Construction Trade Schools Employers Perceptions: Past and Present

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Previous to joining the academic life, Dr. Ghanem was highly involved in Civil/Construction Management projects performing design, estimate, and schedule of Pre-Engineered Steel Buildings. In addition to the mentioned duties, Dr. Ghanem was assisting in creation of project proposals by securing project specifications from clients and communicating the same to design teams, and he was acting as a liaison with client during proposal/quotation stage until projects were awarded.

Dr. Ghanem's current research interests focus on alternative project delivery methods for public infrastructure projects investigating Public-Private Partnerships (P3) models that are available in other countries and how it can impact the existing practice in the United States.

Since joining Roger Williams University, Dr. Ghanem focused his interest on creating, developing and reshaping new and existing heavy civil courses as a result of the increasing students' and industry demands. Dr. Ghanem is the recipient of many teaching and education awards. The award list includes receiving the Regional and International Outstanding Educator awards, the Excellence in Teaching award, and the National Teaching Award, all awarded by the Associated Schools of Construction. He was also awarded the Outstanding Engineering Merit Achievement Awards, by the Engineers' Council of San Fernando Valley, California.

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Introduction:

According to the National Center for Education Statistics (1996), the transition from elementary to secondary education "includes general (academic), technical, and vocational education or any combination thereof." [1]. When transitioning into secondary education, students typically choose what career path they want to pursue by selecting High School courses and programs. This path is often dictated by long term goals such as pursuing a university education or pursuing training towards a skilled labor or trade position [2]. Students obtain general skills corresponding to analytical thinking and literacy by attending general or traditional education schooling. In contrast, students attending vocational schooling acquire both academic schooling and skills based highly on the specific trade of choice [3].

In the 1900s, there was a workforce education movement for vocational education that was supported by the Federal government. More importantly in 1917, the Smith-Hughes Act was signed by President Woodrow Wilson in support of vocational education in the United States. This bill allowed federal funding to promote further vocational education programs [3]. Federal funding helps financially support vocational schools but it also "demonstrates a recognition of the fact that education is a component of national economic growth. It affirms a national commitment to preparing the labor force as a whole and serves as a national response to the growing need for skilled workers in new occupations" [4].

Vocational education has evolved throughout the years causing a name change in 2006 to CTE (Career and Technical Education) to reflect the changing education that went from strictly vocational to emphasizing real-world skill and practical knowledge [5]. Across the nation, we are seeing increased CTE programs being established due to their demand. "During the 2016–17 school year, 98 percent of public-school districts offered CTE programs to students at the high school level. Nationwide, 10 percent of districts reported that students in their enrollment area have the option of enrolling in a CTE district that provides only CTE programs instead of enrolling in their home district" [6]. Through the years, funding for CTE has risen due to the larger enrollment in CTE programs. In the 2022 fiscal year, the Perkins V Grant awarded CTE across the nation $1.3 billion, and a year later in 2023, the grant rose another $47 million [7].

While vocational education has been around for many centuries in one way or another the perception of it has fluctuated throughout its time. Many factors play a role in these perceptions such as the United States economy and events such as the COVID-19 pandemic [8]. From Fall 2019 to Fall 2021, vocational enrollment fell but, post 2021 an increase of enrollment in vocational programs rose to levels higher than before COVID-19 [9]. Throughout the years of exposure to both the traditional high school track and the high school vocational education track, there has been a stigma against vocational education due to traditional 4-year colleges being the

preferred choice and the perception that a vocational high school curriculum did not adequately prepare students for a university education [10].

The U.S. Department of Education (2019) emphasized that the COVID-19 pandemic was a step toward people realizing that CTE programs will be the center of our economic rebuilding. The workforce shortage was reinforced by the aging generation of Baby Boomers reaching retirement and the skills gap between qualified workers and new workers. With the workforce shortage, it was noticed that those coming from CTE programs are more likely to be employed versus those who don't attend CTE schools. During the pandemic, CTE programs were equipped with new technologies to keep the curriculum moving to allow students to enter the critical workforce [10].

The primary research question for this study is to better understand how vocational education is currently perceived by construction industry professionals. The focus is on current high school students enrolled in vocational school and how are they perceived by employers.. To achieve the research goal, the authors conducted a survey targeting construction industry professionals and gathered information about the participants' demographics, the sector of the construction industry the participants work in, the type of construction company they work for, and their perceptions of vocational students and their future opportunities. To produce these questions being presented in these surveys, a literature review was conducted to gather information and guide the questions to produce new results geared towards the research at hand.

Public perceptions of vocational education

In the last 30 years, post-secondary education has become extremely popular, and vocational education has become less sought after. The public thinks vocational education dissuades students from attending higher education [11]. The public also views vocational education as a safety net for students. The pressure felt by high school students about post-graduation was demonstrated in a survey conducted by the ECMC Group about the uncertainty in attending four-year colleges among high school students. Conducted in 2021, and over twenty months period, ECMC surveyed 4,200 students from different high schools. The study found that 86% of students feel pressured into pursuing a four-year college/university degree [12]. The survey also found that the pressure students feel is coming from their family, school, and today's society. However, the perception of vocational education has shifted in recent years. A survey conducted by the University of Chicago in 2022 showed that ninety high school graduates supported the promotion of vocational education as much or more than college prep courses in traditional high schools in America [8].

History of socioeconomics and race in vocational education

The 20th century had large social and economic changes. The mass immigration from Europe and other countries to the United States saw a monumental influx in population in the United States. Between 1900 to 1910, more than nine million immigrants came to America [13]. However, employment was low. Therefore, the children of immigrants couldn't work alongside their parents and learn. Those who did get a job mainly worked in factories. Between 1880 and 1920, the manufacturing sector saw employment improve from 2.5 million workers in 1880 to 10

million workers in 1920 [14]. Children were now able to learn alongside their parents in the manufacturing sector. There, they learned how to work and do a job. However, with the rise of industrialization jobs, it became unsafe to bring children into the workplace.

Children instead went to high school. These high schools didn't know what to do with this large influx of children entering their schools. This led to incorporating vocational training into public education. Low-income students were steered towards vocational schools and away from attending college [15]. Students in vocational schools were likely to be from low-income families with a low-level of education [16].

Vocational education to career and technical education

Due in part to the negative historical perspectives of the term "Vocational Education" in 2006, Congress replaced "vocational" with Career and Technical Education (CTE) in the major federal law impacting secondary and postsecondary CTE programs, the Carl D. Perkins Career and Technical Education Act. Nearly all other federal legislation now refers to CTE as well. The Perkins act also provides $1.2 billion in federal support for career and technical programs (CTE) in all fifty states [7]. This funding, as well as changing the name from Vocational Schools to career and technical education, showcases the perception of vocational education. This change has had positive effects, such as the funding from the federal government and higher enrollment in CTE education.

Students who enroll and graduate from CTE schools are not likely to attend four-year colleges after graduation. Those who do enroll in four-year colleges are likely to get their associates degrees, 64.8% of students who attend colleges get their associates degree [17]. Taking more advanced vocational coursework is associated with lower four-year college enrollment rates, but no reduction in college completion, suggesting that students nudged away from four-year colleges by their exposure to a vocational secondary curriculum. Early exposure to a vocational curriculum may thus facilitate better post-secondary enrollment decisions before students make potentially expensive mistakes, an important priority amid concerns about the number of college dropouts burdened with student debt [18].

Department of Education on Career and Technical Education

It is well known that CTE provides students with hands-on learning experiences and a pathway for success in the future. The hands-on learning provides students with knowledge and skills for a career in successful professions such as the construction trades. There is currently a shortage of trade workers in 2024. The shortage of skilled workers can be attributed to the aging workforce, rising retirement numbers, and the lack of young entrants into the construction workforce [19]. The Department of Education believes that CTE schools and programs can bridge this gap.

In 2019, student participation in CTE was 77%. However, the percentage of students who participated in CTE programs who went on to concentrate in a specific area of CTE was low. Thirty-seven percent of students who participated in CTE programs went on to concentrate in CTE [20].

CTE programs are offered all around the United States. Ninety-eight percent of public-school districts in the country offer CTE programs to high school students, with 73% of these districts offering CTE courses to students that earned dual credits, which are credits for both high school and post-secondary schools. The most common CTE course activity was work-based training where 77% of public-school districts offered internships, on the job site training, and co-ops. Sixty-five percent offered mentoring programs to local employers based on concentration. The most common location where CTE programs are offered to high school students is in traditional high schools. Eighty-three percent of high schools offer CTE programs. CTE programs are in almost every public high school in America. Students are given the opportunity and ability to gain hands-on learning and experience through these CTE programs [21].

Benefits of CTE courses

CTE is linked to increased graduation rates. Statistics and evidence from four states, California, Connecticut, Massachusetts, and North Carolina show an increase in graduation rates from students who participated in CTE programs. Concentrating on CTE increased the student's likelihood of graduating [22]-[25]. This can be linked to 81% of high school dropouts who said that they would have stayed in school if they received and learned relevant, real-world learning while in high school [26].

An increase in postsecondary education outcomes can also be a benefit of CTE. Female and disadvantaged students see an increase in postsecondary attendance after CTE [27]. Students who concentrate in a particular field of CTE such as plumbing and electrical, etc. are more likely to attend a four-year college and gain a degree in their concentrated field [28]. This data demonstrates that CTE schools and courses do not discourage students from attending secondary schools such as two- or four-year colleges/universities.

Another benefit is that CTE programs can enhance valuable skills such as work ethics, perseverance, and communication. These valuable skills can lead to an increase in life outcomes for CTE students [29]. CTE classrooms are a blend of academic and real-world experiences, as well as hands-on training. These components are essential for success in the labor force post-graduation [30]. The direct learning in the classroom CTE students endure helps strengthen the non-cognitive skills students will use in any job.

Evidence of the success of vocational/ CTE education

The success of vocational students after joining the workforce is demonstrated in the job growth rate of different occupations in the construction industry. According to the Bureau of Labor Statistics, the employment growth for an electrician is projected to increase by 6% from 2022 to 2032 [20]. Another example of the success that vocational students see after graduating and joining the workforce is the employment rate after graduation. Vocational students see a 74% employment rate after graduation compared to a 64% employment rate of students who went to college and got a bachelor's degree [31]. Another important statistic to consider is that trade school jobs are projected to grow by 10% between 2016 and 2026, higher than the national average for all jobs [31].

According to the Association for Career and Technical Education, 94% of students who concentrate in CTE programs across the nation graduated high school, which is 9% higher than the overall graduation rate in the United States [32].

The Department of Education found that "Eight years after their expected graduation date, students who focused on CTE while in high school had higher median annual income earnings than students who did not focus on CTE" [10]. Associate degree holders in CTE fields like architecture and engineering, and skilled trades can earn more than $2 million over their lifetimes and up to $2.8 million, which is the same as the median lifetime earnings for workers with bachelor's degrees [33]. This shows that students who attend CTE programs earn the same or more money as compared to students who have bachelor's degrees.

Partnerships between vocational education and the construction industry show how the construction industry views vocational education in a positive light and looks at it more favorably as compared to regular high school education.

Objectives

The objective of this study is to identify the perceptions held by construction industry professionals (i.e., construction owners, general contractors, construction managers, subcontractors, designers, and educators) of CTE high school programs and the career path they offer. The specific objectives were as follows:

1. To determine potential career paths of graduates from CTE high school programs based on the perception of their performance by survey respondents
2. To determine if CTE high school students are perceived to lack soft skills and if parents are believed to influence a student's choice for a CTE education
3. To compare the responses from industry professionals and Career and Technical Education students to the one obtained from our literature review.

Methodology

The objectives of the research were achieved by following a mixed methods research methodology utilizing both a survey conducted amongst industry professionals and the usage of existing research data on career and technical education for comparison. The overall research process of the study involved the following steps: (1) Literature Review; (2) Survey Instrument Development; (3) Survey Distribution; (4) Data Collection; and (5) Data Analysis.

Literature review

The literature review was conducted using applicable digital databases to search for topics mainly concerning the perceptions surrounding career and technical education (formerly known as vocational education). Sources were targeted at a wide range of historical sources to categorize a better timeline of the changes in the perception of Career and Technical Education over the course of national history. Additionally, data acquired from the U.S. Department of Education and the Career and Technical Education Research board was analyzed to have a better understanding of the impact of CTE education nationally.

Survey instrument development

To better understand the current perceptions of CTE in the career path of construction management, a survey was developed and distributed to professionals in the construction industry. The survey questionnaire for the construction industry professionals was divided into three sub-sections to accomplish the main objectives which included: (1) Obtaining information on g the demographics of the survey participants; (2) their perceptions of what potential opportunities, whether career or college, CTE students have; and (3) their perceptions of soft skills and parental influence on students who attend CTE programs. The sections of the survey were developed in conjunction with the literature review to focus on questions related to the performance of employees with CTE experience before entering the workforce. In addition to the standard demographic data, a question regarding the survey subjects' educational path and whether it included any form of CTE experience was included to gauge the different experience levels of the survey participants with CTE. The methodological framework for the inclusion of demographic data allowed us to better understand if there were any connections between company and personal demographics that leads to perceptions surrounding CTE.

Survey distribution

The overall research process of the study involved the following steps: (1) developing a test survey and distributing it to a small group representative of the larger target audience; (2) using feedback from the test group to refine the survey's key topics and determine the appropriate length; (3) having the survey reviewed by industry experts to ensure it accurately captures the relevant aspects of the construction industry; (4) assessing the reliability of the survey by analyzing the consistency of responses across similar questions; (5) distributing the final survey to the targeted audience; and (6) analyzing the collected data. The survey questionnaires were distributed to professionals in construction-related industry from the authors' professional network. The survey was conducted from October 2023 through March 2024. The population for the study consisted of current construction industry professionals with a wide range of ages from under 25 to over 65. The survey also represented a variety of genders, ethnicities, construction experiences, work sectors, sizes and types of firms. This approach ensured a diverse and relevant cross-section of industry representatives. It was assumed in the study that the respondents' insights reflected those of similar demographics, expectations of the respective organizations, and accurately represented the organizations by which they are employed. The professionals in the study had a variety of backgrounds in education and work experience.

Analyzing the collected data

The survey was designed with two sub-sections. The first section was the collection of demographic data of the respondents. This demographic data included standard personal demographics such as gender, salary, etc., along with professional demographic data regarding salary, company type, sector, etc. Responses were collected utilizing Qualtrics for distribution

and survey creation. Completed responses were downloaded from Qualtrics into Excel to sort and clean the data of incomplete responses. Out of 67 responses to the survey, 13 were removed due to incomplete information in the responses leaving us with 54 responses for analysis. Initially, all variables were checked against one another to see if any correlations existed within the separate variables based on survey respondents. The initial test for correlations showed no statistically significant correlations regarding demographic data and how respondents answered questions about CTE/Vocational education. This may, in part, be due to the limited sample size of the survey. To assure the quality of the survey data all incomplete responses and responses that were complete under ninety seconds were eliminated from the survey. The survey was also designed to not allow repeat responses assuring only one submission was allowed determined by the device ip address. Once the data was validated and all responses were shown to be adequate, the data was then analyzed with the findings of which are in the sub-sections below. As previously mentioned the survey sample size was limited meaning the analysis below cannot be applied generally to all construction professionals in the united states. The analysis represents observations specifically of the largest represented pool in the survey responses of construction professionals in the northeast heavy civil and commercial construction industry.

Demographic and background

All demographic data along the percentage of representation in the survey is shown in Table 1. Key points in the demographics are as follows. Age representation for the survey was wide, with responses being recorded from age ranges 20- 65 and over. Of the 54 recorded responses, the largest represented age demographic was between 20-34, making up 63.46% of the population. The reach of the survey was localized mainly to the northeast region of the United States, which accounted for a total of 72.22% of responses. However, responses were recorded from all other major regions of the United States. Four separate construction sectors have representation in the survey, with the largest category being Commercial construction representing 72.22% of the survey responses. In Firm type, the largest represented demographic is General Contractors, making up 55.56% of the survey responses with the second largest being Construction Management with 22.22%. A majority of respondents to the survey did not attend a vocational or CTE focused high school, with the largest percentage (81.48%) going from traditional high school to a college or university

Table 1: Results of demographic survey questions

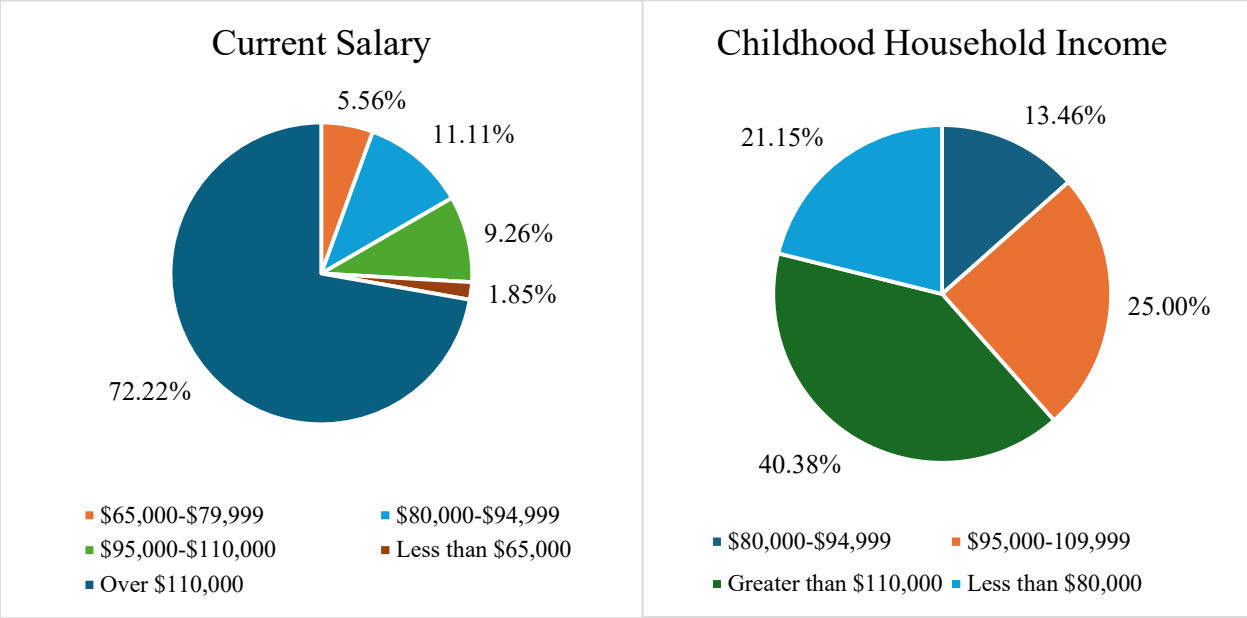
Background Information	**Respondent Percentage (%)**
Age	
20-34	(63.46%)
35-50	(19.23%)
51-64	(13.46%)
65 and over	(3.85%)
Gender	
Female	(12.96%)
Male	(85.19%)
Prefer not to say	(1.85%)

Region	
Midwest	(3.70%)
Northeast	(72.22%)
Southeast	(5.56%)
Southwest	(9.26%)
West	(9.26%)
Sector	
Commercial	(72.22%)
Heavy Civil	(22.22%)
Industrial	(3.70%)
Residential	(1.85%)
Type of Firm	
Construction Management	(22.22%)
General Contractor	(55.56%)
Owners Representative	(9.26%)
Subcontractor	(12.96%)
Firm Revenue	
$250 million and above	(61.11%)
$50 million - $250 million	(20.37%)
Less than $50 million	(18.52%)
Childhood Household Income	
$80,000-$94,999	(13.46%)
$95,000-109,999	(25.00%)
Greater than $110,000	(40.38%)
Less than $80,000	(21.15%)
Salary Range	
$65,000-$79,999	(5.56%)
$80,000-$94,999	(11.11%)
$95,000-$110,000	(9.26%)
Less than $65,000	(1.85%)
Over $110,000	(72.22%)
Educational Path	
Traditional High School to College	(81.48%)
Traditional High School to Trades	(1.85%)
Vocational High School to College	(12.96%)
Vocational High School to Trades	(3.70%)

It is also worth noting in the demographic data that both the respondent's childhood household income and current salary range were recorded in the study, with the majority of responses being below $110,000 for household income and the most common current salary range being over

$110,000. While not entirely correlated, it is strong evidence of the opportunities available in the construction industry regardless of financial status of upbringing (Figure 1).

Figure 1. Current salary of respondents compared to their childhood household income



Analysis

The second section of the survey focused on respondents' opinions on vocational education and CTE with seven questions regarding someone from a vocational/CTE background including: (1) their expected salaries compared to a college graduate, (2) the typical direction a Vocational/CTE student takes after graduation, (3) the performance of workers with vocational/CTE experience, (4) whether they lack soft skills, (5) if soft skills play a role in the hiring process of the construction industry, (6) whether parents have an influence on a student's decision to pursue vocational/CTE focused schools, and (7) whether vocational/CTE students are limited in their ability to attend a college or university. The overall percentage for these questions by percentage of respondents is displayed in Table 2.

Table 2. Respondents' answers to questions regarding CTE/Vocational Education

Question	Respondent Percentage (%)
Salary Comparison to College Graduates	
$1-$15,000 less than college graduates	(3.77%)
$1-$15,000 more than college graduates	(13.21%)
$15,000- less than college graduates	(13.21%)
$15,000+ more than college graduates	(18.87%)
No difference	(15.09%)
Unsure	(35.85%)
Direction of Vocational/CTE Graduates	

College	(1.89%)
Unsure	(5.66%)
Workforce/Trades	(92.45%)
Performance Compared to Worker with no CTE/Vocational Experience	
Above Average	(53.70%)
Average	(24.07%)
Excellent	(22.22%)
Below Average	(0.00%)
Poor	(0.00%)
Do Vocational/CTE Grads Lack Soft Skills	
Maybe	(38.89%)
No	(31.48%)
Unsure	(16.67%)
Yes	(12.96%)
Do Soft Skills Play a Role in Hiring	
Maybe	(22.22%)
No	(11.11%)
Yes	(66.67%)
Do Parents Play a Role in a Student Selecting a Vocational/CTE Program	
Maybe	(16.67%)
No	(3.70%)
Unsure	(1.85%)
Yes	(77.78%)
Does Attending a Vocational/CTE Program limit University Acceptance	
Maybe	(25.93%)
No	(46.30%)
Unsure	(16.67%)
Yes	(11.11%)

As shown in Table 2, there is a consensus that the performance of a worker with CTE experience is comparable or better than a worker without that same experience, with no respondents answering their performance to be below average or poor. Additionally, there is a consensus that students who attend CTE/Vocational programs are less likely to attend college and a majority of these students will leave directly to the trades. However, respondents did not classify this as a limitation of Vocational/CTE education with only 11.11% believing that it is a limiting factor to university acceptance. Furthermore, respondents did not believe that Vocational/CTE students lacked soft skills with only 12.96% responding “Yes” when asked if they believe graduates lacked soft skills compared to non-CTE students. The results of the survey were also analyzed by separating the demographic survey data from the response data to the seven questions in Table 2. The authors found no significant deviation from the mean in responses based on demographic categories.

While there were no significant deviations in the responses to the questions in the second subset there were two correlations noticed in the demographic data surrounding respondent Firm Size/Type and educational paths. Table 3 shows the relationship between firm size and the educational paths of respondents and Table 4 shows the relationship between Firm Type and educational paths of respondents.

Table 3. Percentage of respondents with CTE/Vocational Experience categorized by Respondent Firm Size

Percentage of Respondents based on CTE/Vocational education experience		
Firm Size	**W/O CTE/Voc**	**W/ CTE/Voc**
$250 million and above	94%	6%
$50 million - $250 million	82%	18%
Less than $50 million	40%	60%

It is shown in Table 3 that as the firm size increased in dollar value the percentage of respondents that had either attended a vocational or trade school decreased. The lowest value for firm size represented companies earning less than $50 million dollars annually and corresponded to the highest percentage of responses from workers who had been to a trade or vocational high school with 60% of respondents. This could show evidence to smaller firms, which typically have less specialized staff and require more hands-on management, are better suited to workers with a background in CTE.

Table 4. Percentage of Respondents with CTE/Vocational Experience categorized by Respondent Firm Type

Percentage of Respondents based on CTE Vocational education experience		
Firm Type	**W/O CTE/Voc**	**W/ CTE/Voc**
Construction Management	83%	17%
General Contractor	87%	13%
Owner's Representative	100%	0%
Subcontractor	43%	57%

In Table 4 we can see that firm type also affected the percentage of respondents with a CTE or vocational background with the largest discrepancies being for owner's representative and subcontractor firms. Owner's representative firms had no respondents that had followed a CTE concentrated educational path while subcontractor had a majority of respondents with a CTE concentrated educational path with 57%. This could be caused by the type of work completed by subcontractors being more specialized and requiring more hands-on experience in the trade to manage effectively. The size of the discrepancy is also compounded due to subcontractor firms tending to be smaller in annual revenue than general contractor and construction management firms.

When reviewing existing data provided by the Department of Education and the Institute of Education Sciences, there is limited data that tracks the earnings or performance of high school CTE concentrators. However, there is more recent data involving college attendance and postsecondary education achievements for CTE concentrators compared to non-concentrators. The current data from the U.S. Department of Education shows that 62% of CTE concentrators earn either an associate or bachelor's degree, with an additional 7% earning a certificate post high school graduation. This is lower than a standard high school student by only 1%, with 63% earning an associate or bachelor's degree. When comparing post-secondary attendance, CTE concentrators are 1% higher than non-concentrators at 69% and 68% respectively [34]. Additionally, a more localized study by the U.S. Department of education in Nebraska and South Dakota showed CTE concentrators were 10% more likely than non-concentrators to enroll in post-secondary education within two years of high school graduation and 7% more likely to graduate high school on time [35]. The result of this data is a direct opposite of the perceptions of construction employers that most students are more likely to head directly to the trades and shows that CTE has a stronger link to post-secondary education than traditional pathways.

Lastly the objectives of the survey were revisited to determine the success in accomplishing the outcome.

1. To determine potential career opportunities of graduates from CTE high school programs based on the perception of their performance by survey respondents

   The survey results showed that performance of employees with a Vocational/CTE background was at least the same as or average (24.07%) when compared to traditional graduates with a majority of respondents believing their performance to be above average (53.70%) to excellent (22.23%) in comparison. With the perception of their educational path being that they will perform at a higher level than a standard graduate a vocational/CTE educational path should not limit career opportunities for students in construction fields.

2. To determine if Vocational/CTE high school students are perceived to lack soft skills and if parents are believed to influence a student's choice for a Vocational/CTE education

   A majority of respondents were unsure (16.67%) or thought potentially/maybe (38.89%) Vocational/CTE graduates lacked soft skills. When looking at affirmative responses 31.48% responded no that they do not lack soft skills with only 12.96% responding yes. When reviewing if parents effect a decision for a student to pursue a Vocational/CTE path the majority response was yes (77.78%). While it is still unclear if there is a lack of soft skills being learned through Vocational/CTE programs it is evident that the perception is parents due play a contributing factor in a student's decision to pursue CTE/Vocational education.

3. To compare the responses from industry professionals and Career and Technical Education students to the one obtained from our literature review.

The literature review showed a history of originally a negative perception on the abilities of Vocational/CTE graduates and education. Although it also showed that over time sentiment changed and Vocational/CTE education was shown to add value with graduates being more likely to be employed and earning a larger median wage. This was reinforced by sources of federal funding then being allocated to support CTE programs and increased enrollment post COVID-19. Industry professionals were in line more with the current public view of Vocational/CTE education with a higher perceived performance for CTE graduates and a belief that it does not limit soft skills.

Conclusion and future research opportunities

The construction industry in 2024 is facing a variety of challenges, one of the major elements being the workforce shortage for skilled labor. As the country's infrastructure continues to age and needs replacement, there will be a growing demand for these skilled workers, further compounding the problems faced by labor shortages. Career and technical education moving more to the forefront of the country's priorities may play a role in lessening the shortage of skilled workers by training qualified candidates at a high school level. Previous perceptions of CTE concentrated education made it less desirable, as it was believed to limit enrollment in colleges or universities and provide less opportunities for graduates. The data acquired from the U.S. Department of Education shows that it does not limit a graduate in either of these categories. Furthermore, based on the responses we got from our survey, having a CTE background is seen as a plus in the construction industry and provides a stable career with high earning potential. Considering these factors, it would allow for a student to select a CTE educational path to provide them with more options for future careers in the trades without limiting their potential to pursue higher education. This study was limited by its outreach, being more specifically focused on the northeast region of the United States. For future studies, having the ability to spread outreach to a better sampling across the United States would provide a more accurate representation of national perceptions. Furthermore, the study could be expanded by being able to receive current survey information based upon the perceptions of current CTE students on their post-graduation opportunities.

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