CTE: Key to Education Reform, Preparing the Future Workforce

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Solutions
to the Dropout Crisis

Career and Technical Education

Providing knowledge and skills that enable individuals to be successful in the career pathway of their choice

Why is CTE Important?

- CTE links students to the community using work-based learning opportunities in ways that many other high school programs cannot.

- There is a growing need for credentials, postsecondary education, and training after high school.

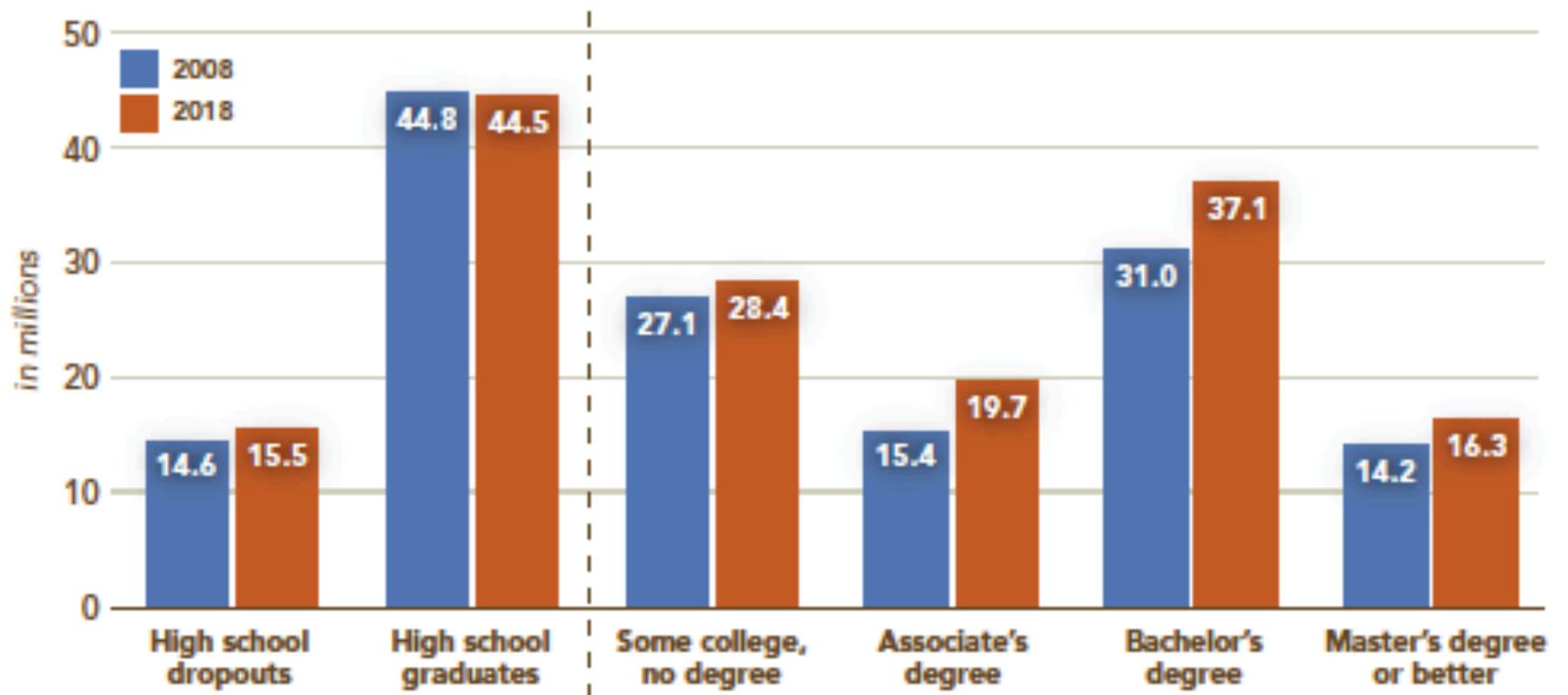- CTE= hands-on learning, connection between education and careers.

Research shows…..

- 90% of the fastest-growing jobs will require an education beyond high school.

- According to the Southern Regional Education Board, students at schools with highly integrated rigorous academic and CTE programs have significantly higher student achievement in reading, math, and science than do students at schools with less integrated programs.

- According to the National Research Center for CTE, a ratio of 1 CTE class for every 2 academic classes was shown to minimize the risk of students dropping out in a 2005 report.

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Detailed educational distribution of total jobs in 2008 and 2018

Source: Center on Education and the Workforce forecast of educational demand through 2018

Legend:
- 2008
- 2018

Category	2008	2018
High school dropouts	14.6	15.5
High school graduates	44.8	44.5
Some college, no degree	27.1	28.4
Associate's degree	15.4	19.7
Bachelor's degree	31.0	37.1
Master's degree or better	14.2	16.3

y-axis: in millions (0, 10, 20, 30, 40, 50)

Odds Ratio of CTE Course Taking and Dropping Out [1] Public High Schools. ELS2002

	Odds Ratio
• Intercept	1.439
• Female[2]	0.583 **
• Black[3]	1.081
• Hispanic	1.177
• Asian	0.880
• Other	1.347
• SES (Socio-Economic Status)	0.757 *
• Ninth-grade GPA	0.239 **
• 3 CTE credits/No Occupational Area Fulfilled[5]	0.508[4]#
• More than 3 CTE credits/No Occupational Area Fulfilled	0.587 *
• 3 or more CTE credits/At least 1 Occupational Area Fulfilled	0.361 **

Data: ELS2002. Base Year, 1st Follow Up, 2nd Follow Up, and restricted data #p<.10 *p<.05 **p<.001
   1: Dropout: Students who have not earned a regular High School diploma two years after cohort's completion in 2004.
Reference variables:
   2: Gender: Male.
   3 :Race/ethnicity variables: White.
   4 :Students who took less than 3 CTE credits
   5 :An occupational area is fulfilled and thus a student is considered an occupational concentrator if she or he takes 3 credits or more in one area. This study is based on 13 occupational areas.

Data from: National Research Center for Career and Technical Education, 2011 Oscar A. Aliaga, PhD

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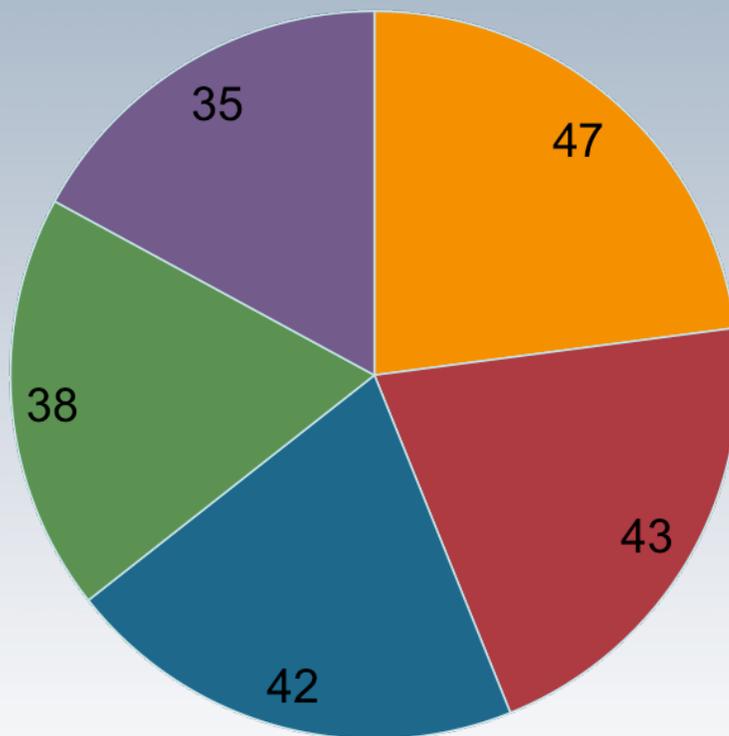
Classes were not interesting

Missed too many days and could not catch up

Spent Time with people who were not interested in school

Had too much freedom and not enough rules in my life

Was failing in school

Top Five Reasons Dropouts Identify as Major Factors For Leaving School

From *The Silent Epidemic,* Bridgeland, John., John DiIulio Jr., and Karen Burke Morison, p. 3.

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The New Education Environment

- Students will expect information to be delivered through electronic media – instant messaging

- Technology will challenge the applied classroom - learning to occur beyond the traditional classroom environment

- Secondary and postsecondary schools are offering online CTE and academic courses.

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The Challenge for CTE

- We are currently preparing students for jobs that don't yet exist……

- Using technologies that haven't been invented yet…..

- Finding creative ways to deliver programs with less money.

Trends in CTE

- Academics and CTE lines are blurring
- CTE courses are using more technology
- States are required to develop Programs of Study
- Healthcare, Sustainability and STEM careers are in high-demand.

CTE's Role in Dropout Prevention

- CTE offers alternative delivery methods to help with dropout prevention:
  - Smaller learning communities, middle college high schools and accelerated programs.
- CTE has become a leader in ensuring flexible, relevant learning opportunities to engage students and provide a real-world, career-oriented curriculum.
- In Career and Technical Student Organizations (CTSOs) such as DECA, FCCLA, FFA, FBLA, HOSA, SkillsUSA, TSA and BPA, 2 million young people work regularly with an adult advisor. A 2007 study by the National Research Center for Career and Technical Education found that CTSO activities positively affect students' academic engagement; and the stronger the student's involvement, the better the results.

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Gateway To Success Program-
Great Oaks in Ohio

- Great Oaks built a partnership with the University of Cincinnati's Clermont College in 2006. It has expanded to Cincinnati State Technical and Community College and Southern State Community College.

- The program is career-based and students complete coursework in a self-paced environment using online resources, software, and materials aligned to state standards.

- Classes are held on the college campus and are open to anyone over the age of 18. Students are able to attend class from 8:00 a.m. to 8:00 p.m. Monday through Thursday, and 8:00 a.m. to 5:00 p.m. on Fridays, in order to meet the diverse needs of the student population.

- Students may enroll at any time during the year, with a stipulation that they must complete 15 hours of on-site coursework per week.

Gateway to Success (Cont)

- Students take an assessment and develop Individualized Graduation Plans (IGP) to ensure that every class they take counts towards graduation.

- About 50 percent of the students in the Gateway to Success program are male, and many had attendance issues, discipline issues, or problems at home.

- During the program's first year, approximately 50 students participated and almost 70 percent of the programs' participants that took the Ohio Graduation Test passed on the first try.

- More than 276 students are currently enrolled in the Gateway to Success program, 326 students have graduated from the program, with 52 additional students earning their GED. Of those students that have graduated,172 are currently in postsecondary classes.

Integration of CTE & Academics

- The 2006 Perkins Act aims to promote the development of services and activities that "integrate rigorous and challenging academic and career and technical instruction."

- Build additional content and applications of academic learning – literacy, mathematics, research, oral communications, use of technology – into a CTE course by reviewing state academic standards and supplementing the teaching of those standards in the CTE setting.

Integration of CTE & Academics (cont)

- Another approach was developed and examined through the "Math-in-CTE" project carried out by the National Research Center for CTE.

  - Math and CTE teachers identified math content already embedded in CTE courses and aligned curriculum activities and created lesson plans to make that content much more explicit and consistent with terminology used in core academic courses.

  - It had a positive impact on student learning and the transfer of learning on several standardized math assessments. A positive side benefit was significant and sustained teacher collaboration.

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# Integration of CTE & Academics (cont)

- Other ways to integrate CTE:
  - contextualize teaching of academic content in the core academic classroom through the extensive use of real-world applications of academic knowledge.
  - problem-based learning and cross-curriculum projects that link and align subject matter among two or more courses, focusing on a shared theme or activity. (ex. career academies)
  - Examples of courses are: **Biotechnology** – Molecular Biology, Genetics, Microbiology ; **Power Equipment & Motorcycle Technology** – Physics ; **Precision Machining Technology** – Math ; **Auto Body** – Principles of Chemistry & Physics

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Programs of Study

- Incorporate secondary and postsecondary education elements.

- Include content that is coherent, rigorous and aligned with challenging academic standards and relevant CTE content that is coordinated and non-duplicative.

- Consist of a progression of courses that aligns secondary to postsecondary education.

- May include opportunities for dual or concurrent enrollment.

- Must lead to a industry-recognized credential or certificate at the postsecondary level or an associate or baccalaureate degree.

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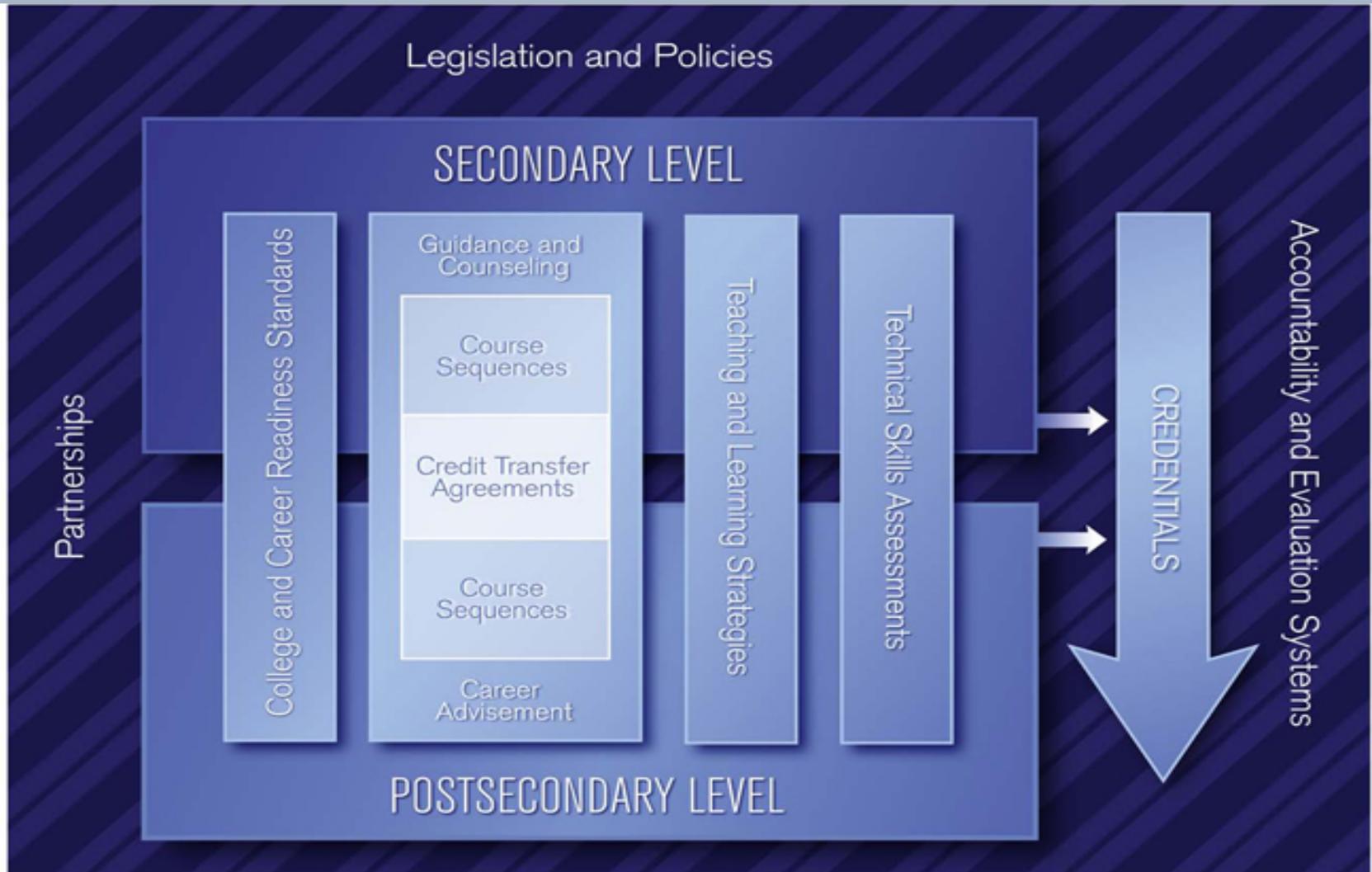
Programs of Study Framework
Designed by OVAE

Sample of the 16 Career Clusters

Agriculture, Food & Natural Resources

Food Products and Processing Systems
Plant Systems
Animal Systems
Power, Structural & Technical Systems
Natural Resources Systems
Environmental Service Systems
Agribusiness Systems

Architecture & Construction

Design/Pre-Construction
Construction
Maintenance/Operations

Science, Technology, Engineering & Mathematics

Engineering and Technology
Science and Math

Finance

Securities & Investments
Business Finance
Accounting
Insurance
Banking Services

Health Science

Therapeutic Services
Diagnostic Services
Health Informatics
Support Services
Biotechnology Research and Development

Business Management &Administration

General Management
Business Information Management
Human Resources Management
Operations Management

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The New Vision of CTE

- CTE prepares students to succeed in **education and careers.**

- CTE is delivered through **comprehensive programs of study** aligned to the National Career Cluster framework.

- CTE is a **results-driven system** that demonstrates a positive return to investment.

- CTE is working to align with current education policy discussions including college- and career-ready, STEM, Common Core State Standards and the assessment consortia, ESEA, etc.

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