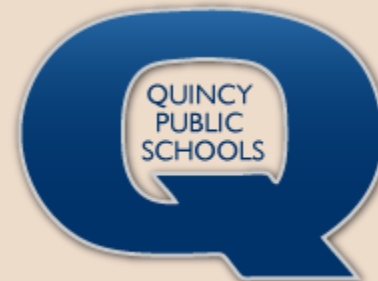


Career Pathways: CTE & STEM

(or, a little dirt never hurt anyone)

Career Opportunities at Quincy Area Vocational-Technical Center & Quincy High School

Mark Pfleiger, QAVTC/WCR Director



Quincy Senior High School



Quincy Senior High School



**Opening Doors To Your Career Future
Through STEM Career Pathways & CTE**

What Are “STEM” Careers?

- Careers requiring Science, Technology, Engineering and Mathematics
- By 2018 Illinois employers will offer over 319,000 jobs requiring education and training in STEM, increasing nearly 20 percent since 2008. According to Georgetown University, Center on Education and the Workforce, over 90 percent of those STEM occupations will require postsecondary education or training. To grow the economy and maintain its competitiveness, preparing students for STEM careers is essential.

ILLINOIS Pathways

Science, Technology, Engineering & Math

Illinois Pathways Initiative

- Illinois Pathways is a STEM education initiative designed to support college and career readiness for all students.
- Partnership between the State of Illinois' education and economic development agencies.
- Illinois Pathways supports local programs that empower students to explore their academic and career interests, as well as Learning Exchanges designed to coordinate investments, resources and planning for those programs.
- Learn more at <http://www.ilpathways.com/>

The Illinois STEM Pathways

- Agriculture
- Energy
- Finance
- Health Science
- Information Technology
- Manufacturing
- Research & Development
- Transportation Distribution & Logistics



CTE Programs of Study in Illinois

- Agricultural Education
- Business, Marketing & Computer Education
- Family & Consumer Sciences
- Health Science Technology
- Technology & Engineering Education
- Develop the technical and applied academic skills needed for the STEM Career Pathways

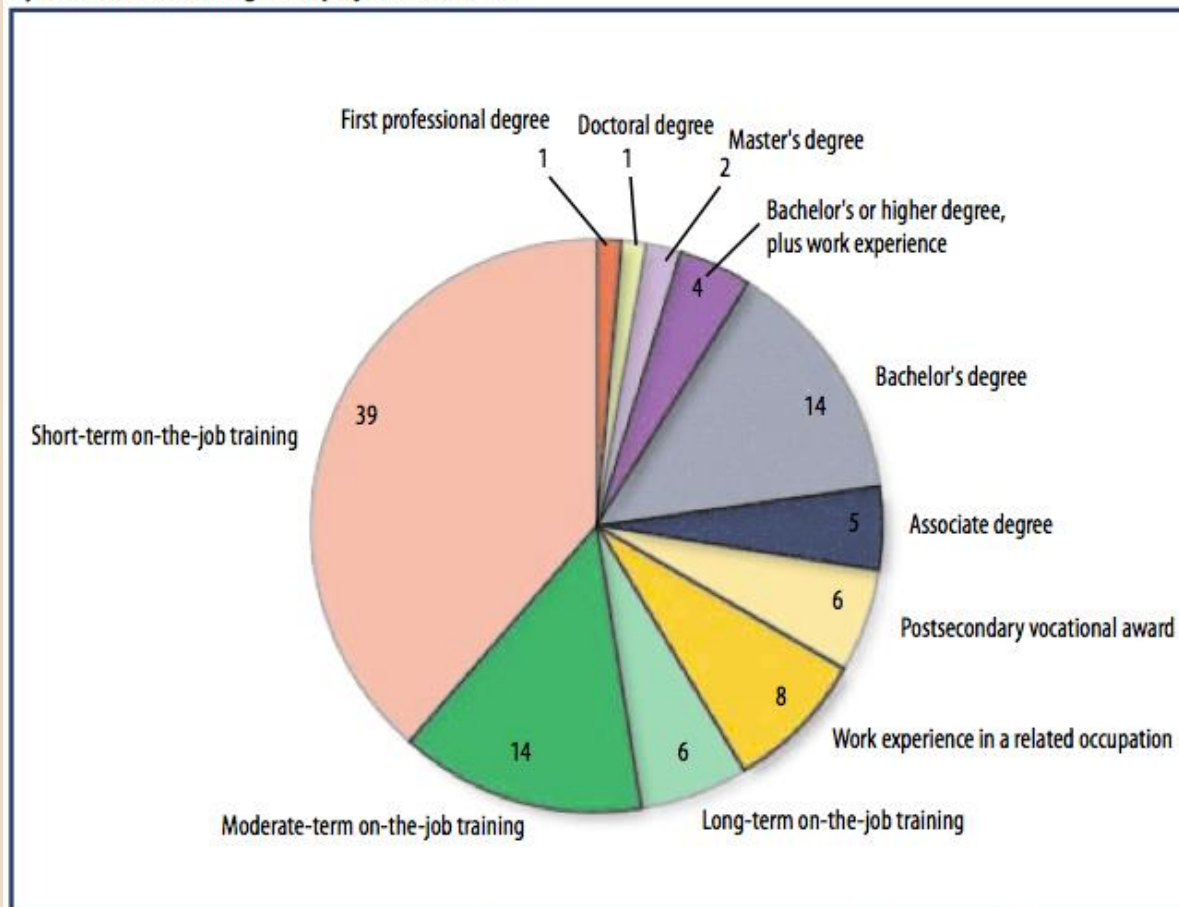


CTE: Learning That Works for Business and Industry and Community At Large

- CTE creates a skilled sustainable workforce
- CTE provides technical knowledge & employability (soft) skills
- CTE links students and potential employers
- CTE supports economy w/next generation of skilled workforce
- CTE develops local entrepreneurs & business leaders
- CTE improves ROI in education through more student focus on a career goal in both HS & post-sec education

CTE in relation to education required for jobs of the future

Percent distribution of job openings due to growth and replacement needs
by education or training level, projected 2008–18



Most job openings over the projections decade will be in occupations that require short-term on-the-job training. Occupations requiring moderate-term on-the-job training and those requiring a bachelor's degree are also expected to have a large share of the projected job openings.

The most recent BLS data (updated Dec, 2015) still only shows 25.6 % of our workforce requires a bachelors degree or higher with an additional 2.3% requiring an associates. Remarkably, these numbers have not deviated significantly over the past 4 or 5 decades.



- **“Career and Tech Ed should be the rule, not the exception”** - A recent brief from Gallup notes: CTE students are more likely to persevere in college than “academic elite track” students. An excerpt: “a recent study found that 80% of students taking a college prep academic curriculum with rigorous CTE met the standard for college and career readiness, compared with 63% of students taking the same academic core without rigorous CTE.”
- <http://www.gallup.com/opinion/gallup/181922/career-technical-education-rule-not-exception.aspx>

Video

Success in The New Economy

Kevin Fleming

Citrus College



- Reflections on the Video...
“Success In the New Economy”

What will it take for our students to be ready?

QHS/QAVTC Career Pathways

QHS/QAVTC Career Pathways

What are Career Clusters and Career Pathways?

Career Clusters are groups of occupations and industries that have in common a set of foundational knowledge and skills. There are 16 nationally recognized clusters within which are multiple Career Pathways.

Career Pathways are programs of academic and technical study that prepare students for a range of postsecondary options within the clusters. By taking courses within a pathway, students are provided a context for exploring career options during their high school education. They will also have a framework for linking learning to the skills and knowledge needed for future education and employment.

What Career Clusters and Pathways have been developed so far?

QHS/QAVTC has begun working with 10 of the 16 national clusters. Each of those pathways is included in this handbook. They are as follows:

- Arts, Audiovisual, and Communication
- Architecture and Construction
- Business and Financial Services
- Engineering
- Health Services
- Hospitality and Management
- Human Services
- Informational Technology
- Manufacturing
- Transportation, Distribution and Logistics

What is the benefit of Career Pathways?

- Students benefit because it provides a link between education and careers. Pathways provide a framework for students to plan their future. Students are more motivated when they can see the relevance of their education and are provided with smooth transitions to college and careers.
- Educators benefit because they begin to connect with local business and industry to ensure that what students learn connects to careers.
- Employers benefit because they are provided the opportunity to partner with educators to prepare future employees by determining the necessary skills, certification and knowledge to succeed in the work force.

How should a student use the QHS Pathways when creating a four-year plan?

Students are encouraged to discuss career goals at home and with the school counselor. They should then plan to explore areas of interests by taking the courses aligned within those pathways. The pathways were developed to provide guidance, yet flexibility as student interests may change during the four years of high school. Students do not need to select a specific pathway for course registration purposes.

Career Pathway Plan



QHS/QAVTC Career Pathway

Name of Cluster: Engineering

This Career Pathway Plan of Study can serve as a guide, along with other career planning materials, as you continue your career path. Courses listed within this plan are only recommended coursework and should be individualized to meet each learner's educational and career goals. All plans should meet high school graduation requirements as well as college entrance requirements.

Grade	English	Math	Science	Social Studies/ Sciences	Other Required Courses, Recommended Electives, Career Specifics, and Learner Activities	Career & Technical Courses and/or Degree Major Courses	SAMPLE Occupations Relating to this Pathway
9	<u>C/C Prep</u> English I <u>Distinguished</u> English II Honors	<u>C/C Prep</u> Algebra I <u>Distinguished</u> Geometry; Algebra II	<u>C/C Prep</u> Environmental <u>Distinguished</u> Biology	<u>C/C Prep</u> World History <u>Distinguished</u> Pre- AP US	<u>Career Specific Electives</u> AP Stats <u>Local and State Graduation Requirements</u>	Intro to Engineering Design	Ag Engineering Appliance Repair Archaeologist Astronaut Biochemist Bioethicist Biomedical Engin. and Tech
10	<u>C/C Prep</u> English II <u>Distinguished</u> Great Ideas	<u>C/C Prep</u> Geometry <u>Distinguished</u> Algebra IIA; Pre Calc	<u>C/C Prep</u> Biology <u>Distinguished</u> Honors Chem; Chemistry	<u>C/C Prep</u> U.S. History <u>Distinguished</u> AP U.S. History	PE Computer App Consumer Ed Dr. Ed Health *Foreign Language	Introduction to Engineering 3-D Modeling and Animation Digital Electronics Principals of Engineering	Chemical Engin. and Tech Civil Engineer and Tech Computer Science Drafter Electrical Engin. and Technician Electronics Engineering Environmental Engineering Fire Investigator Forensic Scientist GIS Specialist Hydrologist Industrial Engineering and Technician
11	<u>C/C Prep</u> English III; <u>Distinguished</u> AP Language	<u>C/C Prep</u> Algebra II <u>Distinguished</u> Pre Calc; AP Calc AB	<u>C/C Prep</u> Fund. of Chem/Physics; Chemistry <u>Distinguished</u> AP Chemistry	<u>C/C Prep</u> Sociology Government (.5) <u>Distinguished</u> AP Government	<u>Student Organizations</u> Robotics Club Math Team	Principals of Engineering Drafting/CAD I Digital Electronics 3D Animation	Marine Biologist Mechanical Engin. and Technician Medical Transcriptionist Meteorologist Microbiologist Neurologist Petroleum Eng. Pharmacologist Physicist Scientist Taxidermist
12	<u>C/C Prep</u> World Lit; Brit Lit; Nonfiction; Cont Novel <u>Distinguished</u> AP Literature	<u>C/C Prep</u> FST; Pre Calc <u>Distinguished</u> AP Calc AB; AP Calc BC	<u>C/C Prep</u> Physics; <u>Distinguished</u> AP Physics	<u>C/C Prep</u> Psychology; Economics <u>Distinguished</u> AP Psych; AP Euro;		Computer Integrated Manufacturing Drafting/CAD II	



Quincy Area Vocational Technical Center

- Skill level career and technical education programs to prepare students for entry-level employment, and/or to continue on in a related college-level CTE program like at JWCC or even WIU.
- Programs are open to high school juniors and Seniors in Adams, Pike & Brown County school districts and QND.
- Day classes meet 2hrs/day, five days/week – earns 2.5 credits for the year.
- Shared Training Program (STP) classes meet Wednesday evenings, 2:30 – 6:30 pm, earns 1.25 credits for the year.
- Tuition is second lowest of AVC's in the State \$445 per credit.



More Features of Our Programs

- A number of programs can provide students with credit toward related programs at John Wood Community College and in some cases four year colleges.
- Some QAVTC programs provide opportunities to earn industry-recognized certifications or credentials needed for employment (for example Nurse Aide Certificate, Food Sanitation Certificate, AWS Level I Welder).
- Opportunities for involvement in student organizations – like the Health Occupations Student Association, Robotics Club or SkillsUSA.

QAVTC Statistics

- ▣ QAVTC serves ten school districts in Adams and Pike Counties
- ▣ QAVTC has ten full-time and one part-time faculty members.
- ▣ approximately 600 students are served annually
- ▣ 500 students enroll from Quincy High School
- ▣ with appr. 100 students from outlying county
- ▣ high schools

QAVTC Connections

- ▣ QAVTC connects to employers through employer advisory committees for input on programs
- ▣ QAVTC connects with post-secondary technical programs with John Wood Community College with articulated credit available as approved by the college
- ▣ QAVTC connects with economic development and workforce agencies through joint activities for professional development and career related information dissemination

QAVTC Strengths

- ▣ Contribute to student completion of high school: 94.5% of 2012 CTE concentrators at QAVTC completed high school which compares favorably to the QHS graduation rate of 86.3% on most recent report card.
- ▣ Contribute to post high school placement:
93% of QHS graduates w/two or more credits from QAVTC were in school, employed or in military which was comparable to QHS also at 93%.

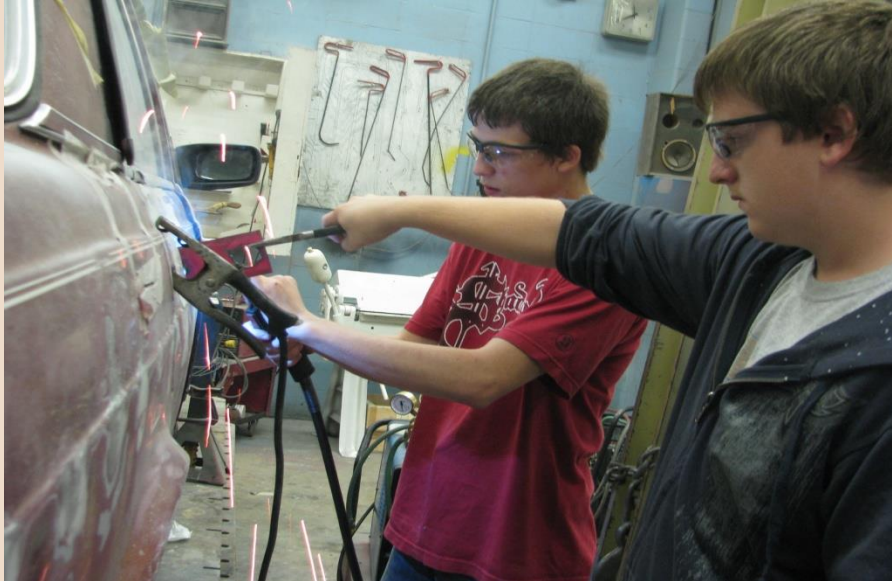
QAVTC Student Follow Up Statistics

- ▣ Of 2012 QAVTC Student Graduates Surveyed:
 - 60% of QHS class of 2012 (489 students) took 2 or more credits of vocational credits at QAVTC during their junior & senior years.
 - Of those 2012 graduates who took QAVTC classes:
 - 17% continued at a four year college
 - 43% continued at a two year college or PS technical school
 - 10% were employed full-time
 - 16% were employed part-time
 - 7% joined the military
 - 7% unemployed



Programs Offered at QAVTC

Check out our programs!





QAVTC CAREER & TECHNICAL PROGRAMS

addressing careers in 13 of the 16 National Career Clusters

- ▣ Drafting/CAD
- ▣ Precision Metals
- ▣ Construction
- ▣ Graphic Design
- ▣ Electronics
- ▣ Welding
- ▣ Diesel Equipment Technology
- ▣ Automotive Technology
- ▣ Health Occupations
- ▣ Business Management & Marketing
- ▣ Childcare
- ▣ Commercial Foods
- ▣ Project Lead The Way
Pre-engineering
- ▣ Cooperative Education

New CTE-STEM Programs at QAVTC/QHS

- PLTW – Biomedical Science (15-16)
- Diesel Equipment Technology (15-16)
- Computer Science (planned for 16-17)
- Agriculture Education (planned for 16-17)
- CEO –Creating Entrepreneurship Opportunities (16-17)



Supporting Career and Technical Education at all Adams and Pike County High Schools

- Technical assistance on CTE program development
- Staff development for CTE teachers and guidance counselors
- Administer funding to procure instructional materials and equipment for CTE programs
- Coordinate with regional economic development and workforce agencies on connecting CTE programs w/employers and community resources
- Coordinate articulation of CTE programs with post-secondary
- Promote and market CTE programs



Quincy Senior High School



**Opening Doors To Career Futures
Through STEM Career Pathways
& Career and Technical Education Programs**



Questions and Discussion

Share what is going on at your school

*Thanks for participating
contact Mark at: pfleigma@qps.org
217-224-3775*