Career-Technical Education for Education Administrators

2020

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Introduction

Career-Technical Education (CTE) courses and/or programs are available to a high percentage of middle and high school students. However, many school and district administrators are unfamiliar with CTE and may not be comfortable leading a CTE department. There are two primary reasons for this. First, most administrators followed a traditional, academic path during their professional career and have had little contact with CTE. Second, the administrator preparation programs in colleges offer little exposure to CTE programming.

CTE is a very specific discipline, yet it is integral to public education because it can serve a students from a wide range of backgrounds and needs. CTE programming is a prime example of what works in response to providing students with rigor, relevance, and relationships in an academic setting. CTE programs are uniquely suited to deliver real-world personal interactions and job experiences.

This paper provides administrators with an orientation about the essentials of CTE and how to provide effective leadership to a CTE department in a school or district. Administrative support for CTE programs, teachers, and students is essential to quality CTE programming.

Overview of Contemporary Career-Technical Education

CTE in 2020 is a very different educational offering than it was in the past. Today it is focused on college and career readiness. More deeply, is about contextual and experiential learning and giving students a solid foundation to develop a transferrable skill critical for success in an ever-changing workforce and global society. CTE prepares students with the requisite skills for everything from immediate entry into the workforce to attending a 4-year college. CTE is about launching students on a career path to become independent, successful citizens.

CTE evolved from Vocational/Occupational Education, which was legislated and funded at the federal level over 100 years ago. At that time, educational and government leaders deemed that vocational and academic education would be separate offerings. Up until late in the last century, Vocational Education was very much about occupational skill development for entry level jobs directly from high school and it served as a viable path for non-college bound youth. To this end, Vocational Education had a single purpose for a specific population of students and was very effective for many years.

Regrettably, many administrators and educators continue to have an outdated view of CTE, which they still associate with the Vocational Education programs of the 1970's. The federal government continues to provide (Perkins) funding for CTE but it has also been integral in ushering out the traditional Vocational model in favor of the modern CTE model.

Today, CTE serves students who are planning to enter the workforce directly out of high school as well as those planning on a post-secondary route. Many CTE students use their high school program to propel them into a post-secondary industry certificate or even an associate's or a bachelor's degree. Many students receive articulated college credit in high school CTE programs that can be used in post-secondary institutions. Students in CTE programs are also well-prepared for military or business development opportunities. Modern CTE programs are very capable of accommodating students who have special needs and educating students with a diverse range of aptitudes and learning styles.

CTE offers multiple paths for students based on their goals and the current demands of industry. CTE is more about broad career clusters and transferable skills rather than narrow, specific job preparation. It follows the educational philosophy of John Dewey, who believed it was better to be prepared in a broad sense so that one can more readily adapt to changing conditions. This is sound philosophy In a world and workforce that is changing constantly. The following table compares basic factors associated with both models.

Summary Comparison of Vocational (VOC-ED) and Career-Technical Education (CTE) Models

FACTOR	VOC-ED	CTE
Purpose	Singular	Multiple
Curriculum	Skill-based	Integrated academics
Student population	Non-college	All students
School goal	Separate	Integrated
Value-added	Entry-level jobs	College and career

Unique Characteristics of Career-Technical Education

CTE is unique because the instructional model is contextual in nature, using the real world of work as the basis for all programming. CTE is program-based rather than course-based, although many students will take a CTE course or two rather than enroll in an entire program. The following characteristics exemplify CTE as a viable educational offering and integral part of a school's goal to prepare students for college and career.

1. The instructional model for CTE is about experiential and work-based learning (WBL). Experiential learning is taught in the CTE lab but also through WBL projects and experiences such as job shadowing, internships, and in some cases, actual paid part-time work. It is about preparing students with a new transferrable skill set that enables them to adapt to changing industry and occupational needs. CTE programs bring the real world into the classroom. It focuses on rigor, relevance, and relationships.

2. CTE programs teach students a contemporary skill set that prepares them for college and career in a rapidly changing global economy. This skill set blends the three learning domains from Bloom's taxonomy (cognitive, psychomotor, and affective) into one

holistic learning experience. This provides students with the best preparation available for college and career readiness. The CTE teacher is the main instructor in all three areas.

Cognitive Domain (Core Academic Knowledge and Skills) – career and occupational knowledge are taught in a traditional classroom. Concepts, terminology, theory, and practices related to an occupation and/or career area are presented using established instructional methodology. Instructors rely on traditional classroom instructional and assessment techniques to instill the academic knowledge students need to be successful in a specific career area. This cognitive foundation is practiced and reinforced with socio-emotional and career specific learning.

Psychomotor Domain (Key Behaviors and Attitudes) – This domain is a critical aspect of the CTE experience because work ethic, attitude, and "soft skills" are highly valued in the workforce. These behaviors and attitudes are taught in the academic and career specific settings. In addition, CTE subject areas are also aligned with a co-curricular student organization called Career-Tech Student Organizations (CTSO). Organizations like Business Professionals of America (BPA), Skills USA, DECA, and others foster learning in key behaviors and attitudes. Leadership, teamwork, social skills, and personal relationships are taught and experienced through these organizations.

Employers emphasize the importance of attitude and work ethic. CTE programs are very effective in teaching these skills because each of the three learning settings teach and reinforce them. The CTE teacher serves as the advisor to the CTSO.

Affective Domain (Career Specific Knowledge and Skills) – CTE students must be proficient in the career specific skills employers expect. This will enable them to succeed in their chosen career. These skills are developed in a CTE lab that is a replica of the actual workplace. The lab is a hallmark of CTE since the skills needed to be marketable and gainfully employed are taught and reinforced here. Students have the opportunity to learn with the latest technology related to their specific occupational area. The actual tools, equipment and tasks used in the workplace/occupation are fostered in the lab.

3. The CTE curriculum is based on occupational competencies to prepare students for college and career in a specific occupation or career cluster. These competencies are based on the actual job performance requirements as determined by industry representatives. In addition, competencies are reviewed by industry panels every five years to insure they are up to date. The CTE teacher's guided course of study includes all the units, modules and learning experiences needed to be gainfully employed in an occupation and/or career path. CTE programs also include industry advisory boards which consist of industry representatives. These groups provide input to insure the CTE program remains current. They also provide support for students experiential learning and CTSO activities.

4. CTE's financial support from the federal government dates back to 1917. This support provided the agenda to states and localities on how to establish, deliver, and evaluate CTE programs. In some respects, CTE is viewed as a national concern much like civil rights and support for Americans with disabilities. For this reason, federal support and guidance has been at the forefront of creating a national system for occupational education. In recent years, this emphasis has expanded to include college and career.

   Much of the federal funding for CTE comes through Perkins funding. It is important for administrators to be familiar with the specifics of Perkins legislation and funding to ensure all available support is accessed. Also, there are numerous regulations related to federal funding. School districts must adhere to these regulations to secure the funding. CTE is seen as a national priority and the federal government wants to assure local districts have the resources to provide meaningful programming.

Career-Technical Education Adds Value

CTE adds value to the student's educational experience by providing multiple pathways after high school. This is important because prepares students for an unpredictable future workforce and the inevitable changes that come with it. Students will find themselves moving among the various options after high school. CTE provides more than one option and lays the foundation for college and career readiness.

At one time in our history, careers were a very linear experience. Many people started a career with one employer and remained with it for their entire work life. This is very rare in our current workforce. Today, careers are constantly changing. Some estimates project students will change careers 8 to 10 times in their lifetime. This puts a premium on lifelong learning and adaptability (John Dewey was right). Changes in technology, globalization, and work processes have greatly influenced the concept of a career. Students must be prepared for career changes and life-long learning is essential to this preparation.

There are six pathways/outcomes from a CTE secondary program. Many are interchangeable. Students will frequently weave between and among these outcomes as they become gainfully employed. Most occupations will have specific education and preparation requirements. CTE provides multiple paths for students which enables them to meet the requirements associated with a specific career. It is important for students to have multiple options to deal with the job and career changes that occur as they move through adulthood. More options mean more choices.

An "outcomes grid" can be created for each CTE program to identify the specific outcomes available from the program. The following career outcomes indicate CTE provides value for students and society. A sample grid for a Cisco Networking program is provided at the end of this white paper.

1. **Entry level work** – Many students will seek immediate employment after high school. It is critical that these students have a viable path into the workforce. CTE programs such as welding, cosmetology, auto technology, and building trades are good examples. These programs offer the student an industry credential, certificate, or license that enables them to be gainfully employed right from high school. For example, cosmetology students receive a cosmetology license, auto tech students are Automotive Service Excellence (ASE) certified, and nursing students earn the State Tested Nurse Assistant (STNA) credential. These credentials are industry approved and recognized. They provide employers the assurance the student meets industry work standards and competence.

2. **Diploma or certificate preparation** – Many students after high school will want to pursue a short-term occupational education program to become employable. A CTE program can lay the foundation for students pursuing this option. These credentials are usually occupationally specific. Community colleges and proprietary institutions offer diplomas and certificates students can earn in less than one year. There are several diplomas and certificates in the Information Technology area. Cisco networking is a good example.

3. **Associate degree** – Unlike Vocational Education, CTE programs guide many students into higher education. Many CTE programs offer college credit that is articulated with an associate degree. Many jobs today require education beyond high school. The associate degree is the optimum degree for many middle-skill occupations which are high wage and high demand. These are jobs that require education beyond high school but do not require a bachelor's degree. Dental hygienist, electrician, and data managers are good examples of middle-skill jobs.

4. **Baccalaureate degree** – Similar to the associate degree, many CTE programs offer college credit which can be used in a bachelor's degree. The credit is sometimes used to waive an introductory course or for general electives. This outcome is becoming more common as CTE programs broaden into traditional academic areas such as math and science. Students in Biotech, STEM, and Performing Arts programs, for example, are prepared to directly enter a four-year baccalaureate program.

5. **Military service** – the Unites States Military is the largest training organization in the world. Numerous occupational training programs are available using the latest technology. Numerous CTE programs align directly with military programs. Many schools even offer junior ROTC programs. Many programs also offer college credit, which can be transferred to a two- or four-year college. Some branches of the military even have their own college such as the Community College of the Air Force. An important benefit of education in the military is there are no tuition or room and board fees.

6. **Entrepreneurship** – Many students wish to start-up and run their own business. This may happen right after high school or at some point in the future. For example, virtually all cosmetology students aspire to own their own business someday and many will. All CTE programs include a unit on entrepreneurship. Should students elect to start a business someday they will have the basic knowledge and preparation to do so. Small businesses make up most of the businesses in the United States. Many of the largest businesses in the world (Apple, Microsoft, Google, McDonalds, Marriott, Ford, etc.) started as small businesses.

Outcomes Grid

An outcomes grid can be created for all CTE programs. An outcomes grid aligns the specific CTE program with the six post high school options. These grids are helpful for everyone to understand the many opportunities associated with a specific CTE program. They also can serve as excellent communication materials to share with parents, employers, counselors, and students. They enable everyone to see the extent to which a CTE program prepares students for college and careers. A sample outcomes grid for a Cisco Networking Program is provided at the end of this paper.

Providing Quality Career-Technical Education Programs

CTE has specific educational theory, curriculum, program design and instructional delivery, which are different than the academic setting. Administrators must be familiar with the specifics of CTE to ensure students are given the best possible programming options to prepare them for the future. In many school districts, a large percentage of students will take a CTE class or enroll in a CTE program. The following suggestions will assist an administrator in supervising CTE programs.

- It is important to hire quality CTE teachers. CTE teachers have a unique profile and professional development that is different than teachers from a traditional, academic approach. For more specific information on this profile and the professional development path for CTE teachers, refer to the white paper, *Career Technical Education: Unique Professional Development*, on the subject.

- The quality of a CTE program is directly related to the teacher's connection to industry. Most CTE teachers will come directly from industry. This is essential since their work experience is the basis for their content knowledge rather than college coursework. It is critical to CTE programming success that the right teacher be hired.

- Most CTE teachers are coming directly from industry and will need to complete a teacher education program. In most cases, they have no previous teaching experience or professional preparation to teach. CTE teachers learn to teach while they are teaching. Administrators must provide support and guidance to CTE teachers as they learn to teach. Many CTE teacher educators believe it takes two to three years for the

CTE teacher to become a competent instructor. The CTE teacher profile white paper provides additional information on supporting the CTE teacher during this development process.

- Federal funding continues to be a critical for the existence of CTE. It is important for an administrator to master the CTE funding and reporting systems to provide support for instruction, labs, and CTSO's. CTE has separate federal funding, and specific guidelines must be followed to obtain it.

- Administrators need to offer a mixture of CTE programs that reflect the needs of students, the district, and local industry. A comprehensive CTE program can offer programming that fits the needs of multiple student populations.

- Celebrate the connections CTE teachers and students have to the community. CTE programs are connected to the business community and the community at large. Teachers and students are frequently engaged in learning activities outside the school. Work-based learning experiences engage students with employers. Furthermore, CTSO activities often involve members of the business community.

- CTE teachers and students in the CTSO need the support of a school or district administrator. CTSOs can be an excellent learning tool as they are co-curricular. They typically include competitive events related to a specific occupational area. Students learn as they prepare for and compete in these competitions. Oftentimes, students will receive awards and recognition for their achievements. These are excellent experiences and the recognition showcases the success of students and the school to the community.

Summary

CTE programs require effective administration and leadership to be an integral part of the overall school or district agenda. As such, it must be integrated into the entire academic environment. CTE teachers, programs, and students must also be viewed as a valuable contribution to school or district educational goals. Years ago, CTE was considered separate from academic education. Today, they should be integrated into one comprehensive educational offering for students. This integration is important and requires administrators who are familiar with CTE to make it happen. Many administrators who are new to CTE have successfully embraced CTE students, teachers, and programs. They have provided effective leadership to support occupational programming that provides students the options and choices to be ready for college, career, and the future.

Sample Outcomes Grid: Networking/Cisco: Two-year CTE Program

A program focused on Digital Media, Computer Literacy, Introduction to Programming, AP-Computer Science Principles, IT Essentials, AP Statistics, Project Lead the Way Robotics, Advanced Math and Science courses that support STEM education.

Outcome	Sample occupations in career path
Entry Level Work	• *Computer Networking and Enterprise* • *Management* • *CISCO Certified Network Associate* • *Computer Systems Technician* • *CISCO Channel Partner* • *Network Operations* • *Center Network Engineer*
2 Year College Programs Several Associate Degree programs are offered related to IT.	• *Industrial Computing* • *Applications Specialist* • *Commercial Music Technology* • *Computer Programming and Database* • *Computer Science and Engineering Technology* • *Cyber Security and Computer Forensics Technology* • *Geographic Information Systems* • *Homeland Security* • *Information Technology* • *Judicial Reporting and Captioning*
4 Year College / University Information Technology degrees are often found in various departments throughout the college or university. Students will need to search for specific degree programs at four-year colleges and universities.	• *Bachelor's degree* • *Education Technology* • *Software Engineer* • *Computer Engineer* • *Global E-commerce* • *Marketing and Sales Technology* • *Game Design & Development* • *Media and Information* • *Mobile Application Development* • *Technology and Media Management*
Work Force Continuing Education Training Programs. **Diplomas and Certificates** Life-long learning is an ever-developing skill set that builds on past experiences and hands-on application in the workforce.	• *Cisco Technical Training Institute* • *IT Basics* • *Business Applications* • *Network Administration / Support* • *IT Service & Support Technician* • *Database Administration*

Outcome	Sample occupations in career path
Industry Credentials/Certifications	• *Networking Essentials* • *CCNA Routing and Switching* • *CCNA R&S 6.0 Bridging* • *Mobility Fundamentals* • *CCNP Routing and Switching* • *Introduction to Cyber security* • *Cyber security Essentials* • *CCNA Security* • *Introduction to IoT* • *IoT Fundamentals* • *NDG Linux Unhatched* • *NDG Linux Essentials* • *NDG Linux I & II* • *CLA: Programming Essentials in C* • *CPA: Programming Essentials in C++*
Military	• *Technology,* • *Communication* • *Fusion Analyses* • *Acquiring and Deciphering intel, and/or logistics support in Air Force, Army, Navy, Marines, and/or Coast Guard*
Entrepreneurship	There are many entrepreneurial opportunities in the information technology field. Most of the major tech companies today started as an entrepreneurial endeavor. A few examples include Google, Twitter, Facebook, Snap Chat, Apple, Microsoft, and Cisco. Cisco offers classes in this: • *Entrepreneurship* • *Be Your Own Boss* • *Get Connected*

About The Author

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