# Career and Technology Education (CTE)
# Melissa ISD Task Force
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The City of Melissa, Texas has an opportunity to take advantage of this moment in time. We stand fast in the traditions of the past like, school athletics, school fine arts, and the local newspaper sharing the events of the week, for us and surrounding districts. Everyone talks about the touchdown, the bands awesome sound, the homerun, the buzzer beater for the win. We also have a another tradition we share with all other school districts in this country, 20% of high school students will not graduate from high school and a many will not attend college for one reason or another. It is time we invest as much time, money and effort in advanced education as we do in these other programs. Traditional education programs continue to yield the same result year after year. We may not win the State Championship every year, but we are guaranteed we will have a senior class that is going to take a major step into the real world. Did we prepare them for that journey? Was the education at Melissa ISD enough to send them on to a future of success or uncertainty? How can we ensure that Melissa ISD provides an approach to education that goes beyond the typical basics? Melissa may not be cutting edge, yet, but we are working on it. The many forward thinking citizens of Melissa realize the importance of our children's education. A growing and powerful tool for the enhancement of our children's education is the evolving Career and Technology Education (CTE) program at Melissa High School. The CTE task force has been brainstorming and filtering through data mines rich with every aspect of the CTE universe.

What is Career and Technical Education (CTE)? CTE programs are developing America's most valuable resource – its people. CTE keeps America working by preparing them for the jobs that exist today, and equipping them with the skills employers will need in the future. High-quality CTE provides learners of all ages with the academic, technical and employability skills necessary to succeed in future careers and become lifelong learners. CTE prepares learners by introducing them to workplace competencies, and makes academic content accessible by providing it in a hands-on context. Organized through the National Career Cluster® Framework, CTE programs cover the entire world of work, from agriculture and arts to marketing and manufacturing. Through the National Career Clusters Framework, students can explore careers and gain universal career-ready skills, as well as skills specific to individual jobs and occupations. CTE is taught in a range of settings – from high schools and area technical centers to technical and two-year community colleges. In total, about 12.5 million high school and college students are enrolled in CTE across the nation. This diverse delivery system provides employers with an opportunity to engage with learners. CTE is helping our nation meet the very real and immediate challenges of economic development and global competitiveness.

- Experts predict 47 million job openings by 2018. About one-third will require an associate's degree or certificate, and nearly all will require real-world skills that can be mastered through CTE.
- Those jobs that require more than a high school diploma but less than a four-year degree account for 54 percent of U.S. labor market, but only 44 percent of the country's workers are trained at that level.
- While more than half of employers are reporting a talent shortage, CTE programs are preparing a

pipeline of workers that possess the technical competencies and workplace skills to succeed in the most in-demand areas, including health care, information technology and skilled trades.
- High-quality CTE programs are developed in collaboration with state, regional and local stakeholders. Through such collaboration, employers have the opportunity to share information regarding expectations, technical requirements and workplace behavior through advisory committees, internships, teacher externships, workplace experiences and more.
- Business and industry partners are encouraged and invited to advocate for and speak out about the value and impact of CTE for our nation's employers.
- CTE helps business. Research shows that an employer who collaborates with education receives a return on their investment. Each employer-student engagement can have a tremendous impact on students' future wage outcomes (up to 4.5 percent increase per employer contact), as well as an increase in technical knowledge, employability skills and networking abilities.

The benefits are clear yet there other factors to consider. This report will cover 5 specific areas in an effort to bring the most information to light on this topic. The focus areas are Infrastructure, Curriculum, Instructors/Staffing, Communication/Marketing and The METT Center (Melissa Education & Technology Training). Each of these subjects has more in-depth information to consider, but this report will cover the highlights.

***Infrastructure:***

The Infrastructure is more about the cost to create a facility to house the chosen CTE curriculum near term, while allowing room to growth over time. Due to new school construction and technology upgrades, "debt service payments" have been the fastest-rising spending category in Texas during the past decade (2001-2011). Debt service payments are, in fact, at an all-time high and steadily increasing, but not as a result of wasteful spending by school districts. There will always be a "wide range of construction costs" and "little standardization in Texas school construction." And, most importantly, there is no such thing as an "average" cost for any type of school in Texas. Most of the time, CTE centers have higher costs per square foot than their regular high school counterparts, even if they are smaller facilities overall. This difference in cost is mainly due to the basic functions of the buildings. CTE spaces require a lot of specialty equipment that can be more expensive. While high schools often include CTE classrooms, these career and tech spaces are a very small percentage of the overall building, so the high cost of the CTE rooms is balanced by the lower costs of large core spaces. Career and Technology Centers, on the other hand, consist of concentrated CTE spaces, which mean expensive equipment throughout the entire facility. Essentially, career and technology centers might have less square footage than regular high schools, but most of the time, the overall cost of the facility will still be more because of the sheer amount of specialty equipment needed to fulfill the purpose of the building. The sheer volume of construction projects that are going on in a region, besides just schools, will create such a high demand for materials and equipment that construction costs go way up. A facilities director of over twenty years once begged the question, "Why would a district cut costs at the front-end of a project when the initial construction cost is only 5 to 10 percent of the total cost of a project in its entire lifecycle?" Every last nut and bolt of a building costs money, but there are integral parts of a building that cost a lot more than most people would think – especially if peoples' perception of construction costs stems from a residential construction project. That means construction projects are going to cost a lot of money no matter what. When you think about the costs of maintaining and operating a facility for 40 to 50 years (and with very limited budgets), it makes good financial sense for school districts to invest in high quality, durable materials, even at a higher initial cost. If a school is built with cheap materials and parts, the operating and maintenance costs of the facility over the life of the building will dwarf the initial cost. If money is spent wisely during construction, taking energy efficiency and durable

materials into consideration, there will be a major return with reduced lifecycle costs. Let's look at nine major parts of a school building that can significantly alter both the initial and long-term cost of a building. DID YOU KNOW? If your city adopts the 2015 International Building Code, building a tornado shelter in every school will be a building code requirement (not an option and not subject to interpretation). – Benchmark Harris, Chair The National TMS Disaster Investigation Committee. FEMA has concluded that, based on the scale of the school construction project, a storm shelter will result in a 5-27 percent cost increase. The nine most significant building costs are:

- Roof
- HVAC Systems
- Lighting
- Interior Walls
- Main Structure
- Exterior Finishes
- Sustainability
- Foundation
- Site

In 2009, Eagle Mountain-Saginaw ISD built both a high school and a career and technology (CTE) center. Chisholm Trail High School 450,302 sq. ft. at a cost of $181.23/sq. ft. and Hollenstein Career and Technology Center 133,079 sq. ft. at a cost of $190.67/sq. ft.. The message is clear - CTE programs statewide need a dedicated and enhanced Material, Supplies and Operating Costs (MSOC) formula. Since CTE is basic education, funding must include the CTE MSOC funding correction. It is critical to the success of the various CTE programs to have the funding needed to meet additional supply costs associated with high quality STEM focused CTE programming. CTE programs have additional requirements such as industry standard equipment and supplies, industry certification options, student leadership and supervision, and teacher certification and training. The business community is calling upon CTE programs to develop a viable workforce and encourage students to enter post-secondary training to include certification programs, apprenticeship, two-year technical and four-year degree programs.

***Curriculum:***

Melissa High School CTE Programs - Melissa High School currently offers a wide variety of Career and Technical Education (CTE) courses. These courses are listed below:

| | |
|---|---|
| Professional Communications | Money Matters |
| Business Information Management 1 | Business Information Management 2 |
| Principles of Information Technology | Computer Programming |
| Advanced Computer Programming | Graphic Design |
| Commercial Photography | Audio/Video Production |
| Introduction to Engineering Design | Principles of Engineering |
| Digital Electronics | Principles of Health Science |
| Medical Terminology | Anatomy and Physiology |
| Forensic Science | Practicum in Health Science* |

| | |
|---|---|
| HVAC and Refrigeration Technology* | Advanced HVAC and Refrigeration Technology* |
| Automotive Technology* | Advanced Automotive Technology* |
| Cosmetology 1* | Cosmetology 2* |

*Students travel daily to Princeton High School to attend these courses.

While these courses seem to address the interests of many students, our current setup has several drawbacks.

1. Course offerings are not consistently aligned into coherent sequences.
2. Course offerings are determined as much by staff availability as by functionality.
3. A large percentage of our CTE courses are taught off-site.

We are now beginning to implement a programmatic approach to CTE courses, creating four-year coherent sequences and hiring teachers to staff those programs. Please refer to the attached spreadsheet for details of each program we hope to have in place within the next five years. Each page of the spreadsheet contains the programs within a single career cluster. For each program is listed the courses by semester and the House Bill 5 graduation endorsement achieved. Courses printed in italics require at least two class periods per day.

Texas has adopted the National 16 Career Clusters Framework and has implemented all 16 Career Clusters. Programs of Study - Texas makes available over120 Programs of Study covering each of the 16 Career Clusters, primarily through the Achieve Texas inventory.

CTE: Making the Difference:

Career Technical Education programs are making a difference across our nation to enable students in grades K-12th to excel in their schools; preparing students for successful transitions to post-secondary education and ultimately secure high-wage, high-skill, and high-demand jobs. The mission of Melissa's Career Technical Education program should be to provide students with the technical skills, integrated activities, the knowledge and aptitude necessary for successful performance in a globally competitive workplace. Our vision of Melissa's Career and Technical Education program needs to promote academic advancement; provide job training and foster employer partnerships; and to improve the employability potential of each student in enrolled in our CTE environments.

The Role of Secondary CTE:

Career and Technical Education must create pathways to success for every secondary student by providing the student with the technical skills and academic knowledge required to prepare for transition into post-secondary education programs and future careers by:

- Provide career and technical education in the K-12th system of public education
- Introduce students to career options
- Assist in the development of career goals
- Provide technical skills
- Provide occupation-specific skills
- Prepare student for post-secondary education and training programs

Career and Technical Education Courses:

High school CTE programs should provide courses and pathways consistent with industry standards. Courses in career awareness or development need to start by 3rd grade. Exploratory courses should begin by 7th grade and subsequent courses teaching students career readiness/job interviewing skills in 8th and 9th grades and the specific job skills in 10th through 12th grades by taking part in industry internships and apprenticeships which can lead to employment, as well as, post-secondary education opportunities and on to careers in the student's chosen field. High school students enrolled in CTE programs often have the opportunity to earn college credits while still in high school. Some CTE students are able to earn state certifications, work in part-time jobs or other work experiences which might be available for after school and summer time employment. Successful CTE programs provide the high school graduate with certifications and contacts that can lead directly to employment opportunities. CTE students spend up to 1,080 hours of learning time in their chosen specialties. Since CTE high school students take all the academic required coursework to graduation from high school the CTE student is better prepared for post-secondary education. Most CTE career areas demand at least some post-secondary training. CTE high school graduates often enroll in four-year colleges and universities, community colleges and trade and technical schools.

The Association for Career and Technical Education recommends the following career clusters: Agriculture, Food and Natural Resources; Architecture and Construction; Arts, AV Technology and Communications; Business Management and Administration; Education and Training; Finance; Government and Public Administration; Health Sciences; Hospitality and Tourism; Information Technology; Law, Public Safety and Security; Manufacturing; Marketing, Sales and Services; Science, Technology, Engineering and Mathematics; and Transportation, Distribution and Logistics. These career clusters are identical to the Texas Education Association Region 10 website on their career and technical education homepage. Region 10 serves as an advocate for career and technical education by providing staff development, technical assistance, and serves as a liaison to business, industry and education. The Texas Essential Knowledge and Skills for Career and Technical Education (TEKS) are the state standards for what a student should know in the perspective career clusters and provides the framework for the CTE high school curriculum. The University of North Texas in partnership with TEA has developed Career Awareness curriculum beginning in 3rd grade to explore Arts, Audio & Video, and Information Technologies.

Project Lead the Way (PLTW) is a leading provider of K-12 STEM programs. This curriculum together with teacher developmental models combines with a network of educators, under the guidance of professional engineers/mentors, corporate and community partnerships to assist students to earn and apply the skills needed in the science, technology, engineering, and math fields. Careers in the STEM fields are where the jobs of today and where the career growth will be in the future.

What can CTE do in Energy and Environmental Sustainability in the future?

There is an increasing demand for a knowledgeable workforce in the new green energy and environmental sustainability fields. A number of high school CTE programs around the country are beginning to offer courses in the environmental sciences exposing students to green curriculum providing the cutting edge training needed in a variety of environment fields. CTE high school programs, together with community and technical colleges will be in a unique position to evolve and adapt quickly to the changing technologies in the energy industry, and to create new training programs to meet the growing demands for highly skilled and environmentally conscious workforce. In preparing for a green workforce new CTE programs might include courses in water conservation, wind energy, biofuels, photovoltaics, environmental systems technology, energy maintenance and green building technologies. One of the fastest growing elements of the environment sustainability movement is the building of green facilities, and the U. S. Green Building Council offers special Leadership in Energy and Environmental Design (LEED) certifications solely to schools.

***Instructors/Staffing:***

The Texas Education Agency (TEA) only issues 9 CTE Certificates – there are 16 nationally approved career clusters. All 9 certificates require Texas Examinations of Educator Standards (TExES) certification. TExES preparation resources are free on the TExES website. Also, 8 of the 9 certificates require an Associate or higher degree from and accredited institution of higher learning. Only the Trade and Industrial Education certification does not require a degree but it is being eliminated in 2016. T&IE certification requires current licensure, certification, or registration by state or nationally recognized accrediting agency for classes being taught or - Pass appropriate National Occupational Competency Testing Institute (NOCTI) TEA CTE Summary Chart.

| Teaching Certification | Certification Exam Required | Degree Required | Wage-Earning Experience Required | License or Certification Required |
|---|---|---|---|---|
| Agriculture Science and Technology | Yes | Yes | No | No |
| Agriculture Food and Natural Resources | Yes | Yes | No | No |
| Business Education | Yes | Yes | No | No |
| Business and Finance | Yes | Yes | No | No |
| Family and Consumer Sciences Composite<br><br>Human Development and Family Studies<br><br>Hospitality, Nutrition, and Food Sciences | Yes | Yes | No | No |
| Health Science Technology Education<br><br>Health Science | Yes | Yes | Yes | Yes |
| Marketing Education | Yes | Yes | Yes | No |
| Technology Education | Yes | Yes | No | No |
| Trade and Industrial Education* | Yes | No | Yes | Yes |
| | | | | |

*The Trade and Industrial Education certificate is being eliminated – all requirements and exams must be completed by 8/31/2016

***Communication/Marketing:***

While the skills needed in today's business environments continue to become more specialized and technical, many of Melissa's students are not taking full advantage of curricula already in place. CTE has many specialized programs to meet the needs of the business community and society, but through a negative perception or no awareness at all, enrollment in some of these programs will decline. Informing students, parents, administrators, business leaders, and the general public about the true CTE program and its advantages will continue to help change perceptions about career/technical over time. While many parents are only considering college dreams for their children, they need to hear about the great opportunities available through CTE. By continuing to showcase successes, earning potentials and the quality of CTE programs, perceptions of career/technical education will improve and enrollment will increase.

**Overall Goals**

- Increase long-term enrollment in CTE programs
- Improve the internal perceptions of CTE programs
- Improve the external perceptions of CTE programs
- Create awareness and Improve perceptions of CTE programs in the business community

**Target Audience**

- Students
- Parents
- Teachers
- Administrators
- All Citizens
- Counselors
- Business Community
- Industrial Development

**Marketing Strategy**

- Target elementary school students and parents through age-appropriate materials and presentations. While geared toward students, their parents also will receive the messages. Generate excitement and interest from students during their formative years
- Target and educate all teachers, counselors, and administrators (other surrounding districts) about the purpose and many benefits of Melissa's CTE programs
- Educate all Melissa residents about the purpose and benefits of the CTE program.
- Target and educate business professionals (county-wide) about the purpose and many benefits of Melissa's CTE programs

**Key Message**

- Great programs in a wide variety of areas
- Graduates go on to good jobs and make great salaries
- CTE helps prepare college-bound students
- Some CTE courses earn college credits
- Having a CTE endorsement on a graduation diploma is prestigious

- CTE courses provide skills for a successful life
- Great programs in a wide variety of areas
- Graduates go on to good jobs; great salaries
- This isn't "shop" anymore
- This isn't "vocational- ed" anymore
- Students must meet high school graduation curriculum and pass exam, while taking specialized classes; challenging/ pays off
- Prepares college-bound students
- Some courses earn college credit
- Advantage: CTE endorsement on diploma
- Courses provide skills to live a successful life
- Benefits Texas businesses

**Marketing Activities**

- Prepared PowerPoint (PPT)
- Promotional video
- Series of presentations for CTE teachers, general teachers, counselors, staff
- Communication workshops for directors, counselors, and local educators
- Targeted presentations for civic groups, churches, and businesses
- Annual Written Survey of businesses that have hired CTE graduates
- CTE educators participate in radio and TV interviews statewide
- Communication Plan for CTE
- Partner with business organizations to develop CTE promotional video
- Speakers' Bureau
- Strategies and Projects promoting postsecondary and CTE partnership
- Posters featuring CTE students and student orgs.
- Series of articles/ads highlighting CTE opportunities
- Strategies to further relationship with media
- CTE Field trips
- CTE activities in newspapers, on Web sites, posters, brochures
- Air radio spots
- Second set of Celebrities of Distinction posters
- "When I Grow Up" Contest

***The METT Center:***

The Melissa Education & Technology Training Center (aka, The METT) will become the talk of the town. A state of the art CTE facility that meets our students needs and those of our surrounding district neighbors. The METT will not only be a place for our students to express their many talents, but will also serve the community with a fully functional restaurant and retail shops. Come by The METT and celebrate the success of our future, mine, and yours, our Melissa Cardinals.