

Career & Technical Education (CTE): Designing a Successful Program



A How-To Guide from Edmentum

Who is CTE for?

CTE is for all students from all backgrounds. The contextual knowledge and skills aid students in identifying, guiding, and achieving their goals. The practice of goal-setting itself is a worthy attribute to attain as a characteristic of successful people.

CTE first introduces the array of careers that adults across the world enjoy, then provides connected information toward acquisition of that career, and delivers a sequence of learning opportunities that place students on the threshold of that career. Many students have little career frame of reference outside of their immediate circles of family and friends. CTE opens the door and mitigates the barrier of entry for all students toward careers. Even if students change their minds about their chosen careers throughout their time participating in CTE programs, they still benefit from goal-setting experiences, interpersonal communications, problem-solving situations, and metacognitive applications of learning.



CTE program development planning

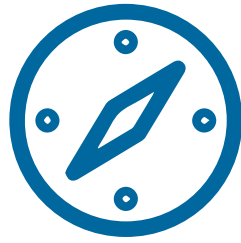


Elementary School Populations; Career Awareness K–6:

Connection of careers to academics and society

At the elementary and intermediate levels, career awareness curricula and instruction connects academic and social themes to careers in the community. Career awareness gives students relevant examples of concepts found in the workplace and introduces students to careers with which they may not be familiar.

What is one thing you can implement this year to expose elementary students to CTE?



Middle School Populations; Career Exploration 7–9:

Career explorations, beginning to develop essential career skills and principles

Middle school students explore the scope of careers through survey courses that compare common employability attributes and contrast the differences across clusters. Career exploration is meant to ignite the curiosity of the learners, align interests and aptitude to goals, and inform the four-year planning of the students and their families.

What is one idea you can implement this year to expose middle school students to CTE?



High School Populations; College & Career Readiness 8-12:

Participation in principles and pathway courses with essential career skills aligned to core standards

High school students embark on their career-aimed curricular journey by taking a coherent sequence of CTE courses designed to scaffold employability knowledge, skills, and experience and concurrently support their interdisciplinary needs.

What is one thing you can implement this year to expose high school students to CTE?

Example CTE program goals

Here's a holistic way of identifying CTE program goals. Does your goal incorporate these elements?

- | | | |
|--|------------------------------|-----------------------------|
| 1. Increase in CTE Dual or Articulated Credit | YES ☐ | NO ☐ |
| 2. Career & Tech Student Organizations support | YES ☐ | NO ☐ |
| 3. Work-Based Learning integration | YES ☐ | NO ☐ |
| 4. Readiness and skills accumulation for certification | YES ☐ | NO ☐ |

Example interest survey

Activities that describe what I like to do:	Personal qualities that describe me:	School subjects that I like:
1. Learn how things grow and stay alive.	1. Self-reliant	1. Math
2. Make the best use of the earth's natural resources.	2. Nature lover	2. Life Sciences
3. Hunt and/or fish.	3. Physically active	3. Earth Sciences
4. Protect the environment.	4. Planner	4. Chemistry
5. Be outdoors in all kinds of weather.	5. Creative problem solver	5. Agriculture
6. Plan, budget, and keep records.		
7. Operate machines and keep them in good repair.		

Example from: <https://cte.careertech.org/sites/default/files/StudentInterestSurvey-English.pdf>

Think about the role of student interest surveys when goal setting. Interest surveys allow students to make statements regarding motivations, interests, and preferences in how they interact, think, and eventually support themselves. Some interest surveys are more general, focusing on the person, others connect and suggest career clusters.

Example CTE program goals

1. Identify a group of students that you could have complete an interest survey.

Which group would you like to survey?

2. Choose your audience:

☐ Elementary

☐ Middle

☐ High

3. Pick three questions you'd ask your target audience.

What questions do you have for your audience?



Dual Credit/Dual Enrollment

Dual credit consists of negotiated, aligned curriculum taught by a district employee with adjunct status or a representative of the college. These courses can be taught face to face, blended or virtually, with the student earning college credit concurrent to high school credit.

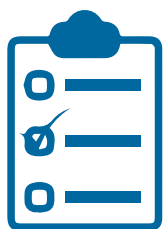
Articulated Credit



Articulated credit is another type of negotiated college credit, but articulated credit requires successful completion of a sequence of courses in order to attain the reciprocal equivalent in the colleges. Credit is negotiated with the local college or broader consortium so that two to three high school Carnegie Units are credited for college hours (i.e., one credit of A/V production plus two credits of advanced A/V production delivers three hours of college media production, upon enrollment). Dual credit appears immediately on a college transcript, but articulated credit is granted upon enrollment or completion of a semester at the institution.

Metacognitive Assessments

Within career-exploration courses, as students are learning how careers interconnect with society, they also are learning about themselves and their own goals as they experience self-reflection. CTE programs offer interests, skills, and learning styles assessments to be coupled with academic and readiness data to guide pathways.



Skill-based assessments help students self-assess their strengths and weaknesses in applicable skills toward careers. These skills may be technical or soft, and the students' metacognition of their answers and results are great to use formatively as students progress through pathways.

Learning styles assessments add the third level of metacognition to guide students' decisions on class delivery, location, etc., to best empower their learning. With the recognition that CTE classes can be delivered multiple ways to best serve students, those students can plan for those deliveries in their pathways.

It is a best practice to deliver these assessments at least twice between grades 7 and 11 in order to update student development, inform decision-making for student stakeholders within pathways, and milestone progress toward career goals.

CTE can be incorporated into curricula in many different ways. Below are a few suggested planning tools to help you get started.

Incorporate into core curriculum



From elementary through secondary schools, students benefit from integration of career lessons. CTE lesson integration delivers relevance to math, science, language arts, and social studies, and career context provides the vehicle for application and above levels of taxonomical growth. Project-based learning (PBL) is empowered through work-based learning (WBL).

The question “When will I ever use this?” is diffused as teachers provide examples, applications, and opportunities for creation/evaluation through career connections.

Career exploration

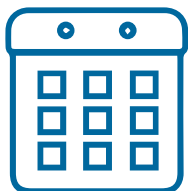


Career exploration is the critical transitional process for students to begin the metacognition within careers as related to their values, preferences, systems of belief, and goals. Students within career-exploration curriculum find their interests, the landscape of the world of work, and the necessary goals that must be set and met to achieve success. Career-exploration curriculum may constitute a credit within a school or district, but it is invaluable no matter if it is delivered in advisory or supplemental fashions. Many core teachers find that integration of career exploration, postsecondary readiness, and 21 century skills/soft skills lessons strengthen their scope and sequences as well.

The essential outcome of career exploration is the four- or six-year plan for each student. Many schools are now conjoining the four-year plans with individual education plans so that all students have a map for success toward college and career readiness.

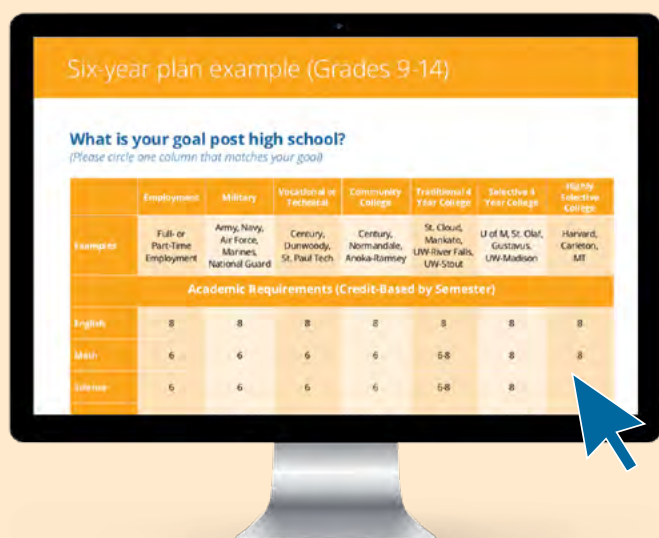
Four- and six-year planning

Four-year plans are developed, preferably in 8th or 9th grade in order to lay out a sequence of academics for students. The sooner that pathways are developed, the sooner students can embark on them and support networks can monitor students.



The plans lay out the course sequences for academics (math, ELA, social studies, science, physical education/athletics, foreign language, etc.) and electives (including CTE). This ensures that counselors and support teams can put the students in the classes that they are excited to take, need to graduate, or are required to take to attain certification/experience. Student plans are also used for planning, program goal setting, staffing, budgeting, and more on the part of the school/district.

Additionally, six-year plans can either precede the four years of high school or succeed them. The most common six-year plan is to plan four years of high school and two years of postsecondary education, being two years of traditional college or trade school. Sometimes, schools will extend the existing four-year plan in 10th grade to make it a six-year plan. The plan reestablishes steps to success, including course sequence, dual credit, graduation, and any needed certifications.



Online Planning Worksheets

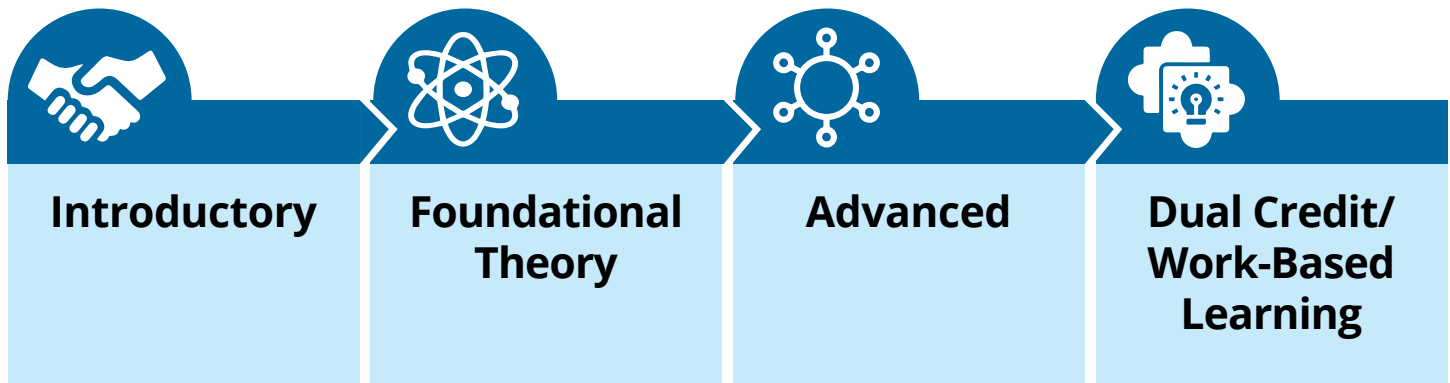
This worksheet booklet provides example 4-and 6-year plans, as well as blank templates to help you get started planning. Use this worksheet to identify an endorsement for a student, if applicable, or end goal for after graduation, while clearly understanding and identifying a path for each student.

[Click here for our planning worksheet](#)

CTE pathways

Pathways are developed at the state and district level to provide students with a coherent sequence of classes that scaffold career readiness and deliver three or more Carnegie Units or credits.

A common sequence is:



Diploma pathways

Diploma pathways are relatively new to CTE sequencing and align as components of an alternate graduation plan. Within diploma pathways, it is common to include:

- Sequenced CTE courses with advanced courses sometimes substituting for a fourth math, science, or ELA credit
- A specific career preparation course
- Completed industry certification
- Requisite college readiness scores on tests like SAT®, ACT®, or WorkKeys® exams

Pathway maps

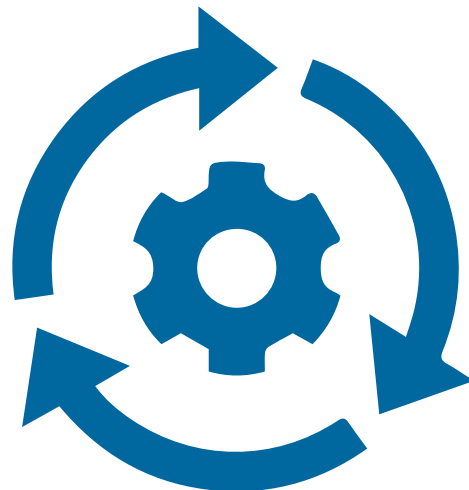
Pathway maps are a visual representation of coherent sequences to aid stakeholders in planning. Students and families have models from which to work in creating or updating four- and six-year plans. Teachers and administrators utilize the big picture layout to communicate and partner with the community, businesses, and colleges. Strong pathway maps will also include options for career and technical student organizations (CTSOs) and certifications.

Implementation models

Face-to-Face: Learning occurs at a traditional brick-and-mortar location with teacher-facilitated management of text and application activities. This model often mixes textbooks, workbooks, pencil-to-paper tests, and hands-on practice and assessment. Face-to-face learning is no longer the primary instructional model of CTE across the nation.

Blended: Blended learning is the current most common CTE instructional model due to its flexibility and versatility. Teachers use a blend of in-person and virtual/digital instruction and assessment to meet the varied needs of learners.

Virtual: Virtual learning utilizes online curriculum, instruction, and assessment to provide access to students. Activities may be synchronous, asynchronous, or even offline.



Student certifications

By now, the notion of an industry certification or licensure as the integral goal for students has become a presumption rather than exception. Traditionally, the top students in given pathways attain certifications, and skilled teachers often had greater success in helping students get these certifications. Now, campuses and districts are recognizing that they need to instill systems that help all students matriculate through the certification no matter background, demographics, or other factors process. Students need to metacognitively evaluate their own progress toward the certification test. Personalized learning communities of teachers, administrators, and advisory-board members need to develop systems that empower all students to stay with their program, develop skills and knowledge in each course toward said certification test, and take practice tests that replicate depth of knowledge and testing environment.



Data and CTE

Data management in CTE has grown to greater importance as educators monitor progress toward assessments and certifications. The registration and collection of data within classes and pathways are the biggest and fastest-growing components due to the importance of CTE. The difficulty lies in the fact that there are many different types of measurements that districts are monitoring.

Below is a set of data points to monitor across programs, including recommended subjects in which to focus:

- Student interest data
- Enrollment by category (participant, concentrator, completer) and demographics
- Academic testing data disaggregated (including CTE and end-of-course data)
- Student intervention data
- Certification and career-readiness testing data, by quantity and proficiency
- PBL, WBL, internship data
- Technology integration data
- Professional development data
- Teacher certification and endorsement data

The key to data management is to ensure that your data points do not exist independently of each other. It's important for educators to work collaboratively to consolidate data into one data-rich environment where reports can be easily sorted, aggregated, and monitored in a visual format by both educators and administrators.

Brainstorm names of team members who will be the core group managing your CTE program development.

Which team members are in our core group?

CTE outside of the classroom

For truly effective career and technical education, it's key to give students opportunities and experiences outside of the classroom. Work-based learning (WBL) can be performed and replicated in the classroom or at home for homebound students in distance-learning opportunities, but you really need the students to be connecting with the real world. Whether presenting to community partners, going and collecting information about careers, competing in career and technical student organizations (CTSOs), or working in a capstone internship, the authenticity of that learning experience strengthens the metacognitive connections.

Articulating the CTE experience

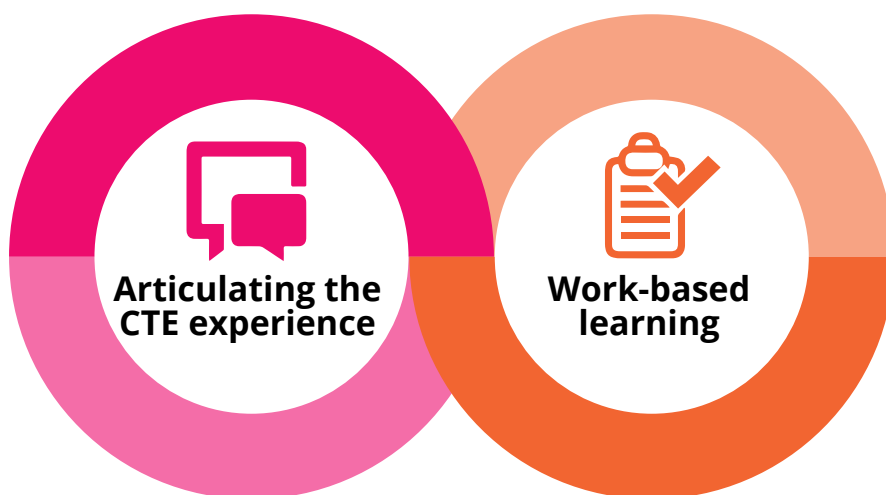


Career-ready students utilize portfolios of their best industry-caliber work. These different work samples can be physical or digital in form. They provide evidence to all CTE program stakeholders, including the student, that the individual has the abilities to be successful in that industry-connected career. The artifacts should be collected systematically, spanning CTE pathway courses, 21st-century-skill-development-activities, and WBL experiences.

Work-based learning (WBL)



Work-based learning begins within the classroom, but it is really a method of incubating students to be ready for college and career experiences. Job shadowing, internships, and project-based activities connected to actual industry work give experiential validity to student's learning. This type of immersive learning environment fosters quick analyses and application of knowledge and skills. These learning opportunities are often the most robust and dynamic learning that students experience. For developing CTE programs, a growing WBL program is a key catalyst in meeting other program growth goals.



Community partnerships



When developing community partners, it's essential to build a network of advisors who can give you constructive criticism, offer experiential opportunities, and provide feedback on continuous improvement opportunities for you when supporting the development of students for the workforce. Many times when you first approach community members about a partnership, their first thought is of money or donations. Truly, it's more about faces of the community and industry; examples within context; conversations; and communication opportunities between teachers, students, and the community. These partnerships construct and develop the most robust work-based learning opportunities and give immediacy to suggestions of improvement areas in the skill development of students.

Community connections include:

- Advisory boards
- Work-based learning opportunities
- Career-day conversations
- Internships and externships
- Guest speakers

It's a great idea to select the career-day presentations that expand past parents of students and that also use specific lessons or themes current in the classrooms or that are based on student-interest surveys.



Externships

Externships are opportunities for teachers to gain work experience in the industry so that they may infuse those experiences, skills, and resources into their curriculum for students. These externships can be utilized by CTE teachers as well as core academic teachers all the way down to elementary school.



Workplace experience

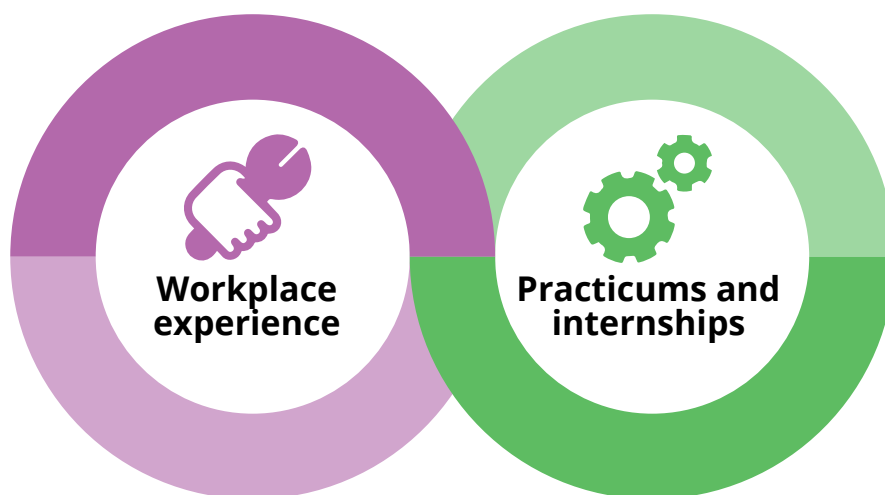


For students who have exposure to CTE outside of the classroom environment, it's an opportunity to apply reading skills, math skills, and social interaction skills that they've learned across their different classes. Not only do students have to prepare to take a test by building knowledge, but they also take practice tests to learn about specific environments or careers. A key career-readiness piece is the socialization of students. This gives them the opportunity to experience entry into a new workplace or a new career and the ability to say to say, "Yes, I have the requisite knowledge and skills, and I can step right in and be a functioning member of this team." Employers and community partners who have hired students with experience of CTE courses would agree that the students are poised and ready to work. Feedback from community partners is essential, as they need to communicate with the students, teachers, and administrators in the program, the improvements need to be given to students so that metacognitive recognition can occur.

Practicums and internships



Often a practicum or internship is the culminating experience in a CTE pathway. These can be components of a capstone course. In these learning environments, students communicate with their CTE teacher and work supervisor for feedback, grades, and selected areas for improvement. It is of great value for students to journal, develop portfolios, and communicate their experiences with class peers so that success, confusion, missteps, and suggestions can all be shared with the learning community for improvement.



CTE outside of the classroom

Career and technical student organizations

Career and technical student organizations (CTSOs) provide opportunities for students to engage in projects and competitions and to demonstrate their knowledge and skills toward career readiness. Students can enjoy chances to test their mettle against future colleagues in their career fields.

A best practice is to engage with CTSOs gradually over time. In year one, utilize the projects and competitions in the classroom to incubate the momentum. If one or more projects meets the high-quality requirements of the rubric, you could enter those. In year two, strategically add in the performance competitions to the calendar. The actual competitions will take place away from campus at a neutral location. The competitions replicate the high-stakes environment of the actual workplace.

For more information on CTSOs, we encourage you to connect with the following organizations:



National FFA (Future Farmers of America)



Future Business Leaders of America



HOSA-Health Occupations Students of America



Business Professionals of America



SkillsUSA



Family, Career and Community Leaders of America (FCCLA)



Technology Student Association (TSA)



Educators Rising

Bringing it all together

Now that you've completed this informational workbook, you can begin the basic steps of planning your career and technical education program. We encourage you to summarize a few activities to help get you started!

Which planning tool will you work on first (check one)?

- ☐ Incorporate CTE into curriculum
- ☐ Expand career skills
- ☐ Start four- or six-year planning

What is your CTE goal?



Complete a SMART goals grid here.

What's one action that you can commit to today that will help you meet your CTE goals?

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