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Career and College Ready

Indiana's New Career and Technical Education



**An Analysis of Indiana's
Career and Technical
Education Programs**

March 2013

**Indiana Department of
Education**

Report produced by *Fleck Education Services*
with funding provided by the *Carl D. Perkins Act*.
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Introduction

Over the last decade, Indiana's vocational education landscape has dramatically changed. What used to be perceived as a low rigor educational alternative for non-college bound students is now a robust statewide college and career preparation program linking the academic rigor of Indiana's Core 40 curriculum with the high-demand technical skills training required by Indiana's workforce leaders.

The negative connotations with the term "voc-ed" have been replaced by new "Career and Technical Education" or CTE programs. And more than just the name has changed.

Indiana high school students who complete a CTE program today:

- Are more likely to graduate from high school - at an average rate that is 6.4% above the graduation rate for all Indiana high school students,
- Earn more college credits than students in any other high school program in the state. College credits earned through CTE programs are transcribed and transferable to all of Indiana's two- and four-year public institutions.
- Take fewer remedial courses in their first year of college. National research indicates that students who have a career focus are more likely to complete a college program.
- Have a greater chance of leaving high school with an industry-recognized certification or credential that provides a competitive advantage to students entering the workforce.

In February 2013, the Indiana Department of Education commissioned two studies of Indiana's Career and Technical education program in order to:

1. Assess the impact of CTE on student performance, graduation and preparation for college and a career, and
2. Examine the strength of the relationships between high school career preparation programs and the regional workforce needs of Indiana's businesses and industries.

This first report provides an in-depth summary of student performance in Career and Technical Education (CTE) programs in Indiana drawn from data provided by the Indiana Department of Workforce Development, Indiana Department of Education and the results of a survey of CTE district directors conducted in February 2013.

Background

Career and Technical Education (CTE) programs in Indiana are governed by both state and federal laws. Federal funding from the Carl D. Perkins Act of 2006 (Perkins IV) is tied to annual student performance in eight core indicators and to the implementation of College and Career Pathways that align CTE and academic courses into a logical sequence that prepares students for entry into postsecondary education or the workforce in a high wage, high skill, high demand occupation.

Federal CTE funding flows to 47 CTE districts in the state, each district representing multiple high schools in an area, and each with its own CTE district director. Program funding is used to

provide equipment and resources for high school CTE courses and programs which, in many districts, are offered through an area career center facility.

State CTE funding is channeled directly to school corporations as reimbursement for student enrollment in designated career preparation courses. Reimbursement rates for courses that prepare students for high wage and high demand occupations in Indiana are higher than the reimbursement rates for courses that lead to lower wage and lower demand occupations. Federal CTE funding is dependent on census data and measures of student performance.

In contrast to former vocational programs intended only for students planning to work immediately after high school, current CTE programs are open to all students whether they intend to pursue a four-year college degree or expect to work directly after graduation. Indiana CTE Pathway Course Sequences today provide:

- Introductory “exploratory” courses to allow students to “try out” a variety of career interest areas before entering postsecondary education,
- An aligned sequence of related career preparation courses (called College and Career Pathways) that allow students to:
 - Earn college credits in high school,
 - Receive an industry-recognized certification, license or credential and,
 - Participate in a worksite internship, cooperative education or other work based learning experience.

In 2009 and 2010, the state asked more than 300 statewide business and industry representatives to review and revise the content standards of each of the state’s CTE courses. The revised courses were then aligned into 53 related career course sequences, called College and Career Pathways, within the following broad “career cluster” categories:

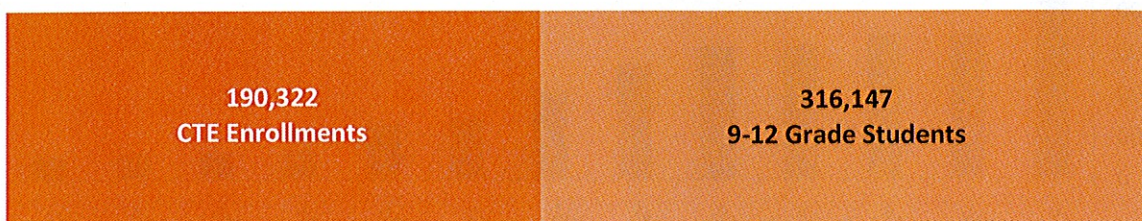
- Agriculture
- Architecture and Construction
- Arts, AV, Technology and Communications
- Business and Marketing
- Education and Training
- Health Science
- Hospitality and Human Services
- Information Technology
- Manufacturing and Logistics
- Public Safety
- STEM (Science Technology, Engineering and Math)
- Transportation

Indiana schools and career centers may choose to offer Pathway Course Sequences from any of these clusters areas as long as they prepare students to enter high wage and high demand careers in the state or local region.

Indiana CTE Program and Performance Information

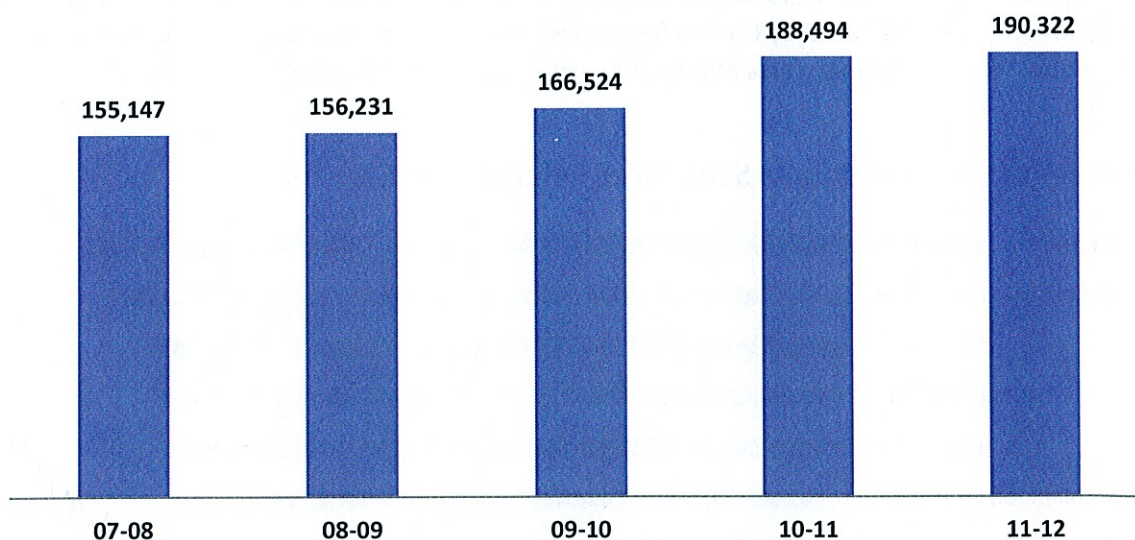
Enrollment and Graduation Rates

Almost half of all Indiana high school students enrolled in at least one Career and Technical Education (CTE) course in the latest reporting year, 2011-12¹. That figure represents 60.2% of the 316,147 public high school students enrolled in grades 9-12².



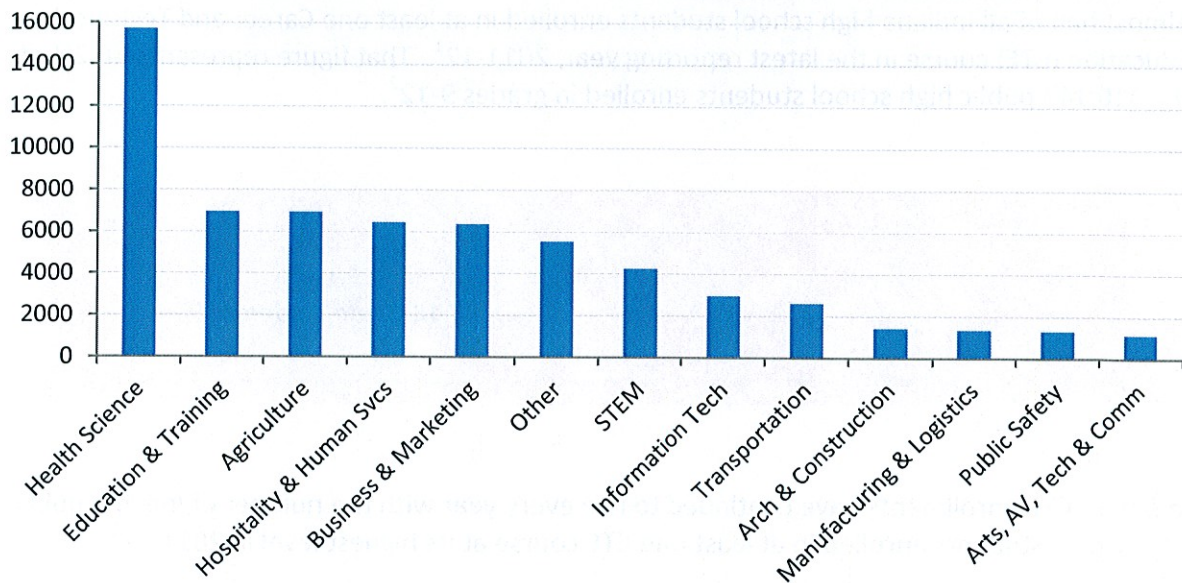
Indiana's CTE enrollments have continued to rise every year with the number of Indiana public high school students enrolled in at least one CTE course at its highest level in 2011-12¹.

CTE Enrollment Trends



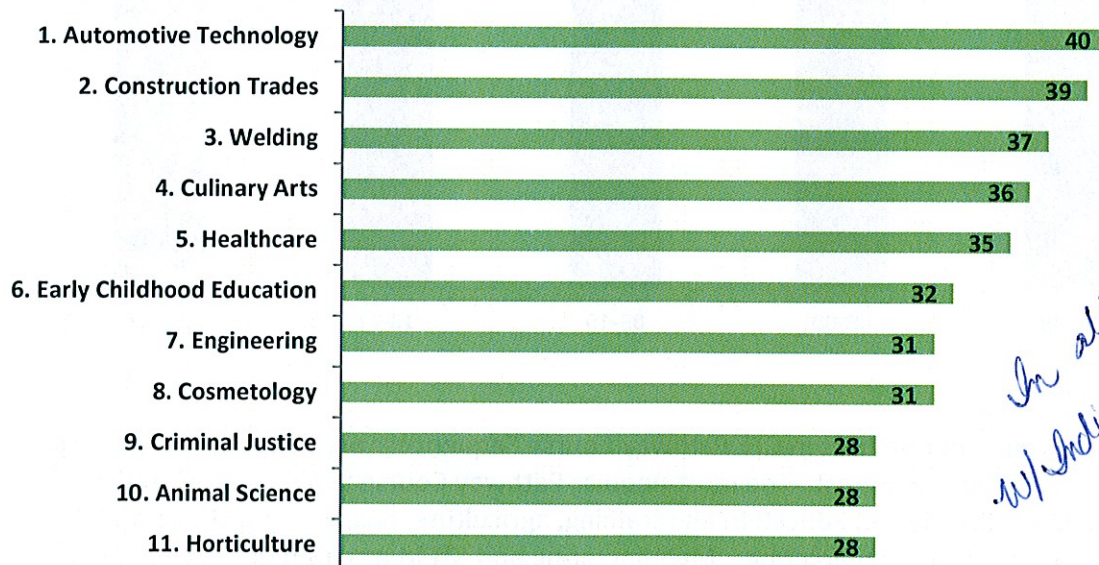
Statewide enrollment numbers in CTE Pathway Course Sequences vary depending on course availability and student interest. The most popular Pathway Course Sequences fall in the categories of health science, education and training, agriculture, hospitality and human services, and business and marketing. Manufacturing and STEM program numbers appear to be growing with an increased emphasis on a new Advanced Manufacturing curriculum from

Conexus and the continued strength of Project Lead the Way (PLTW) pre-engineering and biomedical science program offerings¹.



Each of the 47 CTE districts offers an average of 17 Pathway Course Sequences to students. The most commonly offered Pathway Course Sequences are in the areas of automotive technology, construction, welding, culinary arts and healthcare³. See more details in Appendix A.

Number of Pathway Course Sequences Offered in CTE Districts

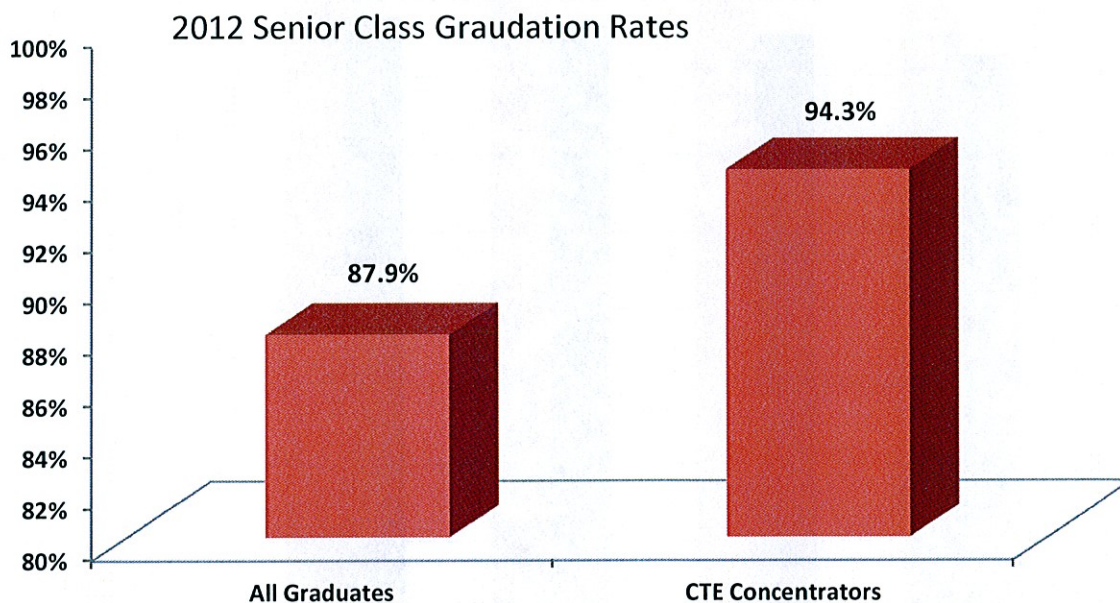


*In alignment
w/ Indiana's economy.*

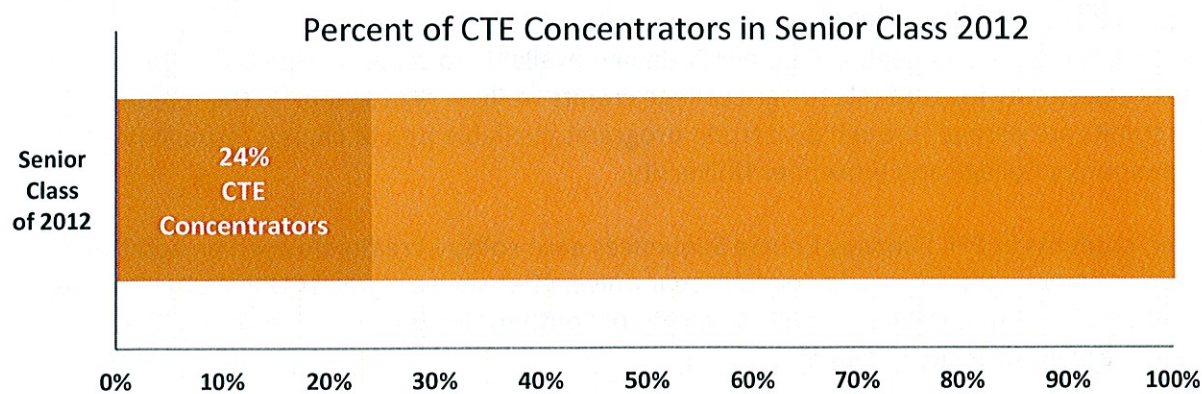
Graduation Rates

In 2011-12, high school seniors who had completed at least six credits in a CTE Pathway Course Sequence (labeled "CTE concentrators") had a graduation rate of 94.3%¹ compared to 87.9% for all students².

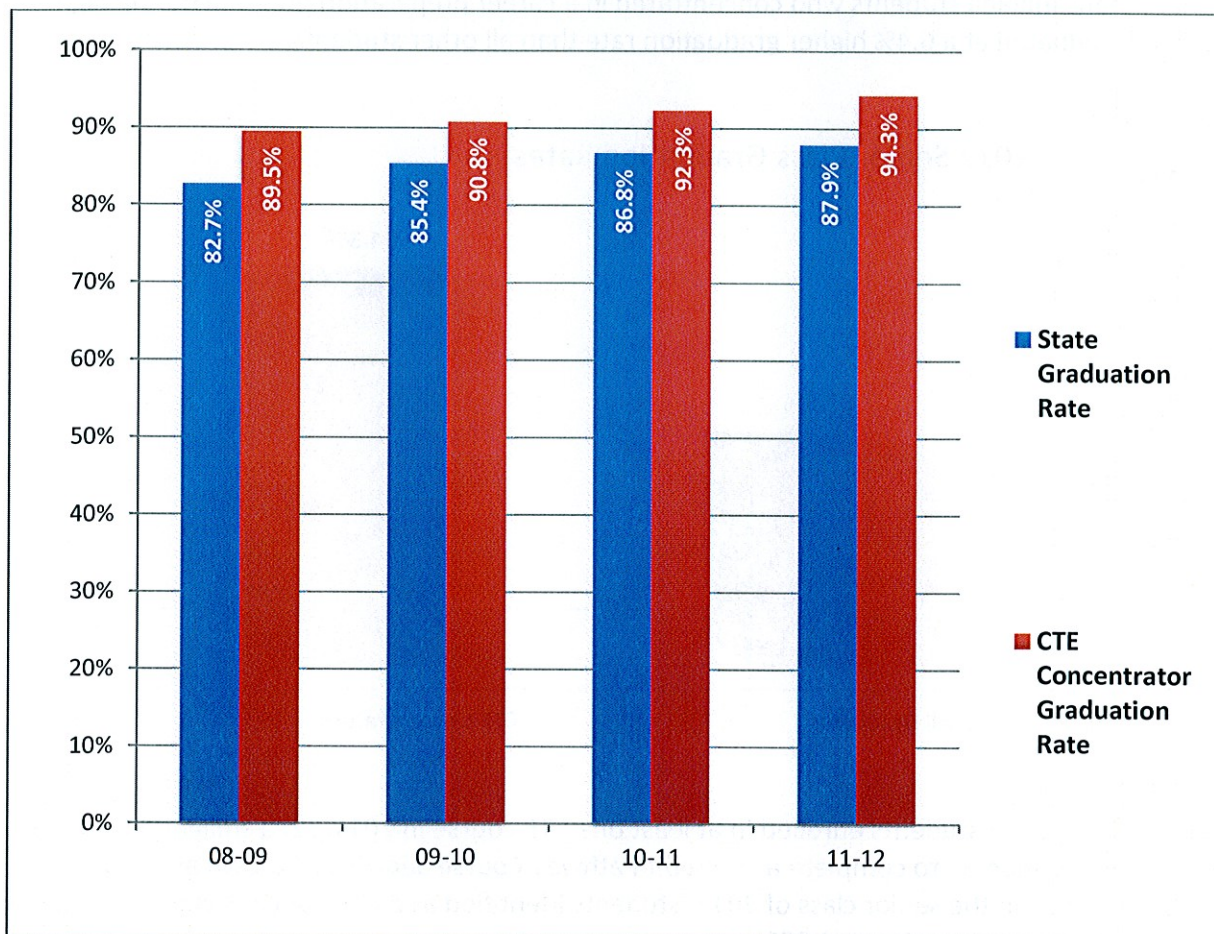
That means Indiana students who concentrated in a career preparation program during high school graduated at a 6.4% higher graduation rate than all other students.



While 49.4% of all students enrolled in at least one CTE course in 2011-12, a smaller number of students continue on to complete a six credit Pathway Course Sequence (known as a CTE Concentrator). In the senior class of 2012, students identified as a CTE concentrator numbered 17,570 or 24% of all seniors (74,065)¹.



Graduation rates for CTE concentrators have been higher than the average graduation rate for all students for the last four years, averaging above 90% since 2010. Consistently, the graduation rate for a CTE concentrator averages 6% higher than the rate for all students¹.



College Credits in High School

Almost all (49) of the 53 College and Career Pathways available to schools around the state offer the opportunity for students to earn college credits while in high school³. The majority of college credits are earned through dual credit programs available free of charge through Ivy Tech Community College and Vincennes University.

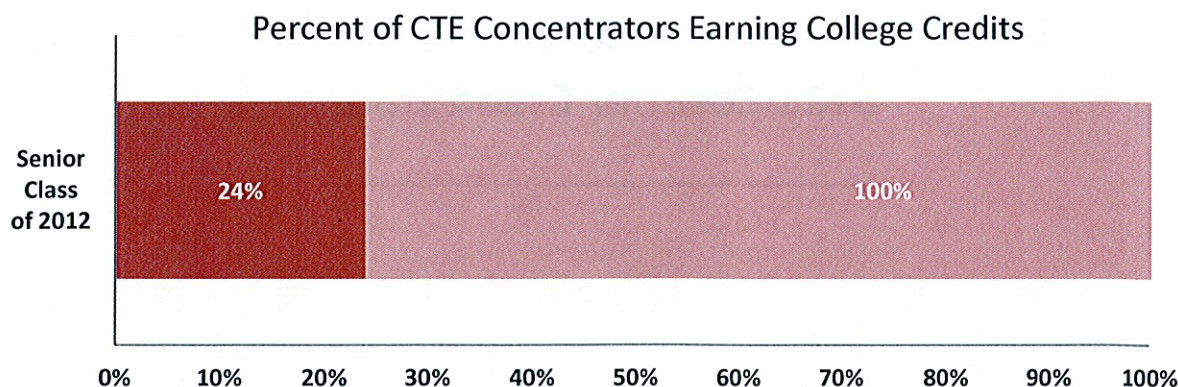
However, students in CTE Pathway Course Sequences earn college credits through an additional 35 postsecondary institutions including four-year universities such as Indiana University, Purdue University, Indiana State University and University of Southern Indiana as well as out of state universities and proprietary institutions³.

Postsecondary and Higher Education Institutions with Dual Credit Agreements with Indiana High School CTE Pathway Course Sequences

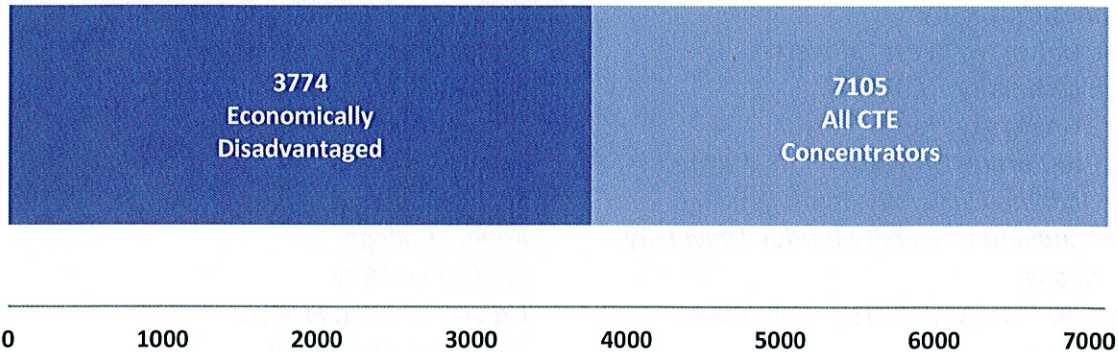
Ivy Tech Community College
Vincennes University
Purdue University West Lafayette
Purdue University – Calumet
Purdue University North Central
IPFW – IU Purdue University Fort Wayne
IUSB – Indiana University South Bend
IUPUI – Indiana University Purdue University Indianapolis
IUPUC - IU Purdue University Columbus
Grace College
Trine University
Indiana State University
Indiana University - Bloomington
University of Southern Indiana
Lincoln College of Technology
Lincoln Technical Institute
Harrison College
ITT Technical Institute
Kansas State University
University of Northwestern Ohio

Danville Area Community College
Southwestern Michigan University
Wyoming Technical Institute
Rochester Institute
University of Northern Ohio
PJ's College
Sullivan College
Kaplan College
Chef's Academy
University of St. Francis
Stevenson University
Missouri S&T
Southwestern Michigan Junior College
Cincinnati State
Beckfield College
Sullivan University
Ohio Technical College
Spencerian College
Christ College of Nursing and Health Sciences

One quarter, 26%, of all seniors completing a six credit CTE Pathway Course Sequence in Indiana in 2012 earned college credits, the highest percentage of any academic preparation program in the state. 53% of senior college credit earners in 2012 were from families considered economically disadvantaged¹.



Disadvantaged Student Concentrators Earning College Credits

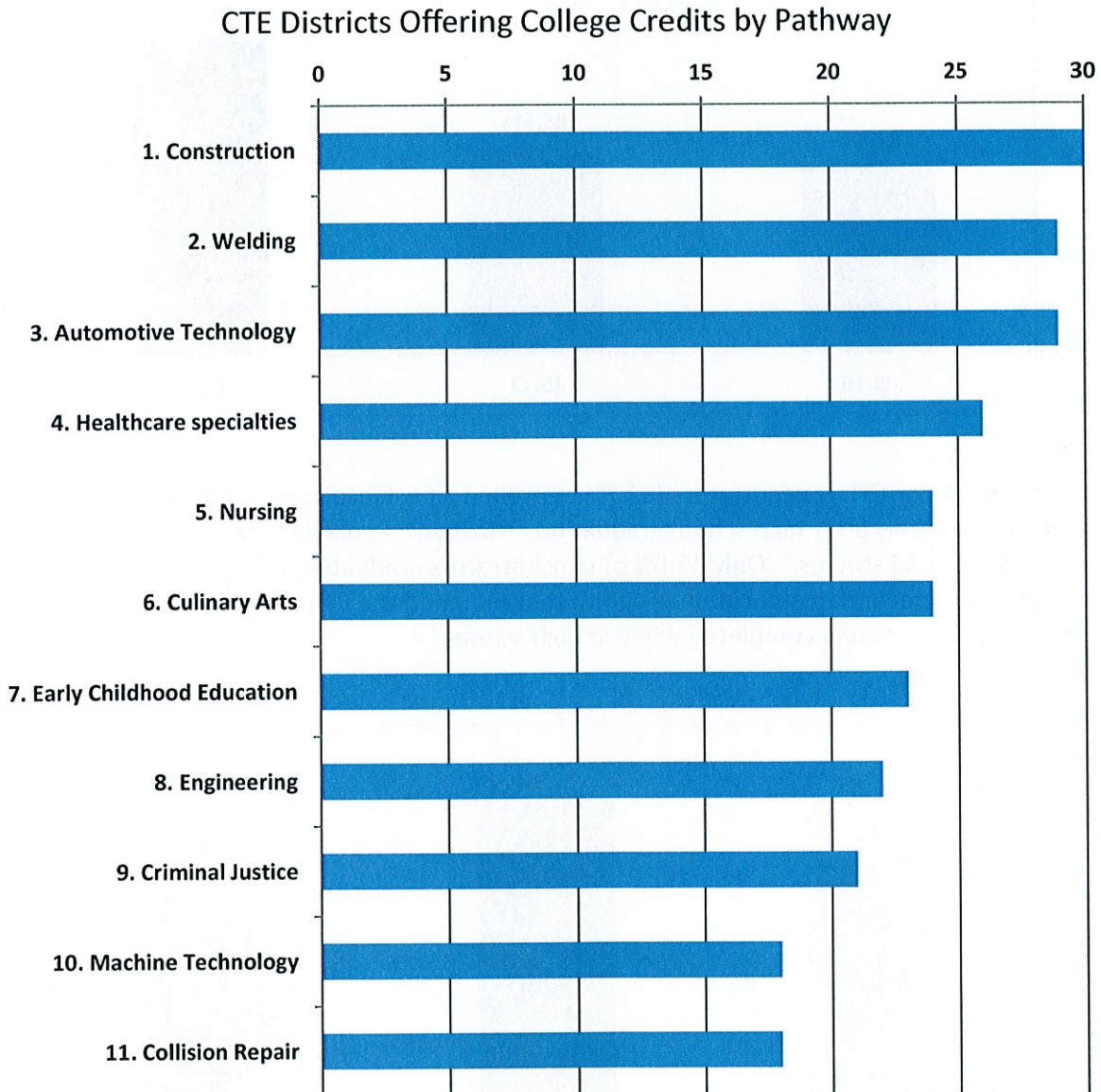


Unlike most other states, college credits earned through CTE programs in Indiana are transcribed college credits meaning students receive a college transcript listing the college credits they earned in high school and those college credits are treated the same as if they were earned on the college campus².

On average, more than 275 college credits are available to students in college and career Pathway Course Sequences offered in each CTE district. By the end of 2012, a total of 18,290 dual credit exams were administered and more than 69,000 college credits were awarded to Indiana high school students in CTE Pathway Course Sequences³. Calculating the average cost of a one credit hour course at Ivy Tech Community College at \$111, Indiana students saved a total of more than \$7.6 million dollars in college tuition costs in 2012 alone.

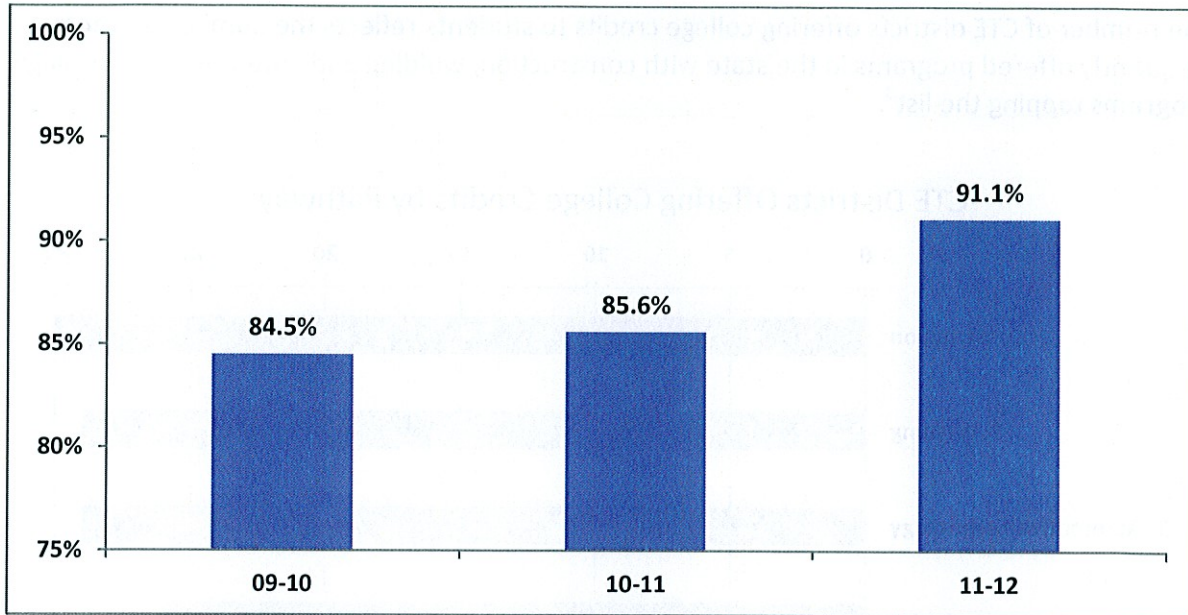
$$\begin{array}{r} 69,000 \text{ Dual Credits} \\ \times \\ \$111 \text{ Cost per Credit Hour} \\ \hline = \$7,659,000 \text{ College Tuition Savings} \end{array}$$

The number of CTE districts offering college credits to students reflects the numbers of most frequently offered programs in the state with construction, welding and automotive technology programs topping the list³.

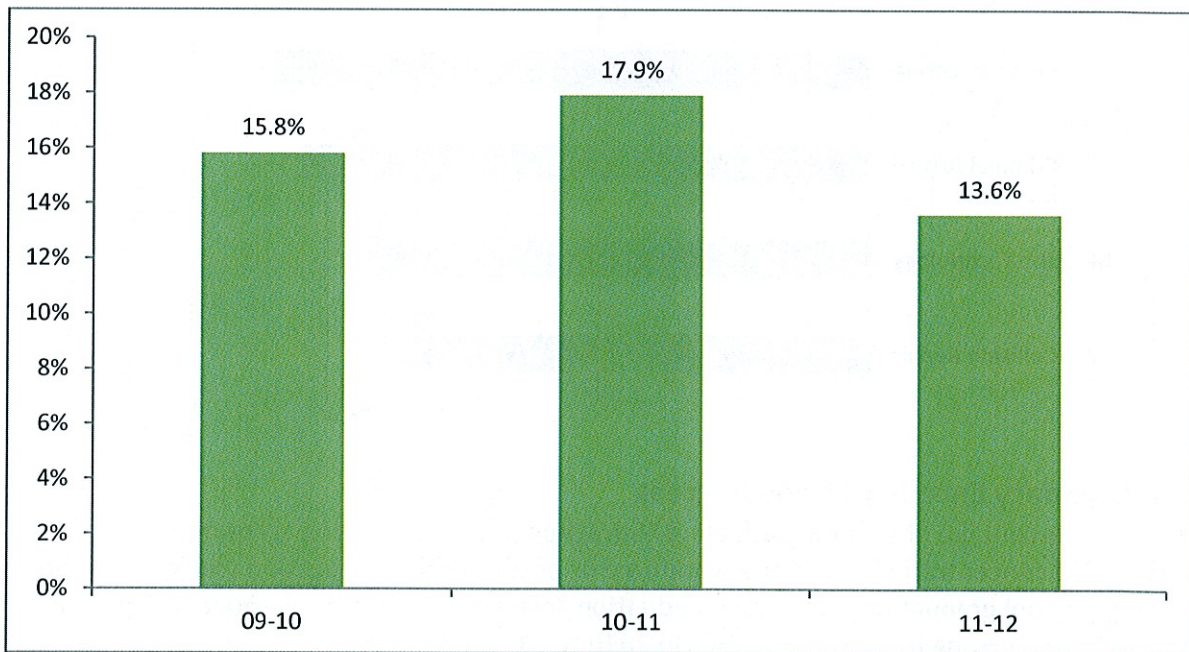


Postsecondary Enrollment and Success

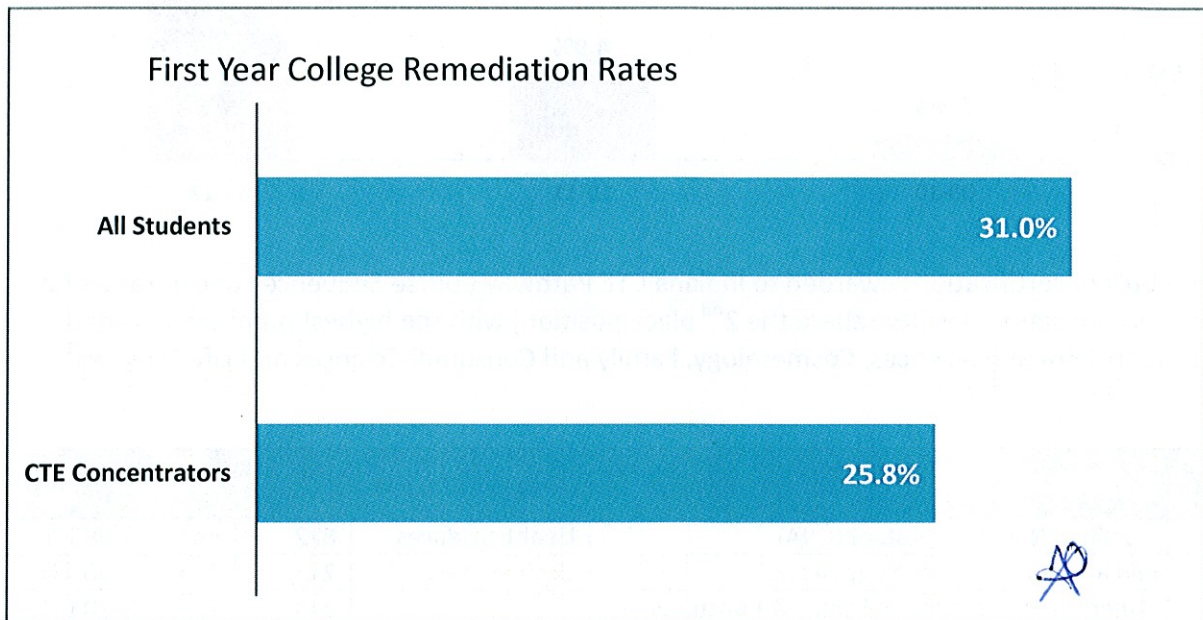
A growing percentage of seniors graduating high school after completing six or more CTE courses (CTE concentrators) enter the workforce or postsecondary education within six months after high school graduation. This after graduation “placement rate” has jumped by 7% in the last two years, moving from just over 84% in 2010 to 91% in 2012¹.



Two thirds of senior CTE concentrators (62.7%), enroll in a postsecondary education or training program immediately after high school graduation. Most enter college with an “undeclared” major or as “general studies.” Only 13.6% of concentrators graduating high school in 2011 enrolled in a postsecondary education program that matched the CTE Pathway Course Sequence the student had completed while in high school¹.



One year follow-up data indicates that remediation rates for CTE concentrators in the first year of college is 25.8%, a full 5 percentage points lower than the 31% remediation rate for all students who entered college in the same year¹. Though the news indicates a positive advantage to students entering college as a CTE concentrator, both percentages are too high. Remediation rates for CTE graduates enrolled in their first year of college rose in 2011-12 which paralleled an overall rise in the rate of students enrolling in college credit-bearing CTE courses.

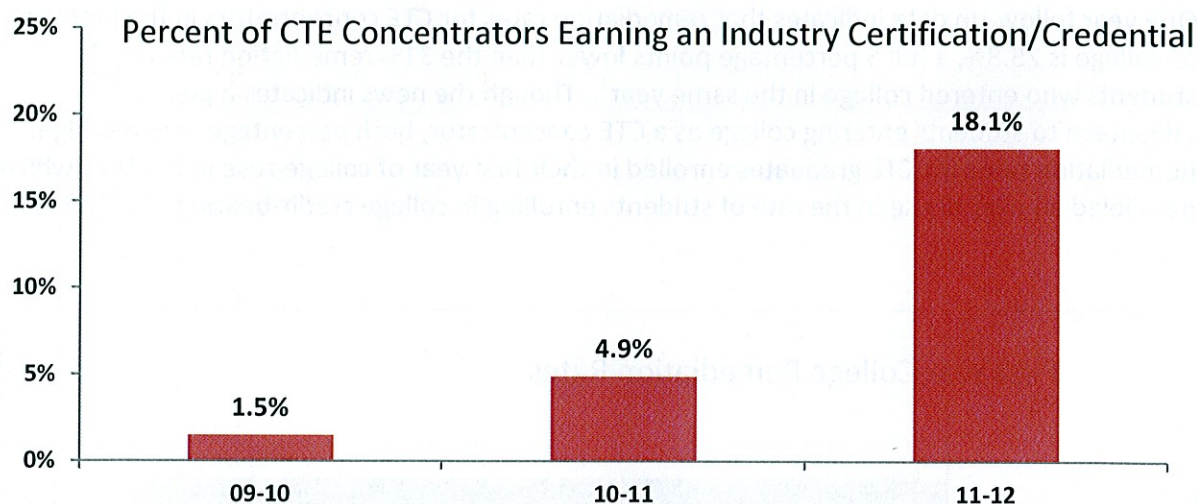


Industry-Recognized Certifications, Credentials and Licenses

Indiana's CTE Pathway Course Sequences are intentionally designed so that graduates earn not only a high school diploma but college credits and/or an industry-recognized certification, credential or license in their chosen career field of study.

While this goal is reflected in federally supported programs of the Carl D. Perkins Act of 2006, many industry-based certifications (IBCs) are typically unavailable to high school students due to minimum age requirements (typically certification holders must be 18 years old or older) and a frequent requirement of prior work experience in the field.

Nevertheless, some industries have created open certifications or "passport" certifications that are available to high school students who demonstrate proficiency in the knowledge and skills competencies of the industry. In 2012, almost 20% of CTE program concentrators earned an industry certification, credential or license which is a four-fold increase over 2011 and the highest percentage ever recorded¹.

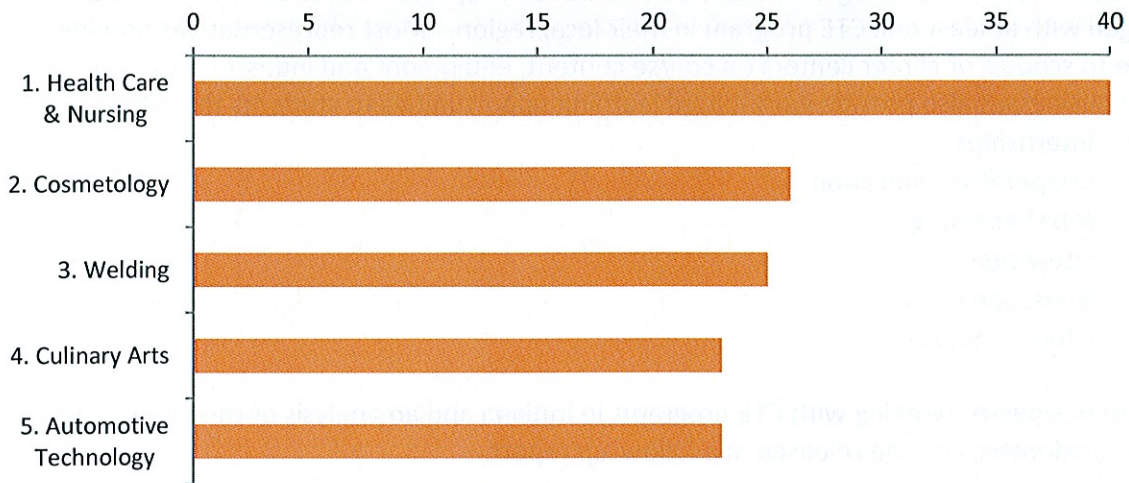


The bulk of certifications awarded to Indiana CTE Pathway Course Sequence concentrators fall into eleven categories (two share the 2nd place position) with the highest numbers awarded to students in Health Sciences, Cosmetology, Family and Consumer Sciences and Life Sciences¹.

	Certification Assessment	Related Pathway Course Sequence	Tested	Passed	Percent Passing
1	Certified Nursing Assistant (CNA)	Health Sciences	872	861	98.7%
2	Indiana State Cosmetology License	Cosmetology	214	193	90.2%
2	American Association of Family & Consumer Sciences (AAFCS)		214	151	70.6%
3	Project Lead the Way (PLTW) Biomedical Sciences Assessment	Health Sciences	186	94	50.5%
4	National Automotive Student Skills Standards (NA3SA) – Auto Tech	Automotive Technology	182	146	80.2%
5	National Automotive Student Skills Standards (NA3SA) – Collision Repair	Collision Repair	184	148	80.43
6	American Welding Society (AW) Sense I Assessment	Welding	180	117	65.0%
7	National Consortium for Health Sciences Education (NCHSE) National Assessment	Health Sciences	165	125	75.8%
8	Early Childhood Education Pre-PAC Assessment	Early Childhood Education	160	84	52.5%
9	ProStart National Certificate	Culinary Arts	159	149	93.7%
10	ServSafe Food Handler Certificate	Culinary Arts	112	98	87.5%

Examining the number of CTE Districts that offer Pathway Course Sequences resulting in certifications or credentials, the most commonly offered programs include Health Care and Nursing, Cosmetology, Welding, Culinary Arts and Automotive Technology programs³.

Top 5 CTE Districts with Pathway Course Sequences Offering Credentials



**Today's CTE works -
for students in high school,
for graduates going on to
postsecondary education,
for businesses,
for the economy.**

*Marilyn Metzler
Executive Director
Indiana Association of CTE Districts*

CTE Connections with Business and Industry

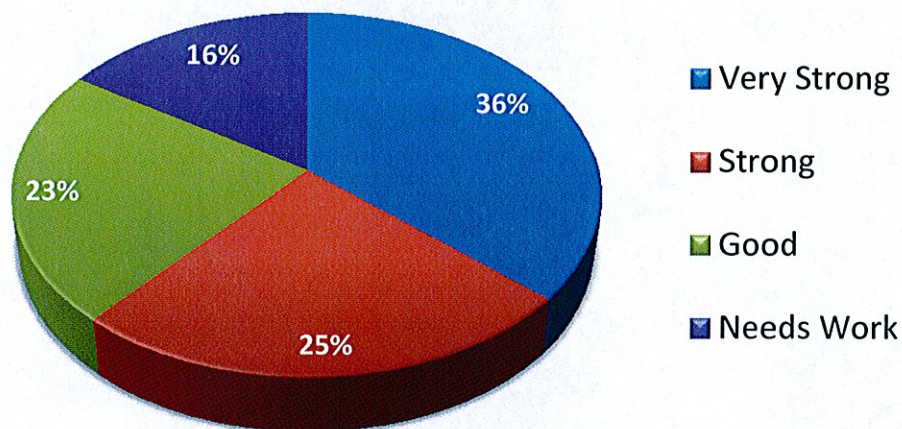
More than 2,300 Indiana regional business and industry representatives are connected and engaged with at least one CTE program in their local region. Most representatives provide advice to schools or career centers on course content, equipment and industry trends but many of the businesses also provide work-based learning opportunities to students through:

- Internships
- Cooperative education
- Job shadowing
- Site visits
- Guest speakers
- Other methods³

A list of businesses working with CTE programs in Indiana and an analysis of the strength of those relationships will be released in a follow-up report.

61% of area CTE district directors rate their office's relationship with local/regional employers as strong or very strong. 23% said their relationship was good but 16% categorized their connections with regional employers as weak³.

Strength of Relationship with Local/Regional Employers



All but two of the 47 districts providing CTE courses and Pathway Course Sequences hold annual business and industry advisory meetings. A large majority, 93%, hold two advisory committee meetings or more each year, typically one in the spring and another in the fall³.

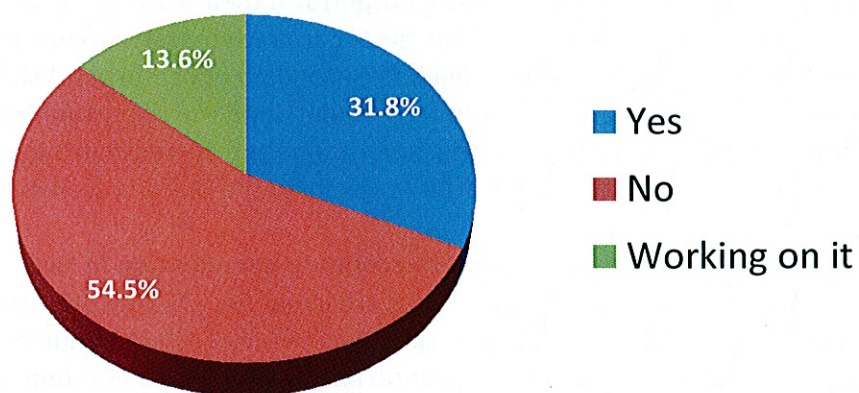
Annual Frequency of CTE Advisory Committee Meetings



District level CTE directors and teachers also reach out to the business community in a number of ways including serving on committees with local Chambers of Commerce and participating in economic development councils, Junior Achievement, manufacturing summits, Partners in Education, trade council meetings and many more (see Appendix B).

Regional Workforce Investment Boards (WIBs) are required to include key workforce and education representatives on boards in each region but only 32% of CTE directors are currently included, with another 14% responding that they are “working on” becoming a participant³.

Do you or a representative of your office serve on your regional Workforce Improvement Board?



Recommendations

Looking solely at Indiana student performance data from the Indiana Department of Workforce Development and Indiana Department of Education over the last four years, summarized in this report, it is clear that Indiana high school students who complete six credits in a CTE Pathway Course Sequence have a distinct academic and competitive advantage over their peers with:

- A greater likelihood of graduating from high school,
- Increased opportunities for earning college credits and/or an industry-recognized credential before graduation, and
- A lower possibility of taking a remedial course in the first year of college.

While there is much good news in this report, four recommendations are apparent:

1. Increase Awareness and Promotion of CTE Programs. More students and parents need to know about the opportunities that are provided through the state's Career and Technical Education programs and specifically the Pathway Course Sequences. State legislators and education leaders must also understand both the benefits and needs of CTE programs to ensure that schools and career centers are adequately supported. Greater local, regional and state recognition of these programs can only improve student performance.

2. Better Connect CTE to Regional Workforce Needs. Though more than 2,000 business and industry representatives from around the state are currently involved in CTE programs, there remains a consistent call from employers for better prepared applicants. New ways are needed to narrow the state's skills gap by ensuring that the voices of business leaders, most in need of a highly skilled workforce, are communicating and engaged with Career and Technical Education leaders and decision-makers. One immediate step toward this goal would be to ensure that every regional Workforce Improvement Board include at least one CTE representative.

3. Explore Ways of Improving Student Persistence. Though students completing six or more credits in a CTE Pathway Course Sequence outperform their peers in many areas, a surprisingly low percentage persist in the same career cluster area when transitioning to postsecondary education or the workforce. Business leaders, secondary educators and aligned postsecondary faculty must explore ways of helping students understand the opportunities that are connected to the career pathways they are studying. Persistence and success rates in both the workforce and college increase when students better understand the options available to them.

4. Intentionally Focus on Reducing Postsecondary Remediation in High School. While college and postsecondary remediation rates are lower for CTE concentrators, first year college remediation rates near 30% are still too high. Because Ivy Tech Community College and Vincennes University have agreed on common Accuplacer scores that determine whether students are placed in a remedial course, high schools and career centers must begin administering Accuplacer assessments in 10th or 11th grades, analyzing the score results and

intentionally implementing high school academic support programming that improves Accuplacer scores. High school staff should work closely with community college faculty in addressing this challenge since both levels share identical concerns.

Indiana's Career and Technical Education system is a relatively unrecognized statewide success story that quietly continues to improve student performance and prepare future leaders for college and a career amidst a loud clamor of popular new initiatives and reform efforts. Despite many remaining challenges, it is an educational achievement narrative that needs to be told and deserves to be heard.

**“Increasing
the number of dual credit
programs at the Century
Career Center has helped
our students become more
focused on advanced
education and future
career goals.”**

***James Little
CTE Director
Century Career Center***

¹ *InTERS Student Data College System, Indiana Department of Workforce Development*

² *COMPASS Data System, Indiana Department of Education*

³ *February, 2012 Survey of Indiana Career and Technical Education District Directors*

Appendix A

Indiana Career Clusters (in bold) and College and Career Pathway Course Sequences	Total # of Pathway Programs in Indiana	# of Districts Offering This Pathway Sequence	# of Districts Offering Dual Credits	# Districts Offering Certification/Credential
AGRICULTURE				
• Agribusiness	70	26	9	0
• Horticulture & Landscape Management	51	28	10	2
• Life Sciences – Animal Science	68	28	14	2
• Life Sciences – Food Science	37	16	5	0
• Life Sciences – Natural Resources	41	19	8	0
• Life Sciences – Plants & Soils	33	16	8	0
ARCHITECTURE & CONSTRUCTION				
• Commercial & Residential Facilities - Residential & Commercial Facilities Management	3	3	0	0
• Commercial & Residential Facilities – Building & Facilities Management	2	2	0	0
• Commercial & Residential Facilities – Building & Facilities Maintenance	5	4	0	0
• Construction Trades – Construction	68	39	30	14
• Construction Trades – Electrical	8	7	4	6
• Construction Trades – Heavy Equipment	4	4	2	4
• Construction Trades – HVAC	8	8	5	5
• Drafting & Design – Architectural	26	21	14	6
• Drafting & Design – Mechanical	11	11	8	3
ARTS, AV, TECH & COMMUNICATIONS				
• Web & Digital Communications - Interactive Media	48	25	10	5
• Web & Digital Communications - Radio & TV	38	24	14	6
• Visual Arts - Commercial Photography	8	8	2	1
• Visual Arts - Fashion, Textiles and Design	22	9	2	0
• Visual Arts - Visual Communications	28	17	11	4
BUSINESS & MARKETING				
• Business Administration – Accounting and Finance	33	16	10	1
• Business Administration – Entrepreneurship & Management	41	21	8	4
• Business Administration – Marketing Management	41	17	9	1
EDUCATION & TRAINING				
• Early Childhood Education - Early Childhood	61	32	23	13
• Early Childhood Education - Education Careers	32	21	9	4

HEALTH SCIENCE				
• Biotechnology	17	10	7	2
• Dental	17	14	5	3
• Health Care Specialties – Health Science Careers	61	35	26	20
• Health Care Specialties – Dietetics & Nutrition Sci	8	2	1	1
• Health Care Specialties – Veterinary	5	5	3	1
• Nursing	43	26	24	20
HOSPITALITY & HUMAN SERVICES				
• Cosmetology	37	31	16	26
• Culinary Arts	50	36	24	23
• Hospitality Management	14	9	5	4
• Human & Social Services	16	7	0	0
INFORMATION TECHNOLOGY				
• Programming	23	14	6	7
• PC Networking & Support – Networking	22	21	15	16
• PC Networking & Support – PC Support	23	19	11	13
MANUFACTURING & LOGISTICS				
• Advanced Manufacturing	25	15	13	8
• Electronics	18	16	8	2
• Engineering	84	31	22	6
• Logistics and Supply Chain Management	5	4	1	0
• Machine Technology	38	27	18	9
• Welding	53	37	29	25
PUBLIC SAFETY				
• Criminal Justice	36	28	21	2
• EMT/Paramedic	20	17	12	14
• Fire and Rescue	16	16	8	11
TRANSPORTATION				
• Automotive Collision Repair	33	27	18	16
• Automotive Technology	60	40	29	23
• Aviation	6	6	2	1
• Diesel Service Technology	7	7	2	3
• Recreational and Mobile Equipment	5	5	3	0
• Tractor Trailer Operations	2	2	1	1

Appendix B

CTE Directors State How they Connect with Regional Business and Industry Representatives

- Internships
- Cooperative education programs
- Formal and informal conversations with employers
- Business and worksite visits
- Lunch meetings
- Economic development meetings
- Local chambers of commerce and chamber education committees
- Presentations to local community clubs and organizations-
- Meetings with trades industries
- Yearly business and industry updates
- Tours, mentors, speakers
- Judges for student competitions and mock interviews
- Business luncheons with students
- American Education Week, business luncheons with students
- Career-related projects
- Business & Industry Surveys
- Company site visitations
- Individual business-education advisory consultations
- Business donations of worksites and clinics for student instruction
- Equipment and material donations to schools
- Judging student projects, presentations
- Participation of teachers in local human resources consortium
- Career mentors
- Collaboration with local economic development organizations
- Regional industry audits (surveys of employer needs)
- WorkOne regional data analysis
- Industry walk through with feedback sessions
- Pathway Work-Group Meetings (more in-depth than advisory meetings)
- Industry demonstrations at open houses
- Employee referrals plus seminars, workshops, and committee participation.
- Specific activities:
 - EcO15 seamless pathways groups
 - CareerFest
 - PLTW advisory committees
 - Business Education Partnership with Muncie Chamber
 - Delaware County Advanced Manufacturing Committee

- Participation in Manufacturing Summit
- Howard County Partners in Education
- Economic Workforce Council
- Horizon Education Alliance
- Participation on the EDC
- Work with Center for Workforce Innovations
- Financial Stability Committee of United Way of Madison County
- Let's Get Real campaign
- Junior Achievement
- EDD Evaluation Team
- Local home show
- NEAT Monthly Newsletter (produced in partner with WorkOne)
- Indiana Career Explorer website training
- Project Lead the Way counselor academy
- College and Career Readiness Education Subcommittee of Madison County Education Committee
- Periodic meetings with Economic Development Officers
- Close work with NEI

**“We work hard
in forming partnerships
with the
business sector, listening to
their needs and
making efforts to assist them by providing
meeting spaces, school resources, and
matching student’s specific skills to the
business sector when possible.”**

*Indiana CTE Director
Survey Respondent*

