

Career Technical Education and Outcomes in Texas High Schools:

A Monograph



The Mission of the Texas Workforce Investment Council

Assisting the Governor and the Legislature with strategic planning for and evaluation of the Texas workforce development system to promote the development of a well-educated, highly skilled workforce for Texas

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Career and technical education (CTE) provides the technical knowledge and skills that are aligned with the academic standards needed to prepare individuals for further education and careers in current or emerging professions. With a focus on secondary CTE, this monograph summarizes the relevant legislation, discusses how CTE has evolved, and details the economic need and value of CTE. Finally, the association between CTE and student academic outcomes such as graduation from high school, transition to postsecondary education, and performance on assessments is illustrated.

Generally, the goal of CTE is to prepare students for successful careers. CTE classes range from career exploration courses to college classes and are offered in middle schools, high schools, community and technical colleges, and other postsecondary institutions. The Carl D. Perkins Career and Technical Education Improvement Act of 2006 (Perkins IV) defines CTE as organized educational activities that:

- A. Offer a sequence of courses that:
 - i. Provides individuals with coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in current or emerging professions;
 - ii. Provides technical skill proficiency, an industry-recognized credential, a certificate, or an associates degree;
 - iii. May include prerequisite courses (other than a remedial course) that meet the requirements of this subparagraph; and
- B. Include competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and knowledge of all aspects of an industry, including entrepreneurship, of an individual.

Relevant Legislation and Funding

Since 1984, federal support for CTE has been provided by the Carl D. Perkins Vocational Act. The latest version of Perkins legislation, Perkins IV, was passed in 2006. Like previous Perkins legislation, Perkins IV stresses accountability. It requires that recipients at the local level submit an annual report detailing performance on core indicators. Perkins IV is also concerned about improving CTE programs, stating that funds may be used to support or develop new CTE courses and initiatives, including career clusters, career academies, and distance education.

Perkins IV is the first act that uses the term “career and technical education” and offers the new definition (cited above) that modifies the previous concept of vocational education. Perkins IV strikes the stipulation that CTE focuses on the preparation for sub-baccalaureate careers. Instead, Perkins IV states that CTE will offer a sequence of courses that provides coherent and rigorous content and technical skill proficiency, an industry-recognized credential, a certificate, or an associates degree.

Additionally, the importance of integrating academic and vocational instruction is highlighted. The legislation frequently mentions “rigorous and challenging academic and career and technical instruction” for “high-skill, high-wage, or high-demand occupations.” This new concept of CTE and the focus on rigor is also reflected in the requirement for establishing programs of study that incorporate secondary and postsecondary education elements that lead to an industry-recognized credential, certificate at the postsecondary level, or an associates or bachelors degree.

For program year 2011 – 2012, Texas received \$89,840,720 in Perkins basic grant funds. Of those grant funds, 30 percent is used for postsecondary programs and 70 percent is used for secondary purposes. Of that 70 percent, at least 85 percent is allocated to school districts through the basic formula grant. The Texas Education Agency (TEA) is responsible for administering the Perkins grant for the state and at the secondary level. The Texas Higher Education Coordinating Board (THECB) is the subrecipient that administers the Perkins grant at the postsecondary level.

Information provided by the TEA Grants Administration Division indicates that TEA issued 434 notice of grant awards to serve 943 school districts or local education agencies (LEAs) in 2011 –2012. Eighteen awards were issued to education service centers to serve as fiscal agents for LEAs that do not meet the threshold to receive the grant as single entities. TEA’s 2011–2012 *Academic Excellence Indicator System State Profile Report* states that 1,072,030 secondary students in Texas (21.5 percent) were enrolled in CTE. In addition to secondary CTE, these programs are offered through 50 community college districts, three state colleges, and four technical colleges.

The Evolution of CTE

Numerous changes in society, technology, the workplace, and educational philosophy have influenced occupational education. Contemporary CTE is very different from earlier models of career training. Vocational education was conceptualized as a separate system of education that emphasized job-specific skills over the academic curriculum and was often used as an alternative or inferior path. CTE still suffers from this outdated stigma associated with vocational education.

Today, CTE (as defined by Perkins IV) stresses rigorous content, alignment with challenging academic standards, a focus on technical skill proficiency and credentials, and preparation for further education. Additionally, CTE programs now stress the education of students for a range of careers in an industry instead of for specific trades. Effective CTE programs also actively partner with local employers to design high-quality programs grounded in industry standards and recognize the skills that are needed to succeed in both college and career.

The Economic Impact and Value of CTE

Nationally, and in the wake of the recent recession, employers have expressed concerns about the availability of enough skilled workers. Although this concern varies by state and industry, some employers reported difficulties in filling vacant positions even during the recession when numerous individuals were unemployed. Furthermore, the pending retirement of a large number of skilled workers from the Baby Boom cohort is expected to cause difficulties in the near future. Effective CTE programs can prepare individuals for these skilled professions using a curriculum aligned with industry

standards and pathways to postsecondary education to replenish the workforce and support a thriving economy.

According to the Bureau of Labor Statistics, eight of the 10 fastest growing occupations between 2010 and 2040, referred to as middle-skill occupations, will require on-the-job training, postsecondary training, or an associates degree, but not necessarily a bachelors degree. By definition, CTE programs are designed to provide the training for these occupations in high-growth industries.

Furthermore, CTE provides an educational context that enables students to apply what they are learning in core academic courses such as math, science, and English to real world problems. This helps students realize the relevance of these courses and motivates the acquisition of additional academic skills. In short, CTE classes have the rare capability to provide an engaging, relevant education while answering the question, “Why do I need to learn this?”

CTE Participation and the Academic Benefits of CTE

Various studies have demonstrated the association between CTE program participation and improved student academic outcomes. Participation in CTE programs is associated with higher graduation rates, lower dropout rates, and higher scores on the Texas Assessment of Knowledge and Skills (TAKS) assessments. Specific studies and data are provided below.

Graduation and Dropout Rates

A review of numerous studies indicates that students enrolled in CTE programs are less likely to drop out of high school.¹ In school year 2007–2008, the national four-year graduation rate was 74.9 percent² compared to 90.18 percent for students who earned three or more CTE course credits in a program area (CTE concentrators).³ Table 1 illustrates the graduation rates for all Texas high school students and students with two or more CTE classes. From 2007 to 2010, graduation rates were higher for students taking two or more CTE classes compared to all Texas high school students. In 2010–2011, the graduation rate for students with two or more CTE classes was 95.91 percent compared to 85.90 percent for all Texas high school students.

Table 1: Graduation Rates for Texas High School Students, 2007 to 2010

	2007–2008	2008–2009	2009–2010	2010–2011
All Students	79.10%	80.60%	84.30%	85.90%
Students with Two or More CTE Classes	92.36%	94.26%	95.68%	95.91%

¹ Kulik, James. 1998. *Curriculum Tracks and High School Vocational Studies*.

<http://www2.ed.gov/pubs/VoEd/Chapter3/Part4.html>

² Stillwell, Robert. 2010. *Public School Graduates and Dropouts From the Common Core of Data: School Year 2007–2008: First Look*. <http://nces.ed.gov/pubs2010/2010341.pdf>

³ U.S. Department of Education, Office of Vocational and Adult Education. 2010. *Carl D. Perkins Career and Technical Education Act of 2006 Report to Congress on State Performance Program Year 2007–08*. http://cte.ed.gov/docs/Rpt_to_Congress/Report_to_Congress_07-08.pdf

Additionally, dropout rates are lower for students with two or more CTE classes. Table 2 indicates that the dropout rates for all Texas high school students are higher than for students with two or more CTE classes. In 2010–2011 the dropout rate for students with two or more CTE classes was half that of all Texas students.

Table 2: Dropout Rates for Texas High School Students, 2007 to 2010

	2007–2008	2008–2009	2009–2010	2010–2011
All Students	3.2%	2.9%	2.4%	2.4%
Students with Two or More CTE Classes	2.5%	1.9%	1.5%	1.2%

Transition to Postsecondary

National data demonstrates that within two years of high school graduation, 79 percent of CTE concentrators enrolled in postsecondary education and 80 percent of CTE concentrators persisted in postsecondary education.⁴ Table 3 illustrates the percentages of Texas students with two or more CTE classes that transition to postsecondary education and careers.

Table 3: Percentage of Texas High School Students with Two or More CTE Classes Transitioning to Postsecondary Education and Careers

	2007–2008	2008–2009	2009–2010	2010–2011
Students with Two or More CTE Classes	60.20%	67.23%	67.17%	67.23%

TAKS Assessment Performance

A greater percentage of Texas students with two or more CTE classes also pass the math and reading sections of the TAKS assessment. Table 4 indicates the percentages of students passing math and reading.

Table 4: Percentage of Texas High School Students Passing TAKS Math and Reading Assessments

		2008–2009	2009–2010	2010–2011
All Students	TAKS Math	82%	89%	90%
	TAKS Reading	93%	93%	94%
Students with Two or More CTE Classes	TAKS Math	95%	95%	96%
	TAKS Reading	98%	98%	97%

⁴ U.S. Department of Education. 2011. *Postsecondary and Labor Force Transitions Among Public High School Career and Technical Education Participants*. <http://nces.ed.gov/pubs2011/2011234.pdf>

Concluding Comments

CTE prepares students for successful careers and further education by providing the technical knowledge and skills that are aligned with academic standards. For this reason, the Council and its partner agencies view CTE as critical for the workforce development system. Because CTE is a key component of the state's workforce system and the strategic plan for that system, the Council will continue to monitor the implementation of CTE throughout the state.

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