



Improving Outcomes for Texas Career and Technical Education Students

by Erin Davis Valdez
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Key Points

- Modern CTE now encompasses up to 16 career clusters, with research indicating that outcomes in different clusters vary widely.
- It may be tempting for policymakers to respond by over-academicizing subjects where this is not appropriate, such as for manufacturing.
- Policymakers and educators should take seriously the role that student preferences play regarding which career path they choose and emphasize equity in supporting training that is effective for those pathways.
- The Legislature could allow districts to use part or all of their CTE allotment for students enrolled in approved courses of study to offset businesses' costs for employing paid interns—enabling students to gain hands-on experience.
- Texas Education Code §48.110 (just created by HB 3) can be amended to require a portion of the college, career, or military readiness outcomes bonus to be contingent on postsecondary enrollment or employment (similar to the Texas State Technical College's return-value funding model).

Executive Summary

Career and technical education (CTE) has the potential to offer students pathways into a range of professions that are high-growth and high-wage. Currently, high school vocational programs and the needs of regional employers are not well-aligned. By examining evidence on the types of career programs, which students are taking advantage of them, and how well these programs reflect high-wage, high-skill, and high-growth jobs in a particular region, it becomes clear that the incentives for high school CTE programs are aligned neither with regional workforce demand nor with the economic prospects of individual students. State level policy to address this misalignment with existing funding sources could include the career and technical education allotment and the outcomes bonuses for college, career, and military readiness included in House Bill 3.

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CTE used to be called vocational education but was successfully rebranded with the reauthorization of the Perkins Act in 2006 (Perkins IV). The push to refurbish at the time had to do with the twin issues of declining enrollment in these programs as well as a social stigma associated with a correct perception that some students were being dumped into these programs ([Malkus, 5](#)).

Nat Malkus' [The Evolution of Career and Technical Education](#) provides a deep dive into the data on CTE outcomes from 1982 to 2013. Malkus suggests a new framework for understanding which students are participating in CTE and their diverging outcomes. He divides them into “New Era” course-takers and the “Traditional Vocational” course-takers.

Modern CTE as defined by Perkins IV consists of 16 career clusters, but Malkus focused on the 12 career categories that the School Courses for the Exchange of Data established to allow for consistent longitudinal analysis. Malkus classifies manufacturing, transportation, construction, agriculture, human services, and public service as Traditional Vocational CTE. New Era CTE subjects, in Malkus' analysis, are computer science, communications, health care, hospitality, and engineering.* Traditional Vocational CTE declined by over one-third from 1982 to 2013 (as measured by credits), even as New Era CTE course credits increased over the same time period by 238 percent ([Malkus, 12](#)).

One factor that many education researchers fail to take into account—or take seriously—is student preferences. Malkus does not make this mistake. In examining the outcomes and characteristics of the various concentrations, he notes that students who are “academically disinclined,” as measured by student surveys, are

* Malkus treats business as a special case, essentially because what counted as a business course in 1983 is dramatically different from what counted in 2013 and later ([Malkus, 16](#)). There is a miscellaneous category for courses that did not fit into School Courses for the Exchange of Data's classification system.

overrepresented in manufacturing, transportation, construction, and agriculture. “Academically disinclined” was determined with questions that sought to gauge whether students felt a sense of belonging at school and whether they thought that “work is more important than attending college” ([Malkus, 22](#)).

In addition, Malkus noted that there are stark differences in the math scores of the various occupational clusters, with the average Traditional Vocational concentrator (Malkus defines “concentrators” as students who took three or more courses within an occupational area) scoring in the 38th percentile on math assessments, while New Era CTE students “were indistinguishable from all other high school students, remaining within one point of the 50th percentile from 2000 forward” ([Malkus, 18](#)).

As the definition of CTE has grown and successfully left behind its former stigma, the new programs are succeeding because New Era occupations draw in a variety of students to participate. But the growth of New Era students shouldn’t distract from the needs of the Traditional Vocational concentrators. That is why policymakers and the public should ensure that student and family preference take precedence over all other considerations. Programs that give students the opportunity to discover their aptitudes and interests through exposure to a wide range of career opportunities are promising a new and better approach. Learning about and trying out options earlier in the educational continuum has the benefit of helping students rule out professions that might have been a bad fit, preventing more costly mistakes later. Texas has recently taken promising steps in this direction through the creation of [Texas Career Check](#) and extending weighted CTE funding to 7th and 8th grade ([TEC §48.106](#)).

The expansion of the definition of vocational education has been largely positive, with students interested in a wide range of postsecondary careers gaining the opportunity to specialize a little earlier than before. Yet Nat Malkus’ research provides policymakers with an important reminder that there are students who do not love school who are nevertheless required to be there. Thus it may be that bias is at the root of some of the views of CTE; researchers, who *by definition* are academically inclined, might assume that a good outcome is when students fall in love with academics because of the “right” interventions.

Bundled into the bias is the idea that curiosity and knowledge are always best pursued via a traditional academic path. But this simply is not the case. Learning on the job used to be the norm for most professions, including ones that we now consider white collar, such as law ([Douglas, 17](#)). And better addressing the needs, interests, and

unique circumstances of the academically disinclined has the potential to increase their long-term engagement with our communities and at the same time improve the overall quality of the workforce.

As can be seen in **Figure 1**, student attitudes toward school vary by concentration. Traditional Vocation concentrators tend to feel less belonging at school and tend to think that working is more important than attending college. This may be a *perfectly rational* attitude, depending on a student’s preferred career path.

Possible Solutions

Paid Work-Based Learning

Malkus’ research shows that not all students enjoy school. Many of the most successful business leaders in current and past generations have felt the same. As only one example, Sir Richard Branson, founder of the Virgin Group, told CNN in 2018, “I was seen as the dumbest person at school” ([Wiener-Bronner](#)).

How can we make our secondary system work better for these students? De-emphasizing seat time and instead focusing on work-based learning might be a good start. Work-based learning has a range of well-documented positive outcomes for students, including increases in graduation and employment rates ([Rodriguez, 1](#)). Work-based learning in the form of apprenticeships is particularly beneficial to students seeking careers in middle-skill professions, including “health care, advanced manufacturing, construction, and information services where labor demand will remain fairly strong over time and employers have difficulty meeting these demands” ([Holtz and Lerman, 1-2](#)).

In traditional career and technical education, the rewards are borne by a largely unaccountable public entity—school districts, and the risks are borne by students. Two recent studies throw light on this mismatch, one focusing on the credentials earned by secondary students vs. labor market demand and the other focusing on demographic and regional differences among various CTE concentrations in Texas.

According to a May 2019 report, *Credentials Matter*, by Burning Glass and the Foundation for Excellence in Education:

Throughout our research, many states indicated they are working to improve the link between their CTE programs and their labor markets. Yet we found that half of all states aren’t collecting the necessary data to know how aligned their credential programs are with employer demand, and not a single state’s secondary credential program measures as “highly aligned” with

Figure 1. Graduates’ attitudes toward school and work in ninth grade, by CTE concentration, 2013

	Positive Sense of Belonging at School	Positive School Engagement	Strongly Agree Getting Good Grades Is Important	Working Is More Important for You Than Attending College		
				Agree	Disagree	Strongly Disagree
All Graduates	45	54	61	12	52	36
Non-Concentrators	45	55	63	11	53	36
Concentrators	44	51	56	16	49	35
New Era	49	56	63	10	47	43*
Computer Sciences	43	52	62	11	39	50
Communications	51	60	62	7	53	41
Health Care	57*	62*	70*	6	43	51
Hospitality	38	45	50*	17	52	31
Engineering	47	53	62	15	52	32
Traditional Vocational	39*	46*	46*	22*	53	25*
Manufacturing	32*	40*	40*	31*	56	13*
Public Service	47	29*	54	6	71*	24
Construction	38	41*	44*	26*	52	22*
Agriculture	42	50	47*	24*	54	22*
Human Services	40	61	53	11	59	30
Transportation	32*	43*	35*	28*	41	31
Business	42	45	65	17	41	42

Note: *P < 0.05. Differences are measured against percentages for all graduates. Standard errors are available in Table A6.

Source: National Center for Education Statistics, HSLs, 2013.

Source: [Malkus, 20](#).

the job market ([Foundation for Excellence in Education, 5](#)).

The report goes on to point out that 10 of the top 15 credentials earned by students are “entirely oversupplied, meaning in every state with data more students are earning them than there is demand for them” (29). Even more damning, the report continues, “there are undersupplied Certifications that command good starting salaries. For example, Automotive Service Excellence Certifications (\$44,000), CompTIA A+ (\$43,000) and AWS Certified Welder (\$43,000) are in high demand in all 24 states with data” (29). Note that the dollar amounts in parentheses indicate the median salary for these certifications, based on U.S. Department of Labor data.

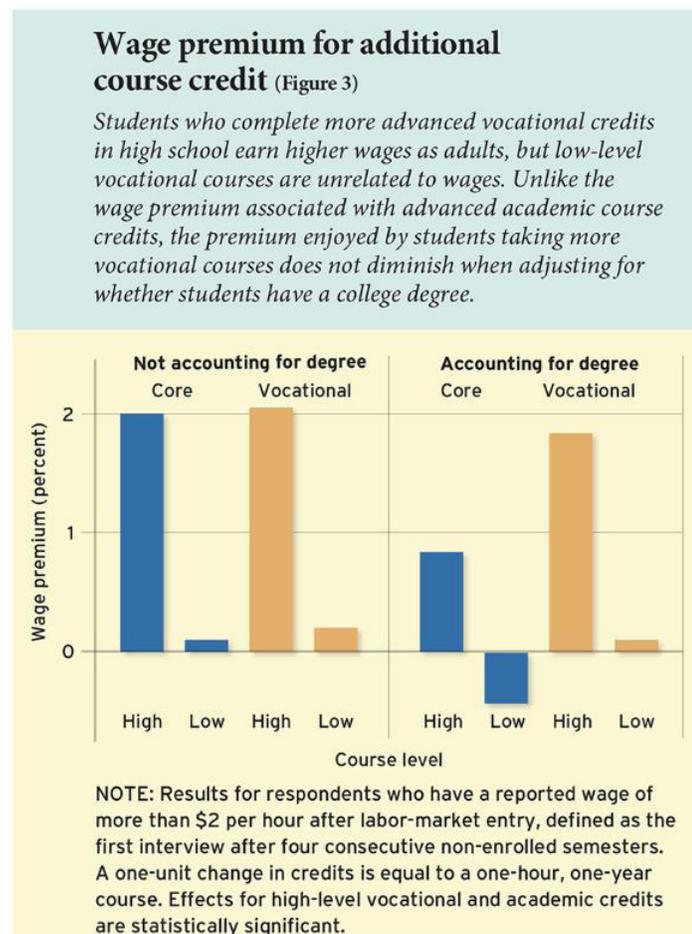
As important as credentials are, they may not tell the whole story. Regional variation as well as the demands of some employers for work experience or competency-based signals rather than just book-heavy preparation should caution policymakers against over-relying on this metric. Other factors, which are often (but not always) present in credential preparation, are in-depth, sequential courses of study combined with hands-on experience.

A recent study by Kreisman and Stange in *Education Next* shows a wage premium of almost 2 percent per year for students who take high-level CTE courses in high school, even controlling for college degree attainment, as can be seen in **Figure 2**. Since most apprenticeships take place later in a curricular continuum for students ([Kreisman and Stange](#)), this positive relationship between early career earnings and depth of CTE coursework shows promise as a pathway toward improving student outcomes.

Increasing the amount of meaningful hands-on learning students can access is also vital to their future economic prospects. Work-based learning and apprenticeships in secondary school are an opportunity for students to get a head start on developing both hard and soft skills necessary for successful careers ([Helper et al., 23](#)). The best payoffs come when both employers and students have “skin in the game,” so that each sees the process as leading to longer-term benefits ([Jacoby, 9](#)).

Removing the barriers keeping academically disinclined students from obtaining good jobs can provide these young people with a sense of earned success. Earning a wage that can support a family or simply oneself with dignity can impart the confidence to continue to upskill or reskill as needed in the future.

The key question for policymakers to consider would be whether the persistent and well-documented gap between the supply side (CTE programs) and the demand side (employment opportunities) exists because of a lack of resources or because of incorrectly aligned incentives which discourage employer participation in secondary CTE programs.

Figure 2. Wage premium for additional course credit

Source: [Kreisman and Stange](#).

Employers in Texas, as in the rest of the nation, wrestle with the skilled labor gap. Under the current set of incentives, it would seem unreasonable to demand of high school administrators that they keep up with the fast-changing needs of business in the 21st century. By shifting the balance toward businesses as key partners in creating regional CTE programs, all stakeholders would benefit, from students who are more appropriately prepared to employers who can expand their businesses to communities that are able to remain strong and intact.

Policy Recommendation: Improve Workforce Outcomes for Career and Technical Education

Paid Work-Based Learning

At present under the [Texas Education Code \(TEC\) §48.106](#), districts are eligible to receive 35 percent more in “weighted” funding for eligible full-time equivalent students in approved CTE programs, and \$50/FTE student enrolled in two or more CTE courses. Thus, there already exists the infrastructure for funding for districts who participate in CTE programs.

The Texas Legislature could amend [TEC §48.106](#) to add “participation in paid internships or similar programs, i.e., apprentice programs in high-demand industries,” as “approved career and technical education programs,” which would allow school districts additional flexibility to offset businesses’ costs for employing paid apprentices with their CTE allotment. The amended portion could qualify the eligible participants by requiring that:

1. School districts adopt CTE courses of study that align with in-demand, high-skill, and high-wage occupations in their regions. TEA’s A-F accountability standards for college, career, and military readiness are already being enacted to help school districts better align their offerings with courses of study.
2. Only students enrolled in [approved courses of study](#) are eligible to participate in the program as part of their third or fourth sequential course in a designated career cluster.
3. School districts report to TEA, via Public Education Information Management codes, the numbers of students participating, their employers, and their wages. These data would allow for longitudinal tracking of student outcomes in higher education and the labor market.

This approach would in no way decrease the availability of funds for districts that already utilize the additional allotment to support robust CTE programs. Rather, it provides districts with fewer CTE teachers or CTE facilities the opportunity to offer their students the “gold standard” of work-based learning—i.e., apprenticeship ([Jacoby, 7](#)).

Reform College, Career, and Military Readiness Outcomes Bonus Requirements to Incentivize Employment

The Texas Legislature in 2019 passed [HB 3](#), which created a College and Career Readiness Outcomes Bonus program under [TEC §48.110](#). Under the program, bonuses of up to \$5,000 per student will be offered to school districts that meet the requirements for college, career, and military readiness.

While college readiness is measured by student enrollment in college after graduation, and military readiness is measured by enlistment in the military, there is no similar requirement for a post-graduation outcome for career readiness. Instead, a school is eligible to receive the bonus if a student meets a threshold on a standardized test and obtains an “industry-accepted certificate.” The TEA promulgates the rules and develops the [list of certificates](#) which they deem as industry-accepted. Yet this list, no matter how well-curated from Austin, cannot be as up to date as local businesses are. Furthermore, certificates which are valuable

in one part of our large and diverse state may hold little to no value in another.

In order to better align the supply of CTE concentrators with the demands of the labor market, legislators could simply require that career readiness be treated on an equal footing with college and military readiness—namely, by revising the language of TEC §48.110 to create a weighted bonus based on the following factors:

- Whether a graduate of their eligible CTE program is employed above a certain wage threshold six months after graduation. The school could receive the bonus on a sliding scale based on the graduate’s quarterly wage;
- Whether a graduate is enrolled in post-secondary education; and
- Whether the school district shares a portion of the bonus with the graduate based on the above criteria.

The Texas Education Research Center (TERC), created by the 79th Legislature, could work as a robust resource for understanding how the educational system is serving students. The TERC houses a repository of longitudinal, student-level data, from P-12 (TEA) to postsecondary (Texas Higher Education Coordinating Board) to post-graduation (Texas Workforce Commission). According to TERC, “the integrated nature of this database allows researchers to follow the educational trajectory Texas students take from elementary school through postsecondary institutions and into their careers” (TERC). With these systems in place, the

Legislature can build on this strength by requiring school districts to demonstrate post-graduation employment outcomes or post-secondary enrollment before collecting a bonus of up to \$5,000 per student.

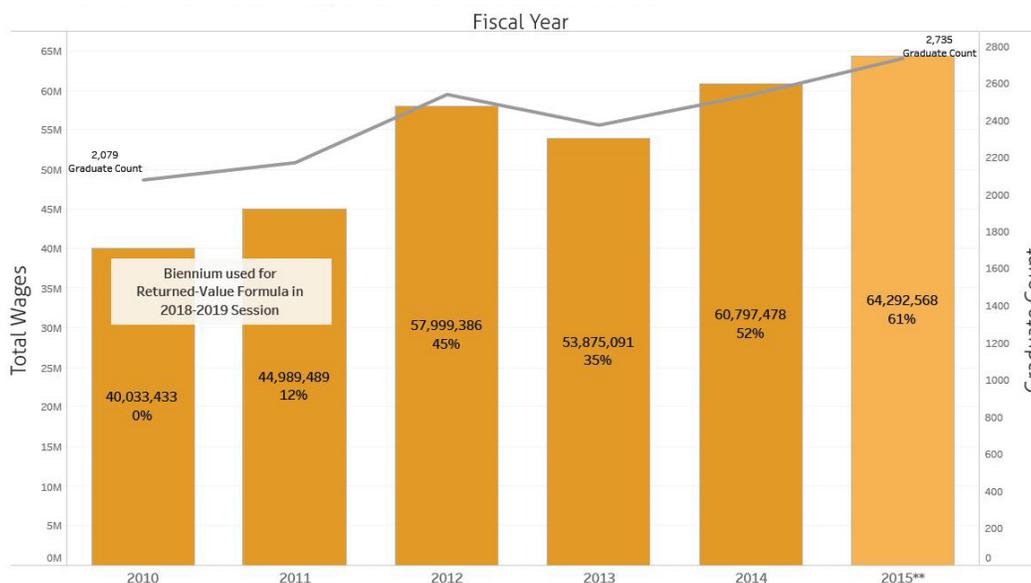
Parallel Success of Outcomes-Based Funding Models

The Legislature already recognizes the importance of workforce outcomes in career and technical education, at least at the postsecondary level. Following Senate Bill 1 in 2013 from the 83rd Legislature, the Texas Higher Education Coordinating Board helped to create the return-value funding model, under which the Texas State Technical College (TSTC) system has since operated. TSTC became the first college system in the nation to receive funding based primarily on student employment outcomes and not on academic activities (Selingo and Van Der Werf, 5-6).

TSTC explains it this way:

For any technical training, a job is the essential outcome. Jobs provide the return and economic benefit to the state through the salary students earn after leaving TSTC. The formula tracks TSTC student earnings for five years after they enter the workforce using data gathered by the Texas Workforce Commission. Salary earnings above minimum wage are considered to be the “value added” by TSTC’s training. TSTC is then paid a discounted percentage of the direct and indirect economic benefit these value-added wages provide to the Texas economy.

Figure 3. TSTC first-year wages and graduate counts



The bar chart reflects total first year wages earned by TSTC graduates and the corresponding variance from the base year (2010). The line chart reflects the total graduate count from each fiscal year. This data source is not inclusive of “Leaver” wages, which are included in the approved Returned-Value formula. **Year 2015 includes one quarter of wages that are annualized. Historical annualization has resulted in wages that were lower than actual when reporting is complete. Wages are not included for program awards that produced less than 6 graduates. Data Source: THECB Gainful Employment Author: Isabel Weeden Data Source Date: 11/22/2016 8:20:51 AM

Source: [TSTC 2019](#).

Although the formula may sound complicated, it is relatively simple. The economic benefit returned to the state through student earnings (above minimum wage) is the essence of the returned-value funding formula. Essentially, TSTC is paid on a commission derived from student earnings years after the training was received. (TSTC 2019)

The outcomes of this program have been strong, with a 61 percent increase in first-year earnings for TSTC graduates, from 2010-2016, as seen in [Figure 3 \(TSTC 2019\)](#).

High schools have an opportunity to reassert their relevance by partnering directly with employers. Responding to the fast-changing skill demands of the 21st century requires employers to become subject matter experts as well as instructional providers in work-based learning contexts. It requires school districts to potentially shift their CTE curriculum and course offerings to better reflect the labor market for high-skill, high-wage, and in-demand skills. They can do this by taking advantage of the opportunities that the Legislature and the governor have already put into place, including the [Pathways in Technology](#) and [Industry Cluster Innovative Academy](#) programs. These programs require the participation of industry partners. In addition, districts have an opportunity to create “[Texas Partnerships](#),” or in-district charter partnerships under TEC [Chapter 12, Subchapter C](#), with an existing charter provider or with

non-profit organizations. These non-profits could [represent local businesses](#) with the capability to provide subject-matter expertise.

The Legislature has provided the resources needed to better prepare high school CTE graduates for the demands of the labor market. It is time to ensure that the incentives of the supply side (district CTE programs) and the demand side (the job market) are as aligned as possible, through improving transparency on types of work-based learning and tying college and career readiness bonuses to workforce or post-secondary outcomes. The success of the TSTC experiment points the way toward aligning the incentives of school districts with local employers, providing students with better economic prospects, employers with the people possessing the right skills, and citizens with a superior return on their tax dollars. ★

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