our students give advice for the incoming class. Every year they say, 'You will learn time management, how to advocate for yourself, and lots of responsibility.'"

CAL has also added new programs to align with student interests: one was developed with Adidas America, one of several international athletic companies located in nearby Portland. Adidas helped the school identify equipment needed for their Design2Fab Lab, where students learn how to design, create, and pitch products for the athletic industry.

Policy and Community Context

Oregon was the first state in the country to develop and build a regional CTE center serving multiple school districts, which it accomplished using the state's charter school law. Two districts in Oregon, Salem-Keizer and Sabin-Schellenberg, offer CTE coursework where district schools can send students. But CAL is unique because it serves five high schools across three school districts: Centennial, Gresham-Barlow, and Reynolds.

As a charter school, CAL has flexibility in scheduling, staffing, and curriculum. Leadership realizes they must balance that flexibility with consistency. Half of the teachers at CAL come from industry, half from education. To develop consistent instruction across teachers with different backgrounds, Egan has invested heavily in teacher training and development. In addition to professional development, the school has weekly sessions for collaboration in grade teams or school-based committees to build staff culture and leadership.

CAL's innovative charter school model provides opportunities that are not available to students in their home districts. But because it is not a stand-alone program, the school faces barriers. Students are at CAL part-time so they are not able to complete a full Associate's Degree, running the risk of not having their credits transfer to post-secondary institutions. The school is also governed by a board made up of area superintendents, which sets the school up as being more of a service for area district schools than an autonomous school.

Oregon has a resource that facilitates work-based learning, [Youth CareerConnect](#), and legislation that allows for pre-apprenticeships (unpaid work-based learning). However, industry-related legislation

limits students to only job shadowing activities: students in the engineering track must be 18 or older to touch machinery, and the Oregon State Board of Nursing changed their requirements, reducing worksite learning opportunities. Regulations like these hamper student opportunities. As a work-around, CAL is piloting a new medical assistant program that would allow students back into hospitals.

Outcomes

Oregon does not report state assessment scores for CAL because these data are reported with their home districts. Neither CAL nor Oregon track outcomes such as post-secondary matriculation, industry credentials, or job attainment. However, the school does [report](#) graduation rates for its students. Even though CAL students are navigating two schools and are enrolled in college-level courses, 98 percent of them graduate on time from their home district. Compare this to four-year [graduation rates](#) of 76 percent at Gresham-Barlow, 74 percent at Centennial, and 63 percent at Reynolds.

Essex North Shore Agricultural and Technical School

A regional vocational/technical school shows the potential of innovation at scale.

Location: Hathorne, Massachusetts

School Type: Regional CTE district school

Grades: 9th through 12th

Enrollment: 1,392

Target Industries: Agriculture, Manufacturing, Natural Resource Management, Health Care, Building Trades, Culinary Arts, Veterinary Science

Open Since: 2014

Program Overview

The expansive training areas of the [Essex North Shore Agricultural and Technical School](#) (Essex) campus give the impression of several different schools. In one building, some of the school's nearly 1,400 students use computer numerical control machines to fabricate hand tools and medallions engraved with the Essex logo. Another building houses an auto shop where two dozen cars are in various stages of repair, waiting to be returned to paying customers. Next is the farm where students keep horses and watch lambs being born. A sleek tech studio includes a huge monitor that allows students to participate via video in team coding projects when they're away from campus. And visitors can enjoy a meal in Essex's on-site restaurant, which, like so much else at the campus, is a working business operated by students.

These are just a few of the 25 CTE pathways that Essex offers to its growing student body (expected to reach 1,600 students at full capacity). The school is one of 26 regional vocational school districts in Massachusetts, which has long used a regional high school model to offer vocational/technical education at scale. While other states also have regional CTE schools, the Massachusetts system has combined strong academics with hands-on, work-based learning opportunities. It has also been effective at adding newer pathways to traditional trades and agriculture.

Using Innovative Scheduling and College Prep to Do More with a Traditional Voc/Tech Program

Essex prides itself in offering complete CTE programs on top of rigorous traditional academic offerings. Like other regional vocational schools in the state, Essex uses a unique split schedule that allows students to fully immerse themselves in their CTE work. During “green” even weeks, 9th and 11th graders take CTE courses while 10th and 12th graders go to traditional academic classes. During “blue” odd weeks, the cohorts switch. The schedule allows students to commit full days to their CTE courses—a schedule that resembles the working world students will enter after high school or college. During a green week, a sophomore studying Information Technology Services might spend the entirety of her school day working toward an industry-recognized CompTIA certification. At the same time, a junior in the Sustainable Horticulture CTE area might commit a full week to learning hybridization or greenhouse management.

Students choose their CTE focus after careful consideration. To give families a clear sense of the career and wage options available upon completing a CTE program, Essex hosts a meeting where parents of incoming freshmen can learn about each of the CTE programs. Freshman year at Essex begins with a semester of career exploration, where students spend each green week learning about a different CTE program. In the second semester, freshmen choose the program they want to study for their next three years at Essex. Once they reach junior year, students can apply to spend their CTE weeks working for one of the more than 85 local companies that partner with Essex.

These partners make up the backbone of the Essex’s advisory committees—groups of industry professionals who help ensure that CTE offerings at Essex are closely aligned with industry needs. The biotechnology department, for example, is advised by representatives from Charles River Laboratories, Illumina, and other Boston biotech firms. This helps teachers ensure that the skills students learn in their CTE courses will directly apply to their careers.

Though Essex is a career-focused school, its leadership is making an effort to integrate CTE and traditional academic courses. Through a planning grant from the philanthropically funded [Mass IDEAS](#) initiative, the school is thinking hard about how the two course types can work together to support student learning. The goal, says Director of Curriculum Tom O’Toole, is to figure out “how the academic side becomes complementary to the technical CTE side.” The school is just beginning this work—integrating math learned in class with a bridge-building project in construction courses is one example—and will continue to think and innovate around the relationship between academic and CTE classes. Essex also offers several course pathways for academically advanced students, including AP and honors courses. The school has articulation agreements with community colleges across the state and beyond which allow easy access to students who choose to continue with a post-secondary education.

Policy and Community Context

Students from 17 different districts attend Essex, which is a regional vocational school district—a special type of district authorized by Massachusetts law. The law allows students in the communities around Essex who want to pursue CTE courses to attend schools like Essex outside of their home districts, bringing their per-pupil funding with them. The large student body allows Essex to achieve economies of scale and purchase expensive equipment, such as 3D printers and agricultural equipment, that is necessary to prepare students for careers in high-paying fields.

The Massachusetts Vocational Education system is known for its [high quality](#), with its schools reporting higher attendance and lower dropout rates than traditional district schools. Student outcomes are similarly strong, with vocational schools reporting pass scores on the states MCAS exam that are equivalent to traditional high schools. As a result, demand is high: more than 5,000 students were on waitlists for

regional vocational schools in 2015. Essex is no exception. This year more than 1,400 students applied for 400 seats in the freshman class. Essex uses a selective process to enroll students: families fill out an application and the school requests grades, discipline records, and a counselor recommendation. This selective process is common across the Massachusetts regional CTE schools. But some CTE schools, especially in systems that have embraced a [portfolio model](#), use a random lottery when demand is greater than available seats. Despite being selective, the school serves a student population that is as economically diverse as the nearby Danvers school district.

Outcomes

Essex [does well](#) on standard measures of success. Proficiency rates for the school population as a whole are about on par with the state. However, a greater share of economically disadvantaged students attain proficiency in math, ELA, and science than their average peers across the state. While the school posts impressive growth rates in ELA, math growth rates lag behind the state average. Ninety-seven percent of students graduate in four years, compared to a state average of 88 percent. School leadership reported that about 70 percent of students attend college after high school, while the rest go directly into employment.

New Orleans Charter Science and Mathematics High School (Sci High)

Changing course to better prepare students for life after high school.

Location: New Orleans, Louisiana

School Type: Charter School

Grades: 9th through 12th

Enrollment: 473

Target Industries: Health Sciences, Engineering, Technology and Design, Advanced Manufacturing Logistics and Skilled Trade

Open Since: 2005

Program Overview

New Orleans Charter Science and Mathematics High School (Sci High) opened its doors in 1993 as a half-day school. Students from around New Orleans could attend the program, which gave them access to rigorous math and science opportunities. This kind of STEM learning was already widely available in the city's selective magnet schools, but only to those who applied and were accepted. Sci High's leaders believed that, given the right environment and supports, all students in the city could learn at high levels in STEM fields.

In the wake of Hurricane Katrina, Sci High reopened in 2005 as a full-day charter high school in the Orleans Parish School Board (OPSB) district and continued to prepare students from diverse backgrounds for STEM-focused careers. Then, in 2016, Sci High developed a CTE program built upon its STEM foundation.

Recognizing that rigorous career preparation requires more than a single class, Sci High's leadership began revising their CTE curriculum in 2019. After careful consideration, Sci High decided on six pathways. Four of these—Health Sciences, Engineering, Technology and Design, and Advanced Manufacturing Logistics and Skilled Trade—prepared students to move into a high-growth, high-wage career after graduation.

Two others—University Math & Sciences and University Humanities—are designed for students interested in a traditional secondary school education. During the first semester of freshman year, students take a CTE survey class in the school’s makerspace, where they engage in project-based learning to explore their interests and the courses the school offers. During the second semester, freshmen meet with a counselor to identify a pathway that will start in their sophomore year. The chosen pathway is not set in stone; any student can work with their counselor to switch pathways later in high school.

In 10th through 12th grades, students complete general coursework along with specialized classes in their pathway. Students pursuing the Advanced Manufacturing Logistics and Skilled Trade pathway will take Carpentry I in their sophomore year, Carpentry II in their junior year, and complete an internship during the summer before their senior year. Students gain valuable work experience on real job sites while earning credit hours that count toward an industry-recognized certification as a carpentry apprentice. The carpentry pathway was developed in partnership with the United Brotherhood of Carpenters and Joiners of America; students interested in applying to the union earn enough credit for a pre-apprenticeship upon graduation. Students who choose to graduate with a Jump Start diploma (see discussion below) spend half their days in career-connected classes during their junior and senior years.

Changing Careers, Changing Curriculum

Sci High has added CTE pathways over time—changing curriculum in response to student need, regional demand, and state policy. The school provides an example of how schools can redesign themselves to add career pathways and continually adjust CTE curriculum in pursuit of greater relevance.

When Sci High first added CTE courses in 2016, students would take videography one year and health sciences the next. This was a problem, school leaders recognized, because most careers require deep and specific knowledge: they knew students needed to think strategically. As a small school, Sci High can’t offer CTE courses in every field. To narrow the list, they used research provided by the regional economic development group, [Greater New Orleans, Inc.](#) Sci High was interested in only adding pathways that would lead to a high-wage, high-demand career. “There are a couple places in the city that do hospitality,” said CTE Director Rae Goldman, “but we don’t [offer those courses] because they are not high wage.” School leaders briefly considered offering machining courses, but decided not to because there was not enough demand from employers. Sci High made the decision to link their pathways with regional demand so students could get good jobs without having to leave their communities. “Making sure that what you’re offering aligns to local needs is really huge for us,” said Goldman.

State policy is also influencing school curricular options. In 2016 Louisiana [launched](#) a revised CTE diploma, [Jump Start](#), which adjusted the old CTE diploma requirements in an attempt to drive curricular improvement and better align pathways with high-wage careers. The change allowed Sci High to expand its curricular options. A student who is interested in medicine, for example, has three pathways available depending on the career she envisions for herself. If she is interested in medicine, but is not sure which area, she can pursue the University Math & Science concentration, which will help her get into a four-year institution. There, she can refine her specialization or even switch focus. If she knows she wants to be a doctor, she can opt into a specialized pathway like Human Body Systems, which will give her a head start on the requirements of a four-year college. Other students in the medical concentration prepare for a medical career that only requires a two-year degree or certification.

Policy and Community Context

Goldman says that having a charter status has been helpful for meeting student and program needs. OPSB schools “have a lot of red tape,” she said, “but I can make decisions on the fly.” Some of those recent decisions have included finding ways to integrate CTE and traditional academic course offerings.

Next year, a math teacher will receive training in engineering, allowing her to offer an upper-level engineering class while also integrating engineering content into the math classes she teaches. This flexibility has also been key to adding robust CTE pathways.

Louisiana's Jump Start diploma has shaped how Sci High approaches CTE. Louisiana is [one of four states](#) that offers a CTE diploma option: its Jump Start diploma replaces some of the academic requirements of a traditional high school diploma. Students still take four credits each in academic English and math, but take only two-credit sequences in science and social studies. In exchange, students take nine credits in career-connected courses, work-based learning, and a state-approved industry credential.

Because of the way the Jump Start diploma is structured, students who graduate with it cannot directly enter a four-year institution but they can go to a two-year school or directly into employment. And because fewer courses are required, students can choose to graduate early, a path that 15 of Sci High's students have elected to take in 2019. According to the school's CTE director, this is a good option for students who must leave high school early for a variety of reasons. For some, secondary schooling does not resonate so early graduation is an alternative to not graduating at all. Other students simply want to begin earning money as quickly as possible to support their families.

While the Jump Start diploma helps students meet short-term goals, it also limits their options down the road because they do not have the credits to immediately enter a four-year institution. An [analysis](#) published in 2019 identified several gaps in how Jump Start has been implemented, including a [lack of alignment](#) between the industry credentials students were pursuing and high-wage jobs.

Sci High is addressing some of the issues that could arise from a two diploma system. The school makes sure that students have time to explore course pathways, and are not locked in—they can switch pathways. School leadership conducted research to make sure that, of the 52 state-approved pathways under the Jump Start diploma, they were offering those aligned with high-growth, high-wage employment in the New Orleans area. And they have gone out of their way to develop relationships with organizations like The United Brotherhood of Carpenters and Joiners of America to ensure credentials are meaningful.

Outcomes

For now, Sci High's outcomes are on par or above the OPSB average. The school received a B on the [Louisiana K-12](#) report card, which used data from the 2017–2018 school year. Proficiency rates in English and math are higher than the district average, with growth rate about on par. All students in New Orleans take the ACT test. Sci High students score below the district average, but in these other college and career outcomes they outpace the district: graduation rates, college enrollment rates, and the rate of earning industry credentials.