

A Post-Pandemic Analysis of Career and Technical Education Performance by Student Gender: A Multiyear, Texas Investigation

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ABSTRACT

In this statewide, multiyear investigation, Career and Technical Education student participation was examined by gender for the 2020-2021, 2021-2022, and 2022-2023 school years. We investigated the participation and certification rates of high school girls in Texas, examining how gender stereotypes and systemic barriers continue to affect educational and economic outcomes. Using Ogbu's cultural-ecological theory, we analyzed statewide archival data from the 2020-2021 school year through the 2022-2023 to compare program completion, concentration, and industry-recognized certification (IRC) attainment among girls and boys. Results were the presence of persistent gender gaps in CTE participation and highlight equity issues in preparing girls for high-wage, high-skill careers aligned with Industry 4.0. The findings underscore the need for gender-inclusive advising, equitable program design, and systemic support to ensure all students can access CTE opportunities.

Keywords: Career and Technical Education, Career Cluster, Completer, Concentrator, Gender

INTRODUCTION

The educational experiences of girls have long since been dominated by gender biases and discriminatory practices (Healy & Lund, 1975). Although girls have typically had access to some sort of education, they have not been encouraged to pursue all available career opportunities until

recently (McClure, 2020). It has only been in the past 10 to 20 years that conversations have occurred about and efforts have been initiated to encourage girls to pursue male-dominated vocations and STEM careers (Robinson & Aronica, 2016). Today, girls are encouraged to be doctors, lawyers, welders, construction managers, electricians, plumbers, and paramedics, but not at the same rate as boys (Hicks et al., 2024a). Even though boys tend to dominate STEM and higher paying CTE pathways, the latest Perkins legislation implores educators to encourage girls to explore all possible career options (Leu & Arbeit, 2020). Now that secondary educators have an increased focus on students attaining industry-recognized certifications, high school girls are gaining increased opportunities to earn certifications that could positively affect their future earning potential (Giani, 2022).

As a result, Career and Technical Education, as it relates to the rates at which girls participate in male-dominated, high-skilled certification pathways, will be explored in this study. Specifically addressed in this article will be an examination of the factors that influence the industry-recognized certification attainment rates and outcomes of girls in Texas. Insights into the foundation and recent legislative milestones of girls' education as it relates to CTE are also discussed. Additionally, provided is an examination of CTE in America as it relates to female workforce opportunities and career planning for girls.

LITERATURE REVIEW

Equity issues that women and girls face concerning CTE were addressed by Scott et al. (2003). They determined that gender stereotypes still affect the career choices and career counseling of girls. Unfortunately, these continuing stereotypes also limit many girls to lower-paying jobs. Also established by Scott et al. (2003) were that girls who were economically disadvantaged were more likely to be stereotyped than other girls, and educators often perpetuate these stereotypes continuing gender segregation within CTE programs. One key finding was that CTE programs are important to girls' education because they positively influence the desire of girls to pursue higher education. Widespread gender biases and stereotypes continue to limit the career options and earning potential of girls, and while legislation such as Title IX has helped highlight the problem, further action is needed to eliminate it (Scott et al., 2003).

Eardley and Manvell (2006) also addressed the prevalence of gender bias within CTE programs. These researchers collected CTE enrollment and wage data from 12 states to document the extent to which girls were underrepresented in nontraditional courses and careers. Eardley and

Manvell (2006) established the presence of substantial gender disparities in CTE course-taking and that not much improvement had occurred since 1977. They established that one contributing factor to the continuation of gender segregation within high school CTE programs was recruitment materials that illustrated the dominant gender and used male pronouns. It was documented that 98% of cosmetology students, 87% of childcare students, and 86% of health science students were female (Eardley & Manvell, 2006, p. 399). Only 9% of girls were enrolled in automotive technology courses, 10% were enrolled in construction courses, 5% of girls were enrolled in welding, and 6% were enrolled in electrician pathway courses. Eardley and Manvell (2006) concluded that discrimination, stereotyping, and sexual harassment contribute to girls being under-represented in nontraditional courses. In a 2023 study conducted by the Urban Institute of the U.S. Department of Labor, trends of women in the labor market from 1950 to 2021 were addressed confirming that despite a slight decline, occupational segregation is still prevalent with less than 1% of women working in the construction industry and only 2% of women working in the transportation industry. Not much has changed since the passing of the Women in Apprenticeships and Nontraditional Occupations (WANTO) Act of 1992 (Butrica et al., 2023).

The effects of Title IX legislation on CTE were addressed by Toglia (2013), given the history of gender inequality in career training, certification attainment, and the workforce. He examined longitudinal data regarding the performance and participation of girls in CTE, science, technology, engineering, and mathematics courses. Established was that not much had changed even 30 years after the Title IX legislation had passed. The examination of CTE course offerings revealed that girls were unlikely to prepare for nontraditional, higher-paying careers (Fluhr et al., 2017). Toglia (2013) reported that while girls comprise 98% of cosmetology students, 87% of childcare students, and 86% of healthcare students, they only comprised 4% of HVAC students, 5% of welding students, and 6% of electrician students even though the latter offers greater financial rewards. Though both Perkins III and IV allocated funding to increase gender equality, gender-role socialization which affects how girls select career paths often begins well before high school and is often reinforced by parent and educator attitudes toward these nontraditional careers for girls (Fluhr et al., 2017). Toglia (2013) also highlighted that girls who were economically disadvantaged faced increased obstacles related to selecting and attaining higher-paying careers. He concluded that the wage data clearly illustrates that female-dominated career fields and certifications such as cosmetology and childcare pay far less than careers and certifications dominated by males such as welding and HVAC.

In a very recent investigation, conducted in Texas, Hicks et al. (2024a) analyzed the IBC attainment rates of male and female high school graduates. In a multiyear study of statewide data, statistically significant differences were revealed in the IBC attainment of girls and boys. Boys were determined to have higher IBC attainment rates than girls in all three school years of data analyzed. One key insight derived from the study was that educators should be more intentional about promoting male-dominated programs to the opposite gender. Hicks et al. (2024a) contended that "School leadership must be attuned to the current gender disparities and ensure all industry-based programs being offered are equitably and appropriately set up for female and male students (p. 111). Also noted was the role of local education agencies in determining which career pathways and IBCs were offered, and that specific schools play a greater role in the attainment of IBCs than demographic factors (Hicks et al., 2024a).

In a longitudinal analysis, Mau and Li (2018) investigated variables predicting the STEM career aspirations of minorities and girls. One important finding was that female students and students of color were less likely to aspire toward science or engineering careers, and that mathematics/science self-efficacy had a statistically significant effect on their career aspirations. Also reported was that familial factors influence educational and career aspirations. In a recent investigation, Phillips (2022) analyzed ways in which barriers such as microaggressions and the lack of equity affect the course-taking patterns and CTE participation of Black girls. Discovered was that, despite the 1972 Title IX legislation to ensure equal access regardless of gender, CTE enrollment patterns continue to be dominated by gender stereotypes. Age-old enrollment patterns continued and persisted, especially for Black female students.

The terms industry-based certification (IBC) and industry-recognized certification (IRC) are used interchangeably in this research investigation because different states use the terms synonymously. These certifications also lead to microcredentialing, which supports students as they seek jobs within the technology-focused fourth industrial revolution, also known as Industry 4.0 (Li, 2022). Further, given the accountability requirements of Perkins IV and Perkins V, states have an increased focus on ensuring that their secondary and postsecondary students are adequately prepared for this new labor market, and certification attainment is an easy measure. However, girls are still being socialized to pursue lower-paying career pathways with certifications that do not yield the highest wages (Fluhr et al., 2017). Therefore, parents and educators need to encourage girls to explore all career options and consider the skill demands of Industry 4.0 before selecting a career pathway (Abulibdeh et al., 2024).

In a statewide study conducted by Giani (2023) to investigate CTE data in the State of Texas, data were analyzed from over a million high school students between 2017 and 2019. Addressed were which IBCs that resulted in increased income and employability upon high school graduation. Unfortunately, Giani (2023) determined that many IBCs did not increase employability for the most recent high school graduates. However, they were more closely aligned to enrollment in postsecondary training and learning opportunities. Giani also examined IBC attainment by demographic group and established a lack of gender differences, with 5.9% of male students earning an IRC and 5.8% of female students earning an IRC. Although the types of IBCs boys and girls worked for were not examined, IBC attainment translated into higher overall student achievement (Giani, 2023).

In 2022, Giani conducted a statewide, longitudinal study to investigate the extent to which industry-recognized certifications influenced the postsecondary earning potential and educational opportunities of Texans. Based on these research findings, Giani suggested that high school CTE programs emphasize apprenticeship programs, stackable credentials, and high-skilled certifications. Most industry-recognized certifications are loosely related to increases in post-high school employability, but are more related to college enrollment. He also determined that girls earned certifications at nearly the same rate as boys. The nursing aide, which is female-dominated, was the most popular industry-recognized certification, but cosmetology had the "largest reliable earning benefit" (p. 26). One important finding was that high-skilled, industry-recognized certifications with the lowest college enrollment rates had the highest employability rates. It was concluded that educators and parents should not ignore all the ways earning an industry-recognized certification benefits students beyond employability (Giani, 2022).

Li (2022) examined industry changes and the development of Industry 4.0 as a result of globalization and artificial intelligence. Li discussed the necessity for industry and educational leaders to effectively train, reskill, and upskill the workforce as a result of the fast-changing technology that is transforming and, at times, eliminating career fields. According to Li, by 2027, two-thirds of the workforce will need to be reskilled or upskilled to meet industry demands. Therefore, high schools need to be intentional about equipping students with key skills such as analytical and innovative thinking, complex problem solving, and creativity (Li, 2022).

Throughout the 400-year evolution of career and technical education, discrimination and segregation have persisted against women and girls (Wonacott, 2002). While CTE legislation in America can be traced as far back as 1601, it was not until the 1972 Title IX legislation that gender equity began to come into focus and not until the 2006 Perkins IV

legislation that conversations about women and girls in nontraditional career fields began to intensify. Although numerous research investigations have been published around Career and Technical Education, more studies are needed to highlight the importance of girls being invited into more non-traditional career pathways and how to socialize girls, so they do not feel uncomfortable pursuing non-traditional careers.

Given that Title IX legislation is over 50 years old, girls should no longer experience the effects of gender bias, stereotyping, discrimination, or harassment. Unfortunately, the truth is that these gender bias issues are still prevalent in schools and society. As a result, further exploration of the importance of CTE course-taking and effective gender-neutral career counseling is needed (Scott et al., 2003). Career and Technical Education needs to be a viable option for all students regardless of race, religion, or gender, especially because these career courses can directly influence the earning potential of students (Toglia, 2013).

THEORETICAL FRAMEWORK

John Ogbu's cultural-ecological theory was used as a theoretical framework through which to examine the Career and Technical Education participation and completion rates of high school girls in Texas. For much of American history, girls have not been afforded as many career training opportunities as boys and have not benefited equally from CTE programs (Butrica et al., 2023; Scott et al., 2003). Throughout his research, Ogbu examined issues related to inequities in education and its negative effects on involuntary minorities such as female students (Ogbu & Simons, 1998). As a result, when girls pursue traditionally male-dominated careers, they must often overcome a deficit mindset related to their academic and physical abilities and endure unfair stereotypes of school personnel that tend to influence their academic achievement negatively (Eardley & Manvell, 2006). Examined in this multiyear investigation were the effects of these discriminatory biases and practices on girls in Texas high schools and their ability to participate effectively in CTE programs and complete their programs of study.

STATEMENT OF THE PROBLEM

Women and girls have faced career and employment discrimination throughout American history, and as a result, many have not been adequately prepared to be competitive in the U.S. labor market. Moreover, because of gender stereotypes and misguided gender roles, many women and girls have not received proper educational training, which has

perpetuated the male-female wage gap in the United States. Even though society is aware of the negative effects of gender stereotypes on girls in STEM and other high paying careers, girls are still socialized to pursue lower paying careers (Toglia, 2013). Further, gender segregation continues to influence the ability of girls to excel in male dominated programs of study and career paths. Because traditionally male dominated, high-skilled industry-based certifications have the potential to change a student's earning potential, girls should receive strategically dedicated opportunities to take advantage of postsecondary learning opportunities that could positively affect their future earnings. Therefore, it is imperative that girls receive quality career exploration and exposure experiences that challenge long-standing gender stereotypes.

The purpose of this study was to compare the CTE performance of high school girls to the CTE performance of high school boys. The first purpose was to determine the CTE program completion rates of boys and girls. The second purpose of the study was to ascertain the different types of programs of study completed by girls and by boys. The third and final purpose was to ascertain the potential economic effects of the differing career opportunities related to programs of study based on industry demand and gender preferences.

Gender equity in education has made notable progress, but persistent disparities remain—particularly in Career and Technical Education (CTE). While legislation such as Title IX and Perkins V promotes equal access, high school girls remain underrepresented in high-wage, male-dominated CTE pathways, which limits their earning potential and career mobility. This inequity is not simply about course selection; it reflects deeply embedded social norms, institutional practices, and systemic barriers that steer girls toward lower-paying certifications and occupations. We addressed these issues by examining the rates at which girls in Texas high schools complete and concentrate in CTE programs, and the types of industry-recognized certifications (IRCs) they earn compared to boys. Building on research documenting gender segregation in CTE (Scott et al., 2003; Eardley & Manvell, 2006; Toglia, 2013), and guided by Ogbu's cultural-ecological theory, we aimed to uncover structural and cultural factors shaping girls' career preparation. By analyzing statewide data from 2020 to 2023, we were able to identify trends and disparities in program completion and certification attainment that carry significant implications for educational leaders, policymakers, and families. The goal is to highlight the need for intentional, equity-centered approaches to CTE programming that expand economic opportunities for all students, particularly those historically underserved individuals.

RESEARCH QUESTIONS

In this article, the research questions include: (a) What percentage of girls from a Texas high school completed a CTE program of study during the 2020-2021 school year through the 2022-2023 school year, in comparison to boys?; (b) What percentage of girls concentrated in a program of study at a Texas high school during the 2020-2021 school year through the 2022-2023 school years as compared to boys?; and (c) What types of programs of study did girls in Texas high schools participate in during the 2020-2021 school year through the 2022-2023 school year, in comparison to boys?

RESEARCH METHOD

Research Design

Through the use of existing, archival data from the Texas Education Agency's Texas Academic Performance Reports and Public Education Information Management System, a non-experimental causal-comparative research design was used to conduct this research study to investigate "the relationship between one or more categorical independent variables and one or more quantitative dependent variables" (Johnson & Christensen, 2017, p. 44). Because these archival data occurred between 2020 and 2023, it was not feasible to manipulate the variables (Johnson & Christensen, 2017). The assumption was made that the data for this study were accurate and error-free, especially given the audit process utilized by the Texas Education Agency to ensure data integrity (Texas Education Agency, 2019a).

Participants and Instrumentation

Participants in this study were girls and boys who graduated from Texas public high schools in the 2020-2021, 2021-2022, and 2022-2023 school years and were deemed career-ready because they received a PEIMS code of six for earning CTE Concentrator status or seven for earning the CTE Completer status. To qualify as a completer, students must complete and pass three or more aligned CTE courses for a total of four or more credits within a program of study, including one level three or level four course from the same program of study. To qualify for the concentrator code, a student must have completed and passed two or more aligned CTE courses for a total of at least two credits within the same program of study.

Data were obtained through a Public Information Request to the Texas Education Agency through the Public Education Information Management System. These data consist of all data requested and collected by the Texas Education Agency regarding public education; clerks and registrars across the State of Texas are responsible for gathering and inputting this data so it can be reported to the Texas Education Agency. The data focus of this study is related to historically underserved students, particularly girls, and how they fared in the category of career readiness upon graduation in comparison to boys. The Texas Academic Performance Reports glossary defines the terms used in this study. During the school years examined, data on over 950,000 CTE high school students were in the sample. As presented in Table 1, in the 2020-2021 school year, data on 216,589 girls and boys were present; in the 2021-2022 school year, data on 363,079 girls and boys were present, and in the 2022-2023 school year, data on 371,526 girls and boys were present.

Table 1
Descriptive Statistics for Texas High School CTE Students by Gender for All Three Years

School Year and Gender	<i>n</i>	<i>%age</i>	Missing (No data reported)
2020-2021			
Boys	103,738	47.8%	71,753
Girls	112,851	52.1%	64,963
2021-2022			
Boys	219,435	60.4%	NA
Girls	143,644	39.5%	NA
2022-2023			
Boys	218,891	58.9%	NA
Girls	152,635	41.1%	NA

RESULTS

Data Analysis

Data for all three school years were nominal in nature. That is, the independent variables related to gender were categorical in nature and the dependent variables of either having taken a program of study or not having taken a program of study were dichotomous. As such, the Pearson-chi square procedure was the optimal statistical procedure to use (Slate, 2023). The underlying assumptions of this procedure were met for all analyses that were conducted.

Results Across All Three School Years

Based on the analysis of CTE student participation for the three school years of data analyzed, statistically significant differences were revealed between girls and boys. The first year of reported data analyzed was from the 2020-2021 school year. Because Texas CTE data lag and reflects the previous school year results, this student participation occurred during the 2019-2020 school year, in which students did not return to school after spring break in March 2020 due to the COVID-19 pandemic. Schools closed, requiring students to complete their school year online. Pearson chi-square procedures revealed that the overall CTE participation of girls was statistically significantly higher than the overall CTE participation of boys. Girls completed their programs of study at much higher rates than boys, and specific differences were observed within specific programs of study.

Across all three school years, CTE completion and concentration rates for girls were statistically significantly higher than the CTE completion and concentration rates of boys. Overall, boys participated in more programs of study, but girls had higher concentration and completer rates in the programs of study in which they participated. Specifically, girls had the greatest overall program participation within the following career clusters: Health Sciences with an average completer rate of 6.0% or 19,023 students; Education and Training with an average completer rate of .07% or 2,219 students; Arts, Audio Visual Technology, and Communications (AAVTC) with an average completer rate of .06% or 1,902 students; Hospitality and Tourism with an average completer rate of .05% or 1,585 students; and Human Services with an average completer rate of .04% or 1,268 students as illustrated in Figures 1, 2, and 3.

Based on the three years of data analyzed, differences in participation rates between boys and girls across various programs of study were presented. For example, girls are concentrated on Cosmetology and Personal Care Services, Family & Community Services, as demonstrated

in Table 2. Girls' concentration rates in these programs of study consistently exceeding the concentration rates of boys by statistically significant margins. Early Learning, Teaching, and Training (See Table 3) programs of study showed similar patterns in girls' completion rates.

Figure 1

Average Percentages of Texas High School Student CTE Concentrators by Gender for All Three School Years

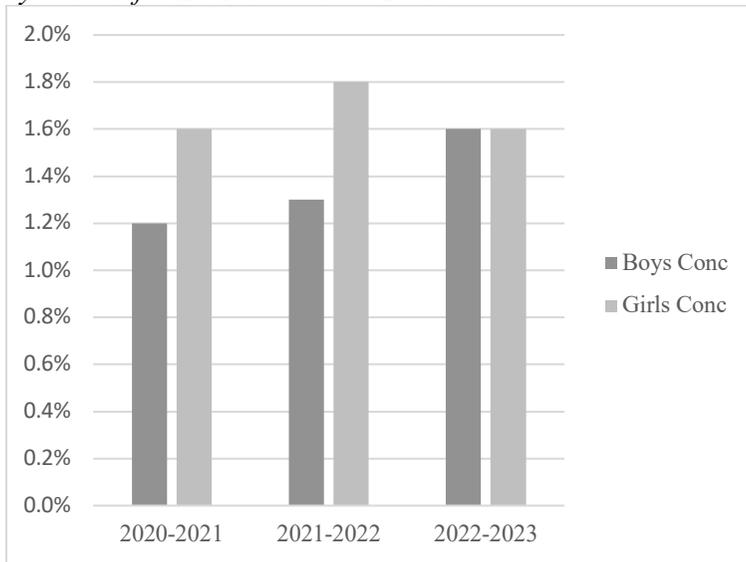


Figure 2

Average Percentages of Texas High School Student CTE Completers by Gender for All Three School Years

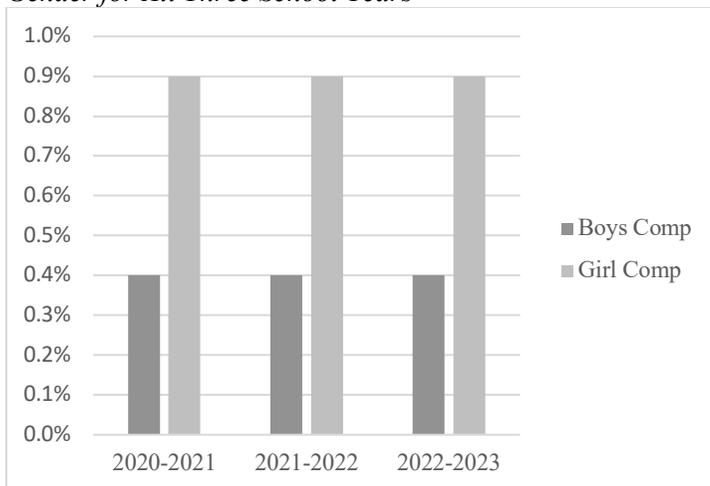


Figure 3

Top Five Texas CTE Career Clusters Completed by Girls from 2020-2021 School Year through the 2022-2023 School Year

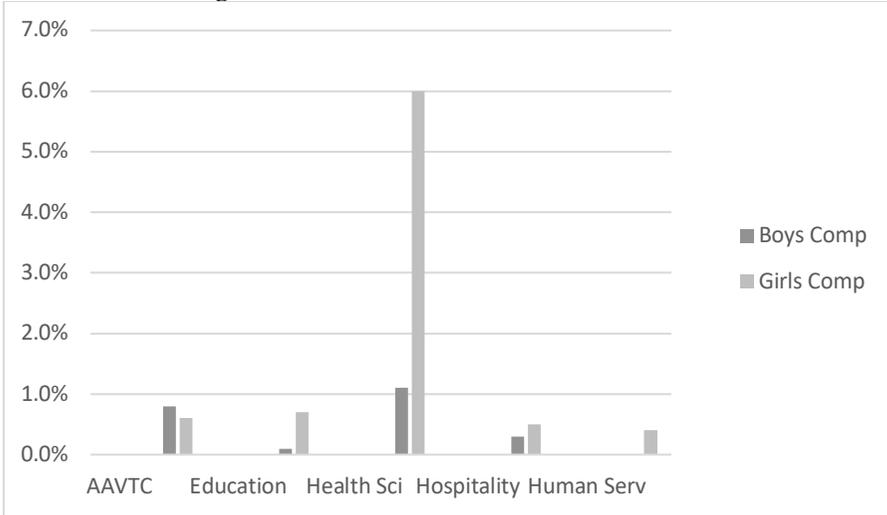


Table 2

Descriptive Statistics for all Programs of Study Related to Career Cluster: Education and Training for Concentrators and Completers by Gender for All Three School Years

School Year and Program of Study	Boys Conc	Boys Comps	Girls Conc	Girls Comps
Early Learning				
2020-2021	0.2%	0.0%	2.3%	0.1%
2021-2022	0.2%	0.0%	2.1%	0.1%
2022-2023	0.1%	0.0%	1.8%	0.1%
Teaching & Training				
2020-2021	0.3%	0.1%	2.8%	1.5%
2021-2022	0.3%	0.1%	2.6%	1.3%
2022-2023	0.2%	0.1%	1.4%	1.3%

Table 3

Descriptive Statistics for all Programs of Study Related to Career Cluster: Business, Marketing, and Finance for Concentrators and Completers by Gender for All Three School Years

School Year and Program of Study	Boys Conc	Boys Comps	Girls Conc	Girls Comps
Accounting & Financial Services				
2020-2021	7.5%	0.3%	4.3%	0.3%
2021-2022	7.8%	0.4%	4.6%	0.3%
2022-2023	8.0%	0.4%	5.0%	0.3%
Business Management				
2020-2021	6.1%	0.4%	4.2%	0.3%
2021-2022	6.1%	0.5%	4.1%	0.4%
2022-2023	6.3%	0.7%	4.4%	0.5%
Entrepreneurship				
2020-2021	4.6%	0.1%	2.5%	0.2%
2021-2022	4.9%	0.2%	2.7%	0.2%
2022-2023	4.9%	0.2%	2.9%	0.2%
Marketing & Sales				
2020-2021	0.8%	0.0%	0.2%	0.0%
2021-2022	0.9%	0.0%	0.3%	0.0%
2022-2023	0.9%	0.0%	0.3%	0.0%
Retail Management				
2020-2021	0.0%	N/A	0.0%	N/A
2021-2022	0.1%	N/A	0.0%	N/A
2022-2023	0.1%	N/A	0.1%	N/A

Girls in the program of study of nursing students also had statistically significantly higher completion rates than boys, as delineated in Table 4. Within this program of study, students focus on instructional objectives that include caring for patients, monitoring vital signs, developing and implementing patient care plans, managing patient pain, and maintaining patient records (Texas Education Agency, 2024a). These trends highlight traditional programs of study that have historically attracted girls.

Table 4

Descriptive Statistics for all Programs of Study Related to Career Cluster: Hospitality and Tourism for Concentrators and Completers by Gender for All Three School Years

School Year and Program of Study	Boys Conc	Boys Comps	Girls Conc	Girls Comps
Culinary Arts				
2020-2021	1.4%	0.7%	1.6%	1.1%
2021-2022	1.2%	0.9%	1.7%	1.3%
2022-2023	1.3%	1.1%	1.6%	1.4%
Lodging & Resort Management				
2020-2021	0.0%	0.0%	0.1%	0.0%
2021-2022	0.0%	0.0%	0.0%	0.0%
2022-2023	0.0%	0.0%	0.0%	0.0%
Travel, Tourism, & Attractions				
2020-2021	0.0%	N/A	0.0%	N/A
2021-2022	0.0%	0.0%	0.0%	0.0%
2022-2023	0.0%	0.0%	0.0%	0.0%

On the other hand, boys had stronger concentrator rates in programs of study such as Accounting & Financial Services where students learn how to prepare, examine, and analyze financial statements, Business Management where they learn how to formulate policies, manage daily operations, and manage human resource, and Entrepreneurship where students learn to plan, launch, coordinate, and direct public and private business ventures (See Table 5), as well as Advanced Manufacturing & Machinery Mechanics (See Table 6) where students learn aspects of manufacturing processes, such as reading blueprints, welding, and operating a variety of tools, and Engineering (See Table 7) in which students learn a variety of skills related to applied Engineering design related to engines, machines, and structures (Texas Education Agency, 2024a).

Table 3

Descriptive Statistics for all Programs of Study Related to Career Cluster: Health Science for Concentrators and Completers by Gender for All Three School Years

School Year and Program of Study	Boys Conc	Boys Comps	Girls Conc	Girls Comps
Bio-Medical Science				
2020-2021	0.3%	0.1%	1.0%	0.5%
2021-2022	N/A	N/A	N/A	N/A
2022-2023	0.3%	0.1%	1.0%	0.5%
Exercise Science & Wellness				
2020-2021	0.0%	N/A	0.1%	N/A
2021-2022	0.0%	N/A	0.1%	N/A
2022-2023	0.0%	N/A	0.1%	N/A
Health Informatics				
2020-2021	3.1%	0.0%	13.7%	0.0%
2021-2022	3.3%	0.0%	14.1%	0.0%
2022-2023	3.1%	0.0%	13.7%	0.0%
Healthcare Diagnostics				
2020-2021	2.0%	2.1%	7.7%	11.3%
2021-2022	2.0%	2.3%	7.5%	11.6%
2022-2023	1.7%	2.2%	6.9%	11.6%
Healthcare Therapeutic				
2020-2021	2.0%	2.1%	7.7%	11.3%
2021-2022	2.0%	2.3%	7.4%	11.7%
2022-2023	1.7%	2.2%	6.9%	11.6%
Medical Therapy				
2020-2021	1.9%	1.6%	8.0%	8.5%
2021-2022	2.1%	1.7%	8.0%	8.8%
2022-2023	1.8%	1.7%	7.4%	9.0%
Nursing Science				
2020-2021	3.6%	0.3%	15.7%	1.8%
2021-2022	3.7%	0.3%	15.6%	1.9%
2022-2023	3.4%	0.3%	15.2%	1.8%

Table 6

Descriptive Statistics for all Programs of Study Related to Career Cluster: Agriculture, Food, and Natural Resources for Concentrators and Completers by Gender for All Three School Years

School Year and Program of Study	Boys Conc	Boys Comp	Girls Conc	Girls Comp
Agribusiness				
2020-2021	0.1%	0.0%	0.4%	0.0%
2021-2022	0.2%	0.0%	0.5%	0.0%
2022-2023	0.2%	0.0%	0.5%	0.0%
Animal Science				
2020-2021	1.1%	0.1%	1.7%	1.0%
2021-2022	1.1%	0.2%	1.7%	1.2%
2022-2023	1.0%	0.2%	1.5%	1.2%
Environmental & Natural Resources				
2020-2021	0.5%	0.0%	0.7%	0.0%
2021-2022	0.5%	0.0%	0.7%	0.1%
2022-2023	0.4%	0.0%	0.5%	0.1%
Food and Science Technology				
2020-2021	0.1%	0.0%	0.5%	0.0%
2021-2022	0.3%	0.0%	0.6%	0.1%
2022-2023	0.3%	0.0%	0.5%	0.1%
Plant Science				
2020-2021	0.4%	0.0%	1.5%	0.1%
2021-2022	N/A	N/A	N/A	N/A
2022-2023	0.6%	0.1%	1.9%	0.2%

Table 7

Descriptive Statistics for all Programs of Study Related to Career Cluster: Manufacturing for Concentrators and Completers by Gender for All Three School Years

School Year and Program of Study	Boys Conc	Boys Comps	Girls Conc	Girls Comps
Advanced Manu & Machinery Mechanics				
2020-2021	3.5%	0.2%	0.4%	0.0%
2021-2022	3.4%	0.2%	0.4%	0.0%
2022-2023	2.8%	0.2%	0.3%	0.0%
Industrial Maintenance				
2020-2021	N/A	N/A	N/A	N/A
2021-2022	N/A	N/A	N/A	N/A
2022-2023	N/A	N/A	N/A	N/A
Manufacturing Technology				
2020-2021	0.6%	0.0%	0.0%	0.0%
2021-2022	0.6%	0.0%	0.0%	0.0%
2022-2023	0.7%	0.0%	0.0%	0.0%
Welding				
2020-2021	1.0%	0.3%	0.0%	0.0%
2021-2022	0.9%	0.4%	0.0%	0.0%
2022-2023	0.9%	0.6%	0.0%	0.0%

Girls and boys had comparable participation rates in service-oriented programs of study such as Culinary Arts (See Table 8) and Law Enforcement (See Table 9). These programs of study attracted similar levels of interest from girls and boys. As such, no significant gender disparities were present in these programs over the three school years.

Table 8

Descriptive Statistics for all Programs of Study Related to Career Cluster: Law and Public Services for Concentrators and Completers by Gender for All Three School Years

School Year and Program of Study	Boys Conc	Boys Comps	Girls Conc	Girls Comps
Emergency Services				
2020-2021	0.6%	0.0%	0.9%	0.1%
2021-2022	0.6%	0.0%	0.9%	0.0%
2022-2023	6.0%	0.0%	0.7%	0.0%
Government & Public Administration				
2020-2021	0.0%	0.0%	0.0%	0.0%
2021-2022	0.0%	0.0%	0.1%	0.0%
2022-2023	0.0%	0.1%	0.1%	0.1%
Law Enforcement				
2020-2021	2.7%	1.8%	2.3%	1.6%
2021-2022	2.5%	1.8%	2.5%	1.6%
2022-2023	2.5%	1.8%	2.4%	1.6%
Legal Studies				
2020-2021	0.8%	0.1%	0.8%	0.1%
2021-2022	0.7%	0.0%	0.8%	0.1%
2022-2023	0.7%	0.0%	0.7%	0.1%

Table 9

Descriptive Statistics for all Programs of Study Related to Career Cluster: Transportation, Distribution, and Logistics for Concentrators and Completers by Gender for All Three School Years

School Year and Program of Study	Boys Conc	Boys Comps	Girls Conc	Girls Comps
Automotive				
2020-2021	1.3%	1.5%	0.0%	0.0%
2021-2022	1.2%	1.5%	0.0%	0.0%
2022-2023	1.3%	1.4%	0.0%	0.0%
Aviation Maintenance				
2020-2021	0.0%	0.0%	0.0%	0.0%
2021-2022	0.3%	0.2%	1.1%	0.6%
2022-2023	0.0%	N/A	0.0%	N/A
Diesel & Heavy Equipment				
2020-2021	0.1%	N/A	0.0%	N/A
2021-2022	0.1%	0.0%	0.0%	0.0%
2022-2023	0.1%	0.0%	0.0%	0.0%
Distribution & Logistics				
2020-2021	0.0%	N/A	0.0%	N/A
2021-2022	N/A	N/A	N/A	N/A
2022-2023	N/A	N/A	N/A	N/A
Flight				
2020-2021	0.0%	N/A	0.0%	N/A
2021-2022	N/A	N/A	N/A	N/A
2022-2023	0.0%	N/A	0.0%	N/A
Maritime				
2020-2021	0.0%	N/A	0.0%	N/A
2021-2022	0.0%	0.0%	0.0%	0.0%
2022-2023	N/A	N/A	N/A	N/A

In contrast, participation rates in Architecture and Construction (See Table 10), Energy (See Table 11), and Transportation, Distribution, and Logistics (See Table 12) were practically nonexistent for both girls and boys. Only minimal enrollment was present across these clusters. These are high demand, high paying careers, and unfortunately, no specific

conclusions can be made about the reasons behind these low participation rates.

Table 10

Descriptive Statistics for all Programs of Study Related to Career Cluster: Human Services for Concentrators and Completers by Gender for All Three School Years

School Year and Program of Study	Boys Conc	Boys Comps	Girls Conc	Girls Comps
Cosmetology & Personal Care Services				
2020-2021	0.0%	0.0%	0.6%	1.1%
2021-2022	0.0%	0.0%	0.6%	0.9%
2022-2023	0.0%	0.0%	0.5%	1.1%
Family & Community Services				
2020-2021	1.0%	0.0%	4.4%	0.1%
2021-2022	1.0%	0.0%	4.1%	0.0%
2022-2023	0.8%	0.0%	2.2%	0.1%
Health & Wellness				
2020-2021	0.0%	0.0%	0.4%	0.0%
2021-2022	0.0%	0.0%	0.4%	0.0%
2022-2023	0.0%	0.0%	0.6%	0.0%

Table 11

Descriptive Statistics for all Programs of Study Related to Career Cluster: Engineering for Concentrators and Completers by Gender for All Three School Years

School Year and Program of Study	Boys Conc	Boys Comps	Girls Conc	Girls Comps
Applied Agricultural Engineering				
2020-2021	2.0%	0.4%	0.6%	0.0%
2021-2022	1.9%	0.6%	0.7%	0.1%
2022-2023	1.9%	0.8%	0.5%	0.1%
Drone (Unmanned Flight)				
2020-2021	0.7%	N/A	0.0%	N/A

2021-2022	0.7%	0.0%	0.1%	0.0%
2022-2023	0.6%	0.0%	0.1%	0.0%
Engineering				
2020-2021	4.4%	2.4%	0.9%	0.3%
2021-2022	4.1%	2.2%	0.7%	0.4%
2022-2023	3.5%	2.0%	0.7%	0.3%
Geospatial Eng & Land Surveying				
2020-2021	0.1%	N/A	0.0%	N/A
2021-2022	0.2%	0.0%	0.0%	0.0%
2022-2023	0.2%	N/A	0.1%	N/A

Table 12

Descriptive Statistics for all Programs of Study Related to Career Cluster: Agriculture, Food, and Natural Resources for Concentrators and Completers by Gender for All Three School Years

School Year and Program of Study	Boys Conc	Boys Comps	Girls Conc	Girls Comps
Digital Communications				
2020-2021	1.2%	0.8%	0.7%	0.4%
2021-2022	1.2%	0.7%	0.7%	0.3%
2022-2023	1.0%	0.7%	0.6%	0.3%
Graphic Design & Multimedia Arts				
2020-2021	4.3%	1.3%	3.2%	1.0%
2021-2022	4.1%	1.4%	3.2%	1.2%
2022-2023	4.0%	1.4%	3.3%	1.2%
Printing & Imaging				
2020-2021	0.0%	N/A	0.0%	N/A
2021-2022	0.0%	0.0%	0.0%	0.0%
2022-2023	0.0%	0.0%	0.0%	0.0%

The Agriculture, Food, and Natural Resources career cluster (See Table 13) had similar participation between girls and boys, with

concentrator rates at .09% for girls and .06% for boys. Although the overall participation rates were low, the relative parity between the genders is noteworthy. Girls concentrated on and completed programs of study involving the health and service industries. For example, girls had high completion rates in Healthcare Diagnostics, Healthcare Therapeutics, and Medical Therapy programs of study, as revealed in Table 14. The Health Science career cluster focused on academic and career opportunities related to "planning, managing and providing therapeutic services, diagnostic services, health informatics, support services, and biotechnology research and development" and could lead to "occupations ranging from medical assistant, registered nurse, and physical therapist to forensic science technician and athletic trainer" (Texas Education Agency, 2024c, p. 1). Within this career cluster, girls concentrated in the Nursing program of study at an average rate of 15.5%. However, the participation rates of girls in this program of study declined to a post pandemic concentrator rate of 15.7% (See Table 15).

Table 4
Descriptive Statistics for all Programs of Study Related to Career Cluster: Energy for Concentrators and Completers by Gender for All Three School Years

School Year and Program of Study	Boys Conc	Boys Comps	Girls Conc	Girls Comps
Oil & Gas Exploration & Production				
2020-2021	0.0%	N/A	0.0%	N/A
2021-2022	0.0%	0.0%	0.0%	0.0%
2022-2023	0.0%	0.0%	0.0%	0.0%
Refining & Chemical Processes				
2020-2021	N/A	N/A	N/A	N/A
2021-2022	N/A	N/A	N/A	N/A
2022-2023	0.0%	N/A	0.0%	N/A
Renewable Energy				
2020-2021	1.3%	0.0%	0.3%	0.0%
2021-2022	1.2%	0.0%	0.4%	0.0%
2022-2023	1.3%	0.0%	0.4%	0.0%

Table 14

Descriptive Statistics for all Programs of Study Related to Career Cluster: Agriculture, Food, and Natural Resources for Concentrators and Completers by Gender for All Three School Years

School Year and Program of Study	Boys Conc	Boys Comp	Girls Conc	Girls Comp
Architectural Design				
2020-2021	0.4%	0.5%	0.2%	0.3%
2021-2022	N/A	N/A	N/A	N/A
2022-2023	0.4%	0.5%	0.2%	0.3%
Carpentry				
2020-2021	0.6%	0.3%	0.0%	0.0%
2021-2022	0.6%	0.3%	0.0%	0.0%
2022-2023	0.6%	0.4%	0.0%	0.0%
Construction Mgt & Inspection				
2020-2021	0.0%	0.0%	0.0%	0.0%
2021-2022	0.0%	0.0%	0.0%	0.0%
2022-2023	0.0%	0.0%	0.0%	0.0%
Electrical				
2020-2021	0.1%	0.0%	0.0%	0.0%
2021-2022	0.0%	0.0%	0.0%	0.0%
2022-2023	0.1%	0.0%	0.0%	0.0%
HVAC & Sheet Metal				
2020-2021	0.0%	0.0%	0.0%	N/A
2021-2022	N/A	N/A	N/A	N/A
2022-2023	0.1%	N/A	0.0%	N/A
Masonry				
2020-2021	0.0%	0.0%	0.0%	0.0%
2021-2022	0.0%	0.0%	0.0%	0.0%
2022-2023	0.0%	N/A	0.0%	N/A
Plumbing & Pipefitting				
2020-2021	0.0%	0.0%	0.0%	0.0%
2021-2022	0.1%	0.0%	0.0%	0.0%
2022-2023	0.1%	0.0%	0.0%	0.0%

Table 15

Descriptive Statistics for all Programs of Study Related to Career Cluster: Information Technology for Concentrators and Completers by Gender for All Three School Years

School Year and Program of Study	Boys Conc	Boys Comps	Girls Conc	Girls Comps
Cybersecurity				
2020-2021	3.3%	0.6%	1.0%	0.1%
2021-2022	3.2%	0.8%	1.1%	0.2%
2022-2023	3.5%	0.8%	1.2%	0.1%
Information Technology Support & Services				
2020-2021	0.2%	0.0%	0.1%	0.0%
2021-2022	0.2%	0.0%	0.1%	0.0%
2022-2023	0.2%	0.1%	0.1%	0.0%
Networking Systems				
2020-2021	1.5%	0.1%	0.3%	0.0%
2021-2022	1.6%	0.1%	0.5%	0.0%
2022-2023	1.8%	0.1%	0.5%	0.0%
Programming & Software Development				
2020-2021	2.8%	0.8%	0.9%	0.1%
2021-2022	2.9%	1.0%	1.0%	0.2%
2022-2023	3.1%	1.0%	1.1%	0.2%
Web Development				
2020-2021	0.7%	0.0%	0.4%	0.0%
2021-2022	0.7%	0.1%	0.2%	0.0%
2022-2023	0.6%	0.0%	0.4%	0.0%

As illustrated in Figure 4, girls and boys had notable participation in the Business career cluster. Girls concentrated at an average rate of 2.4% while boys concentrated at an average rate of 3.9% (See Table 5). Girls concentrated in the Graphic Design & Multimedia Arts program of study at an average rate of 3.2% while boys concentrated at a higher average rate of 4.1%. Business, Marketing, and Finance was another career cluster in which boys outperformed girls at a statistically significantly higher rate, especially in Accounting, Business Management, and Entrepreneurship, in which boys concentrated at an average rate of 6.2% as compared to the

tables concentrator rate of 2.9% for girls (See Table 5). This area was the only program of study in which both girls and boys had substantial participation, but boys had higher participation rates than girls.

Figure 4

Top Five Texas CTE Career Clusters Concentrated in by Girls from 2020-2021 School Year through the 2022-2023 School Year

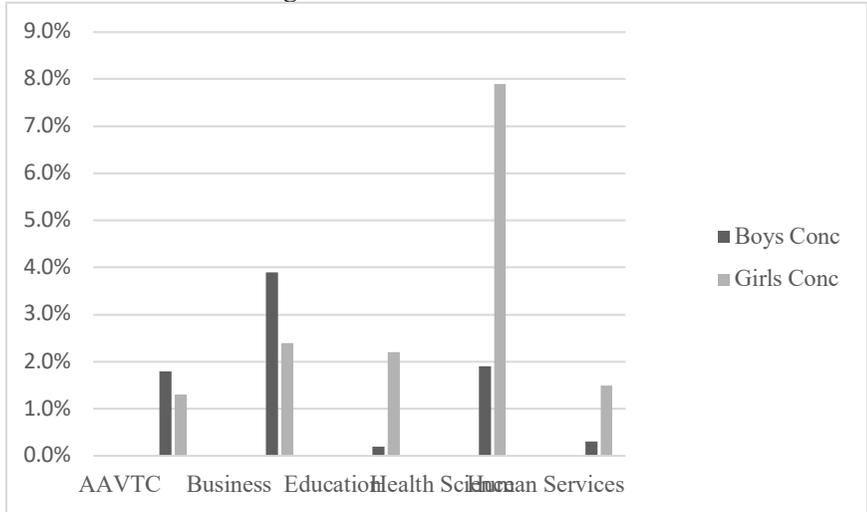


Figure 5

Five Career Clusters with the Lowest Participation Rates by Girls in the 2020-2021 School Year through the 2022-2023 School Year

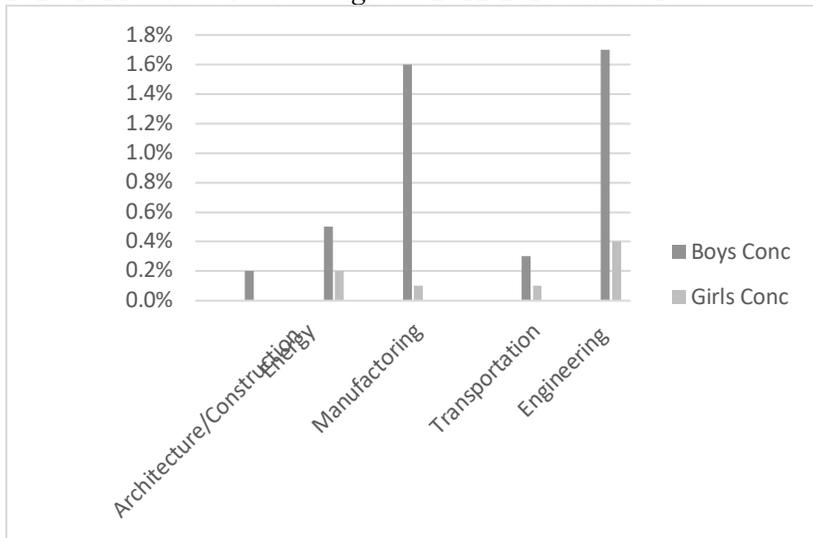
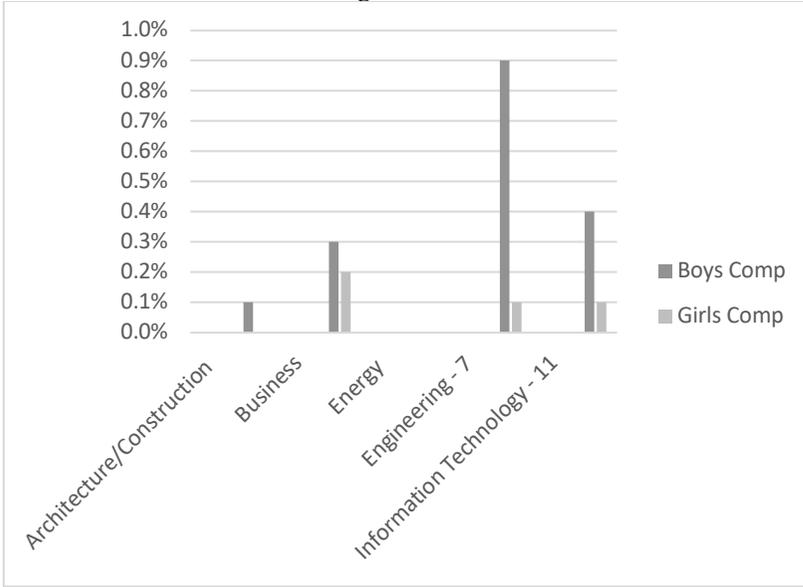


Figure 6

Five Career Clusters with the Lowest Completion Rates by Girls in the 2020-2021 School Year Through the 2022-2023 School Year



The five Texas CTE career clusters least completed by girls over the three school years analyzed were Business, Marketing and Finance, Energy, Engineering, and Information Technology, as depicted in Figure 5. Girls were least likely to concentrate in the career clusters of Architecture and Construction, Business, Energy, Engineering, and Information Technology (See Figure 6).

DISCUSSION AND CONCLUSIONS

In this statewide, multi-year investigation, CTE participation rates were examined by student gender for the 2020-2021, 2021-2022, and 2022-2023 school years. Throughout the study, girls participated in their CTE programs at higher rates than boys. As illustrated by Figure 1, the concentrator rates of girls were higher than boys, but decreased slightly after COVID as the concentrator rates of boys continued to increase. As presented in Figure 2, each year an average of 1,964 girls completed their programs of study at a rate of .09%, while an average of 873 boys completed at a rate of .04%.

Traditional programs of study attracted more female students. The Culinary Arts data yielded equal representation that could reflect a growing societal trend where careers in food service, hospitality, and

culinary entrepreneurship are seen as gender-neutral. Similarly, Law Enforcement programs appear to attract students based on personal interest rather than gender stereotypes. Low participation rates by girls in some of the programs of study could be attributed to several potential factors, such as insufficient awareness, societal perceptions, or a lack of hands-on opportunities for students to engage meaningfully. Many male-dominated industries, despite having high workforce demand, may need strategic efforts to boost high school student interest and reduce gender-related barriers to enrollment.

Overall findings were reflective of the performance of historically underserved students, particularly girls, in terms of career readiness upon graduation compared to boys. Given the relatively stable overall student numbers, participation remained robust enough to identify meaningful gender-based trends and disparities in program completion rates. The analysis of CTE participation and completion rates for girls and boys in the three school years revealed significant trends, variations, and disparities. The COVID-19 pandemic, which disrupted learning during the 2019-2020 school year, did not deter overall female participation, which remained significantly higher than male participation across several key programs.

Girls consistently led in completion and concentration rates in programs such as Health Sciences, Education and Training, Arts, Audio Visual Technology, and Communications (AAVTC), Hospitality and Tourism, and Human Services. Health Sciences, with an average completer rate of 6.0%, had robust participation from girls. Of note, however, is that programs traditionally dominated by boys, such as Advanced Manufacturing & Machinery Mechanics and Engineering, had minimal to no increase in female participation. This statistic highlights a persistent gender divide in traditionally male-dominated fields.

While disruptions were present due to the COVID-19 pandemic, girls were able to sustain participation in programs such as Nursing within the Health Sciences cluster, achieving a concentrator rate of 15.7% post-pandemic. This result is suggestive that, despite the challenges, female students prioritized career-focused courses related to healthcare and personal services, which may reflect increased societal awareness of healthcare careers during the pandemic. Boys, on the other hand, did not show substantial improvements in similar healthcare fields and remained at the concentrator level in programs such as Accounting, Business Management, and Entrepreneurship.

One key observation was that boys pursued a wider variety of CTE programs than girls. Girls had greater success and completion in the programs they participated in. Cosmetology, Family & Community Services, and Early Learning programs consistently attracted higher

female concentrator and completer rates. Boys' higher concentrator rates in Accounting & Financial Services and Business Management reflect continued adherence to traditional gender norms in educational and career pathways. The Business career cluster was a notable exception. Boys had higher participation and concentrator rates, averaging 3.9% compared to 2.4% for girls. Within Graphic Design & Multimedia Arts and Business, Marketing, and Finance, boys concentrated in programs focusing on policy development, financial planning, and creative design, underscoring male dominance in entrepreneurial and leadership-oriented business roles.

Table 16
Summary of Results for Top Completion Rates by Program of Study for Girls for All Three School Years

Program of Study & School Year	<i>n</i>	%age
Healthcare Therapeutic		
2020-2021	15,411	11.3%
2021-2022	15,956	11.7%
2022-2023	15,850	11.6%
Law Enforcement		
2020-2021	2,182	1.6%
2021-2022	2,182	1.6%
2022-2023	2,182	1.6%
Medical Therapy		
2020-2021	11,592	8.5%
2021-2022	12,001	8.8%
2022-2023	12,274	9.0%
Nursing Science		
2020-2021	2,455	1.8%
2021-2022	2,591	1.9%
2022-2023	2,455	1.8%

However, Agriculture, Food, and Natural Resources had similar participation rates for girls and boys, a positive trend indicating gender-neutral engagement in traditionally mixed fields. Programs such as Culinary Arts and Law Enforcement also reflected gender balance, which could suggest evolving societal perceptions and the breakdown of traditional stereotypes in certain career fields. Despite being high-demand, high-paying career clusters, Architecture and Construction, Energy, and

Transportation, Distribution, and Logistics had minimal and at times no enrollment for girls and boys. However, the lack of female participation in Engineering and Information Technology suggests deeper, systemic issues that go beyond awareness or access. In conclusion, clear gender-based differences were documented in CTE participation and completion. Girls consistently completed programs at higher rates but remained underrepresented in high-demand career clusters such as Engineering, Energy, and IT. These findings underscore the importance of tailored strategies to address systemic barriers and foster equitable CTE participation across all career pathways.

Table 17

Summary of Results for Top Completion Rates by Program of Study for Boys for All Three School Year

Program of Study & School Year	<i>n</i>	%age
Engineering		
2020-2021	4,337	2.4%
2021-2022	3,975	2.2%
2022-2023	3,613	2.0%
Healthcare Therapeutic		
2020-2021	3,794	2.1%
2021-2022	4,156	2.3%
2022-2023	3,975	2.2%
Law Enforcement		
2020-2021	3,252	1.8%
2021-2022	3,252	1.8%
2022-2023	3,252	1.8%
Medical Therapy		
2020-2021	2,891	1.6%
2021-2022	3,072	1.7%
2022-2023	3,072	1.7%

A distinct pattern emerged for boys that highlighted a strong engagement with both technical and service-oriented career clusters. Engineering stood out as the leading program, reflecting the growing demand for technical expertise and problem-solving skills in a

technologically driven economy. Complementing this technical focus, healthcare-related programs of study such as Healthcare Diagnostics and Healthcare Therapeutics were also prominent. This significant participation illustrates that boys are also preparing for careers in the healthcare sector. Additionally, the Law Enforcement program of study ranked among their top choices, indicating a notable interest in public safety and criminal justice careers, areas that require both discipline and a commitment to community service. Rounding out the top five was the Medical Therapy program of study that equips students with the skills needed to support patient rehabilitation and overall wellness (See Table 17).

Connections to Existing Literature

The findings from this statewide, multiyear investigation confirmed that girls were still not pursuing traditionally higher-paying, male-dominated careers. Instead, they continued to prefer programs such as Health Science, Teaching, and Cosmetology, and have not pursued programs of study such as automotive, construction management, and welding at notable rates (Eardley & Manvell, 2006). An analysis of these data and previous data revealed that girls remained unlikely to participate in nontraditional, higher-paying career clusters (Fluhr et al., 2017). Also confirmed in the results of this investigation was that girls were still less likely to pursue careers related to Engineering (Fluhr et al., 2017; Leu & Arbeit, 2020; Mau & Li, 2018), highlighting a persistent gender gap in this field.

The findings further reflected the need for effective, gender-neutral career counseling (Scott et al., 2003) and underscored the importance of exposing girls to and encouraging them to explore a variety of career programs of study. This issue is especially critical because many non-traditional career options offer higher earning potential (Toglia, 2013). Additionally, both girls and boys have increased access to industry-based certifications, as reflected in their rising completer rates, a trend that aligns with previous studies.

Connections to Theoretical Framework

Because women have been treated as minorities, the findings from this three-year investigation align with John Ogbu's Cultural Ecological Theory, which suggests that minority students often experience lower academic performance due to the need to overcome negative societal perceptions that diminish self-efficacy (Ogbu & Simons, 1998). These perceptions may also contribute to lower participation rates in certain CTE

programs of study. Similarly, Eardley and Manvell (2006), Fluhr et al. (2017), and Leu and Arbeit (2020) have all documented that girls participate in STEM and non-traditional career clusters at significantly lower rates due to societal biases that adversely affect their self-confidence. Furthermore, girls in Texas high schools earn fewer industry-based certifications (Hicks et al., 2024a) and complete non-traditional CTE programs at lower rates (see Figure 5), reinforcing the idea that gender stereotypes create barriers that could hinder their future earning potential. These findings highlight the need for targeted interventions to address gender disparities in CTE participation and completion.

Implications for Policy and Practice

Results from this statewide, multiyear study highlight the need for schools and districts to take intentional steps to encourage girls to participate in traditionally male-dominated career clusters such as Engineering, Architecture, and Information Technology. Given that overall completion rates were low for both girls and boys, school counselors must play a crucial role in helping students select the right sequence of CTE courses starting as early as Grade 8. Counselors and administrators should work closely with students and parents to ensure students are placed in CTE programs based on individual fit, rather than gender-conforming expectations. District CTE personnel should collaborate with elementary and middle schools to introduce girls to a wider variety of career options beyond traditional “girl” careers. Schools and districts may also need to implement targeted interventions such as enhanced career counseling and mentoring programs to address gender-based disparities in CTE participation and foster interest in non-traditional careers for girls.

Because Perkins V legislation encourages educators to expose girls to non-traditional careers, more strategic efforts are required to create exploration opportunities beginning in elementary school. High schools should also host Engineering, STEM, and Construction camps specifically designed for girls. Additionally, Texas’s Teacher Incentive Allotment program could serve as a model for a new CTE teacher incentive program. Legislative action is needed to recruit high-quality female industry professionals to teach CTE courses that are traditionally male-dominated. This type of program could also help fill hard-to-staff CTE teaching positions across the board.

Recommendations for Future Research

Several future research opportunities have emerged from this study. First, additional research studies are encouraged to understand fully the

scope of participation in CTE by girls. This researcher focused on students with a PEIMS coding of six or seven. Additional research investigations are warranted on students with a PEIMS coding of five and E, for explorer, especially because 81% of high school students enroll in at least one CTE course, nearly 70% complete two or more CTE courses, and only 25% take three or more CTE courses in a single program of study (Texas Education Research Center, 2020). The question remains concerning why are more girls not receiving the six or seven code? What more can educators do to encourage girls to complete non-traditional programs of study? Further, additional research studies are needed to determine how educators can help more Black students complete their programs of study, and what needs to occur to help students in poverty complete their programs as well.

Second, because the Texas Education Agency did not begin tracking CTE completer rates statewide until the 2020-2021 school year, a likely next step for researchers would be to compare completer rates of girls by programs of study sunset in 2020 and 2024. Many of the programs of study were sunset by the Texas Education Agency in 2020. These programs of study went into effect in 2020-2021 (Texas Education Agency, 2019b). Therefore, students had access to more programs of study and industry-based certification options before that change went into effect. Lastly, future research investigations are needed related to which sunset programs of study did girls excel, especially given the second list of sunset programs of study in March 2024 that went into effect for the 2024-2025 school years (Texas Education Agency, 2024f). Researchers are also encouraged to extend this investigation to other states.

SUMMARY

In this statewide, multiyear investigation, CTE participation rates were addressed by gender in Texas for the 2020-2021 school year through the 2022-2023 school year. The focus was on trends and differences in program concentration and completion. Findings were that girls completed their programs of study at consistently higher rates than boys across the years examined. Girls also had higher overall concentrator and completer rates, particularly excelling in the Health Sciences career cluster, which remains a highly preferred field for females.

Additionally identified in this investigation were specific programs of study most preferred by girls, such as Nursing, Healthcare Diagnostics, and Healthcare Therapeutics, all of which offer pathways to high-demand careers in the healthcare sector. These preferences reflect national trends that highlight the continued alignment of female student participation with traditionally female-dominated careers. In contrast, boys demonstrated strong preferences for Business, Manufacturing, and Engineering

programs of study. Although boys concentrated heavily in these fields, their completer rates remained notably low, indicating potential challenges in program retention and persistence that may disproportionately hinder male students from completing CTE programs.

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Bios

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