Career and Technical Education: Enhancing Educational Experiences in Middle School, High School and Postsecondary Education

project10 transition education network

1. What is career and technical education?

Career Technical Education (CTE) helps learners develop the knowledge and skills they need to be prepared for college and careers. CTE emphasizes real-world skills and practical knowledge within a student's career of interest. CTE is a cost-effective way for students to start a career in as little as one or two years of school The Florida Department of Education (FDOE) has a wide variety of CTE degree and certificate programs across the following 17 Career Clusters. See the table below for the Career Clusters and two program examples for each cluster.

Career Cluster	Program Examples
Agriculture, Food and Natural Resources	Agritechnology and Veterinary Assisting
Architecture and Construction	Building/Trades Construction and Electrician Apprentice
Arts, A/V Technology and Communication	Digital Design and Digital Video Technology
Business Management and Administration	Administrative Office Specialist and Medical Administrative Specialist
Education and Training	Early Childhood Education and Early Childhood Education Apprentice
Energy	Energy Technician and Electrical Line Service and Repair Apprentice
Engineering and Technology Education	Energy Pathways and Communications Technology
Finance	Finance and Personal & Family Finance
Government and Public Administration	Emergency Planning & Response and Principles of Public Service
Health Science	Allied Health Assisting and Practical Nursing
Hospitality and Tourism	Culinary Arts and Commercial Foods & Culinary Arts
Human Services	Cosmetology and Barbering
Information Technology	Web Development and Computer Systems & Information Technology
Law, Public Safety and Security	Criminal Justice Operations and Florida Law Enforcement Academy
Manufacturing	Welding Technology Fundamentals and Welding
Marketing, Sales and Service	Marketing, Management & Entrepreneurial Principles and Sport, Recreation & Entertainment
Transportation, Distribution and Logistics	Global Logistics & Supply Chain Technology and Automotive Service Technology

Career and Technical Education will help students to do the following:

- Explore career interests during middle school and high school
- Develop employment skills
- Complete courses to meet high school graduation requirements
- Develop leadership skills
- Earn certificates, industry certifications, applied technology diplomas (ATDs) and/or associate's degrees in a wide range of programs that provide a living wage
- Prepare for additional postsecondary education
- Start a career within one to two years in an affordable way.

For more information on occupations important to Florida's economic development, refer to FDOE Career Clusters and Curriculum Frameworks

2. What advantages does taking CTE courses provide to middle school and high school students with disabilities?

Secondary transition planning is widely recognized as an essential activity at the high school level and it is equally important at the middle school level. Middle school students need strengthened transition services in the following areas:

- Student participation in the individual educational plan (IEP) process
- Self-awareness and self-advocacy skills
- Transition planning that identifies courses of study through the student's strengths, interests and preferences (Weidenthal & Kochhar-Bryant, 2007)

Transition services prepare students to pursue postsecondary education and careers and is known as college and career readiness (CCR). Recent research suggests that CCR at the middle school level should include the following:

- Career Exploration
- Postsecondary Options and Aspirations
- Goal-Setting and Planning (Grigal, Cooney, & Hart, 2019)

Research also shows that secondary students with disabilities who participate in CTE, particularly those who concentrate their courses in one program of study, are more likely than students with disabilities who did not participate in CTE to do the following:

- **Graduate from high school -** CTE participation increases student engagement, reduces the likelihood of dropout and increases graduation rates. The connection between CTE courses, student interests and real-world problem-solving increases student engagement because it impacts HOW students learn as well as WHAT students learn.
- **Go to college -** CTE increases the likelihood of college enrollment. Through experience in CTE, students are able to envision career directions and access higher learning to achieve their goals.
- **Contend for competitive wage jobs -** CTE research shows that students with technical or applied science degrees earn salaries that are competitive with bachelor's degree holders (Dougherty, 2016).

Dougherty (2016) explained that CTE offers students many advantages without a downside. He summarized, "High school CTE improves outcomes for students seeking to start their careers quickly, but is no hindrance to those who want additional academic training. Make high-quality, labor-market-aligned CTE available to all students, and encourage (and enable) them to participate" (p. 30). For more information refer to Career and Technical Education in High School: Does It Improve Student Outcomes?

CTE: A Pathway to Graduation!

CTE courses can provide a pathway to graduation. Beginning with the 2019-2020 school year, all students may earn a standard high school diploma through the Career and Technical Education (CTE) pathway option.

Students using this option must meet all of the requirements for a 24-credit standard diploma, with the following differences: (1) elective requirements are reduced to four credits, (2) physical education, the online course and arts course are not required, (3) two elective credits in CTE courses that result in a program completion and an industry certification are required and (4) two elective credits in a work-based learning program are required (up to two credits of electives, including financial literacy may be substituted to fulfill this requirement).

There are also two graduation options available only to students with disabilities that allow for CTE course substitutions for

- English 4
- One math credit
- One science credit and
- One social studies credit

(Does not include Algebra 1, Geometry, Biology 1 and US History.)

3. What are CTE course substitutions and what advantage do they provide for high school students?

Substituting a CTE course for a graduation requirement can benefit students in the following ways:

- Assist students to master the course objectives in a manner that is more easily grasped.
- Provide students the benefit of exploring a career direction and gaining employment skills.
- Increase student confidence and engagement.

These advantages increase student engagement and reduce instances of dropping out of school which support students as they pursue a high school diploma.

See BEESS CTE Course Substitutions for more information.

4. Are accommodations and modifications available for CTE courses at the middle school and high school levels?

Both accommodations and modifications are available for CTE courses at the middle school and high school levels. Accommodations and modifications are recommended by the student's IEP team according to each student's individual needs. Here is a simple way to think about the difference between accommodations and modifications. Accommodations change how the student is instructed or tested. Modifications change what the student is expected to learn. Information on accommodations are available in *Accommodations: Assisting Students with Disabilities*.

Accommodations can be requested at the postsecondary level when a student discloses a disability and provides documentation that verifies the presence of a disability. *Modifications to the curriculum are not available at the postsecondary level.*

Information on Diversified Education and Instructional Support Services

The FDOE CTE webpage has more information on the following:

- **Diversified Education:** Below the list of career clusters, find the link to Diversified Education Home. This program provides courses in career exploration and planning for middle school students and courses in employability skills and work experience for high school students.
- **Instructional Support Services:** Below the list of career clusters, find the link to Instructional Support Services. This program provides services and instruction for students with disabilities representing special populations.

Three Common Myths about CTE

1. Myth: CTE is only for students who are not going to a 4-year college.
Fact: CTE can also be a pathway to further postsecondary education.

2. Myth: CTE is training for one job only.
Fact: CTE prepares students to explore multiple career options.

3. Myth: CTE does not build academic skills.
Fact: CTE encompasses both technical and academic skills.

"Today's CTE delivers real options for college and rewarding careers, helps learners build real-world skills, and enhances the high school and college experience."

Career Technical Education: Myths and Facts (n.d., p.1)

5. Why is CTE a valuable option to consider when planning for further education after high school graduation?

CTE is an excellent option for all students to consider, including students with disabilities, for multiple reasons. Three primary reasons are discussed here.

Reason #1: Ease of access. Students can access CTE courses and the benefits that accompany them at the middle school and high school levels. Additionally, there is open access/enrollment for students with a high school diploma at a Florida College. CTE Centers do not require a high school diploma for admittance.

* See this Florida College System webpage for information on available programs and majors.

Reason #2: Employment opportunities and wages. Students who are enrolled in CTE during high school and at the postsecondary level are able to earn industry certifications, which are nationally recognized credentials that indicate students have met pre-determined standards for knowledge, skills and competencies. Industry certifications may assist students to obtain a job in one of the fast-growing occupations in Florida that typically provide better wages than students exiting high school without an industry certificate usually earn. Approximately half of the 50 fastest-growing occupations require a postsecondary career certificate or associate degree. *Measuring the Economic Success of Florida's Graduates: Economic Security Report 2018* analyzed data collected from 2011-2015 and showed that an associate in science degree stacks up favorably to a bachelor's degree in regard to first-year wages and percentage of graduates employed. See the chart below for specific details.

Degree Type	Florida First-Year Median Wages	Florida First-Year, Full-Time Employment Rates
Career Certificate (District Technical College/Technical Center)	$28,704	48%
Associate in Science Degree	$44,432	68%
Bachelor's Degree (Florida College System)	$43,584	74%

* This data does not distinguish between graduates working within or outside their fields of study.

Reason #3: Cost-effectiveness for students. The Association for Career and Technical Education (ACTE) reported that Career and Technical Centers and Technical Colleges are a good bargain for students and can cost significantly less than other institutions of higher learning.

Overview of Certificates and Degrees

Career certificate programs are a series of vocational courses that prepare students for entry-level employment.

College credit certificates are a series of college credit courses that prepare students for entry-level employment .

The applied technology diploma (ATD) includes courses that are part of an AS or AAS degree and lead to employment in a specific occupation. An ATD may consist of either career credit or college credit.

The associate in applied science (A.A.S.) degree is a two-year technical degree designed to train students for direct entry into a specialized occupation.

The associate in science (A.S.) degree is a two-year technical degree designed to prepare students for a specific occupation and a related bachelor's degree program.

Advanced technical certificates (ATCs) are programs of instruction that are less than 45 credit hours of college-level courses and are awarded to students who have already received an A.S. or A.A.S. degree.

The associate in arts (A.A.) degree is designed for students who plan to attend a four-year institution as a junior and complete a bachelor's degree program.

The bachelor's degree is a four-year degree that is typically 120 credit hours; it may have an emphasis on science, liberal arts, or could be related to unique workforce sectors.

More information is available at *Measuring the Economic Success of Florida's Graduates -Economic Security Report 2018*

6. What are the differences between CTE at the high school level and postsecondary level?

It is essential for students with disabilities to understand the differences between CTE at the high school and postsecondary levels. These differences are summarized in the table below.

CTE - High School Level - Individuals with Disabilities Education Act (IDEA) and ADA	CTE - Postsecondary Level - Americans with Disabilities Act (ADA)
Access services through Exceptional Student Education (ESE), School District	Access services through a Disability Services Office
Emphasis on success: Curriculum can be modified through Access points instruction for students with significant disabilities.	Emphasis on equal access: Standards, course objectives and the curriculum cannot be modified; however, accommodations may be accessed.
Appropriate accommodations, as indicated on the student's IEP, can be provided.	Appropriate accommodations, as indicated through documentation, can be provided. Documentation could require a psychological/educational evaluation, and could also include documentation from high school, such as a Summary of Performance from high school, an IEP, etc.
The school facilitates an evaluation.	The student is responsible for getting an evaluation and providing any other documentation of disability. Vocational Rehabilitation may be able to assist postsecondary students get the evaluation they need.
Students are determined eligible for ESE based on evaluation outcomes and IDEA disability categories.	Evaluation and other documentation must show the student's functional limitations and the impact of the limitations regarding the demands of postsecondary education in order to demonstrate the need for reasonable accommodations.
The individual educational plan (IEP) is the guiding document for providing ESE services.	The IEP and the Summary of Performance can be useful documents to share, but are not the guiding documents for providing services to students with disabilities.
School personnel, discretionary project personnel and/or parents identify students potentially in need of ESE services.	Students must advocate for themselves through the Disability Services Office, which includes the disclosure of a disability.
The school is responsible for arranging accommodations with classroom teachers.	Accommodations determined by the Disability Services Office may be communicated to the student's professors by office personnel or the student may be responsible for initiating accommodations with professors in each course.
Academic tutoring may be provided through ESE services.	Students are responsible for identifying and accessing tutoring resources.
Parents have access to student records if they are legal guardians or if the student is under age 18. Students who have received transfer of rights may invite parents to the IEP meetings.	Parents do not have access to student records without written consent from the student unless the parents have legal guardianship.

Key Findings: Florida Economic Security Report 2018

Completers with an advanced technical certificate received the highest median wages one year after graduation ($44,436) across all programs and credential levels.

Completers with an advanced technical certificate also received the highest median wages five years after graduation ($59,368) across all programs and credential levels.

Apprenticeship completers from Florida College System institutions had the highest rate of full-time employment (77%), across all credential levels and programs.

Completers of the associate in arts degree and college credit certificate most frequently continued education in another public institution, across all credential levels.

Career and Technical Education Resources and References by Question

Question 1:

Florida College System Programs Listing

https://www.floridacollegesystem.com/students/programs.aspx

Provides an overview of the eight meta majors and provides a degree finder tool.

Florida Department of Education Career and Technical Education Brochure

http://www.fldoe.org/core/fileparse.php/5652/urlt/CTE-brochure-online.pdf

Provides a brief overview of CTE programs in Florida.

Florida Department of Education: Career Clusters Infographic

http://www.fldoe.org/core/fileparse.php/5652/urlt/CareerClusterInfographics.pdf

Provides a visual overview of the CTE career clusters.

What is CTE? (2018)

https://cte.careertech.org/sites/default/files/What_is_CTE_2018.pdf

A two-page overview of CTE and its value for students and industry.

What is career and technical education, anyway?

https://www.edweek.org/ew/issues/career-technical-education/index.html

Highlights the improvements in CTE and addresses frequently asked questions about CTE.

Question 2:

Career and Technical Education in High School: Does It Improve Student Outcomes? (2016) -

https://fordhaminstitute.org/national/research/career-and-technical-education-high-school-does-it-improve-student-outcomes

Explores the positive impact CTE has on student outcomes.

Grigal, M., Cooney, L., & Hart, D. (2019). Promoting college and career readiness with middle school youth with disabilities: Lessons learned from a curriculum development project. *Career Development and Transition for Exceptional Individuals, 42*(1), 64-71. Explores the importance of college and career readiness instruction for middle school students with and without disabilities.

Special Education: Increasing Job Opportunities for Students through Engagement in Career Technical Education (2018)

https://www.eparent.com/education/special-education-increasing-job-opportunities-for-students-through-engagement-in-career-technical-education/

An education blog for parents that discusses the value of CTE for students with disabilities.

Weidenthal, C., & Kochhar-Bryant, C. (2007). An investigation of transition practices for middle school youth. ***Career Development for Exceptional Individuals, 30*****(3), 147-157.** Explores IEP participation and transition services needs at the middle school level.

Question 3:

Florida Department of Education (FDOE), Bureau of Exceptional Education Services (BEESS), Career and Technical Education Course Substitutions

http://www.fldoe.org/core/fileparse.php/7571/urlt/CTEsubstitutions.pdf

Provides guidance on eligible CTE course substitutions and provides a rubric to assist districts in making their own course substitution determinations.

Florida Department of Education (FDOE), Career and Technical Education Program Resources

http://www.fldoe.org/academics/career-adult-edu/career-tech-edu/program-resources.st

Provides an overview of CTE resources.

Question 4:

Accommodations and Modifications for Students with Disabilities in Career Education and Adult General Education

http://www.fldoe.org/core/fileparse.php/7690/urlt/0070069-accomm-educator.pdf

Assists school district personnel to make decisions about the use of accommodations and modifications by students with disabilities.

Florida Department of Education (FDOE), Division of Career and Adult Education Guidance on Modified Occupational Completion Points (MOCPs)

http://www.fldoe.org/core/fileparse.php/7574/urlt/mocps.pdf

Describes the history, benefits and usage of MOCPs.

Question 5:

Florida College System

https://www.floridacollegesystem.com/

Provides comprehensive information on Florida College System majors, programs, admissions and financial assistance.

Measuring the Economic Success of Florida's Graduates

http://www.floridajobs.org/docs/default-source/office-of-workforce-services/state-program-reports/2019-state-program-reports/florida-economic-security-report-final-01-10-2019.pdf?sfvrsn=0

Details economic outcomes of recent completers from Florida's public postsecondary educational institutions.

Technical Assistance Paper (TAP): CTE Basic Skills Assessment Requirements

http://www.fldoe.org/contact-us/search.stml?q=Career+and+Technical+Education+TAP

Provides information about a wide range of CTE topics.

Up to the Challenge: The Role of Career and Technical Education and 21st Century Skills in College and Career Readiness

https://eric.ed.gov/?id=ED519335

Promotes the combined focus on CTE and 21st Century Skills to prepare students to be college and career ready after graduating from high school.

Question 6:

Differences Between High School and College Disability Services

https://www.gtc.edu/sites/default/files/files/documents/DIFFERENCES%20BETWEEN%20HIGH%20SCHOOL%20AND%20COLLEGE%20DISABILITY%20SERVICES.pdf

Compares and contrasts differences between high school and postsecondary education when accessing disability services.

Disability Rights Education and Defense Fund

https://dredf.org/legal-advocacy/laws/a-comparison-of-ada-idea-and-section-504/

Provides a comparison of ADA, IDEA and Section 504 legislation.

Family Guide to Secondary Transition Planning for Students with Disabilities

http://project10.info/Documents/FamilyGuide_Revised_FINAL_6.13.18.pdf

See table on differences in accessing services for students with disabilities between high school and college (p. 38-39).

Additional Resources

Advance CTE Fact Sheets

https://careertech.org/fact-sheets

Includes a list of all the fact sheets produced by Advance CTE

Career and Technical Education, Inclusion, and Postsecondary Outcomes for Students with Disabilities

https://caldercenter.org/publications/career-and-technical-education-inclusion-and-postsecondary-outcomes-students

Describes the positive connections between inclusion, CTE and post-school outcomes.

Developing a Postsecondary Career and Technical Education Program to Support Students with Intellectual and Developmental Disabilities: Replication Guide Based on Project Achieve at Florida State College at Jacksonville

https://www.fddc.org/publications

Provides an overview of Project Achieve and information about how to replicate the program.

Florida Consortium on Inclusive Higher Education

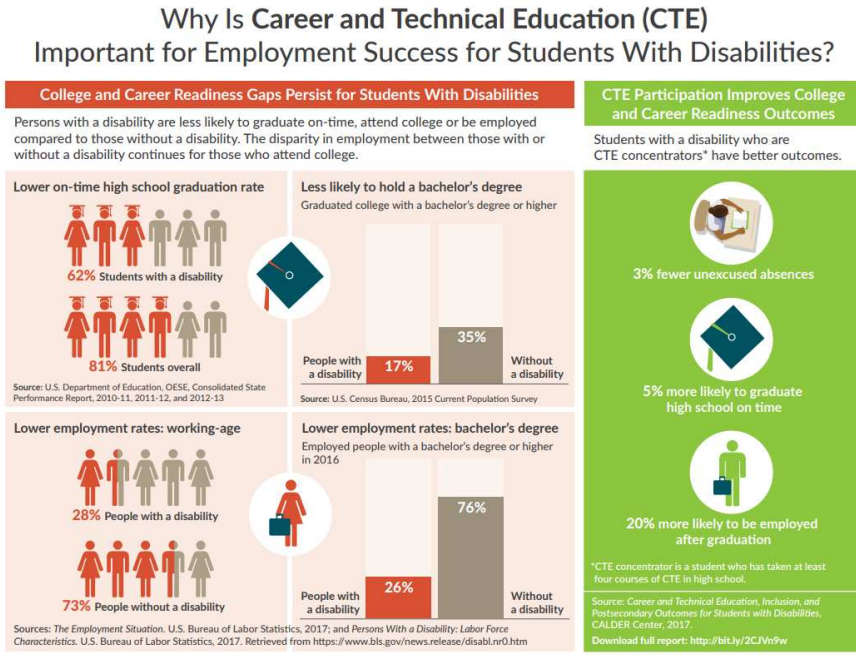
https://fcihe.com/

Provides information on Florida's inclusive college programs for students with intellectual disabilities.

Why Is Career and Technical Education (CTE) Important for Employment Success for Students With Disabilities?

https://ccrscenter.org/sites/default/files/CTE_SWD_Infographic.pdf

Visual overview of how CTE supports employment success for students with disabilities.



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