Increasing the reach of career and technical education (CTE)

Regional Educational Laboratory (REL) Midwest

November 12, 2021

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Increasing the reach of career and technical education (CTE)

Regional Educational Laboratory (REL) Midwest

November 12, 2021

Meet the presenters

Dominique Bradley, PhD

Researcher
REL Midwest

Aleksis Kincaid, PhD

Researcher
REL Midwest

Maria Dracopoli

Research Associate
REL Midwest

Meet the guest speakers: Perry Central Community Schools, Indiana

Jody French

Principal
Perry Central Jr./Cr. High School

Susan Miller

Director of Human Resources
Thermwood Corporation

Vivian Galey

High School Senior
Perry Central Jr./Sr. High School

Meet the guest speakers: Alexandria Area High School, Minnesota

Chad Duwenhoegger

Principal
Alexandria Area High School

Claire Anderson

Academy Coach
Alexandria Area High School

Eric Hartmann

Business Teacher
Alexandria Area High School

Sam Steidl

Certified Financial Planner
Ameriprise

Meet the guest speakers: Alexandria Area High School, Minnesota

Carrie Urness

HSHS Academy Counselor
Alexandria Area High School

Meghan Orgeman

BCE Academy Counselor
Alexandria Area High School

Anna Zwilling

University of St. Thomas Student
Alexandria Area High School Alumni (2020)

Hailie Kent

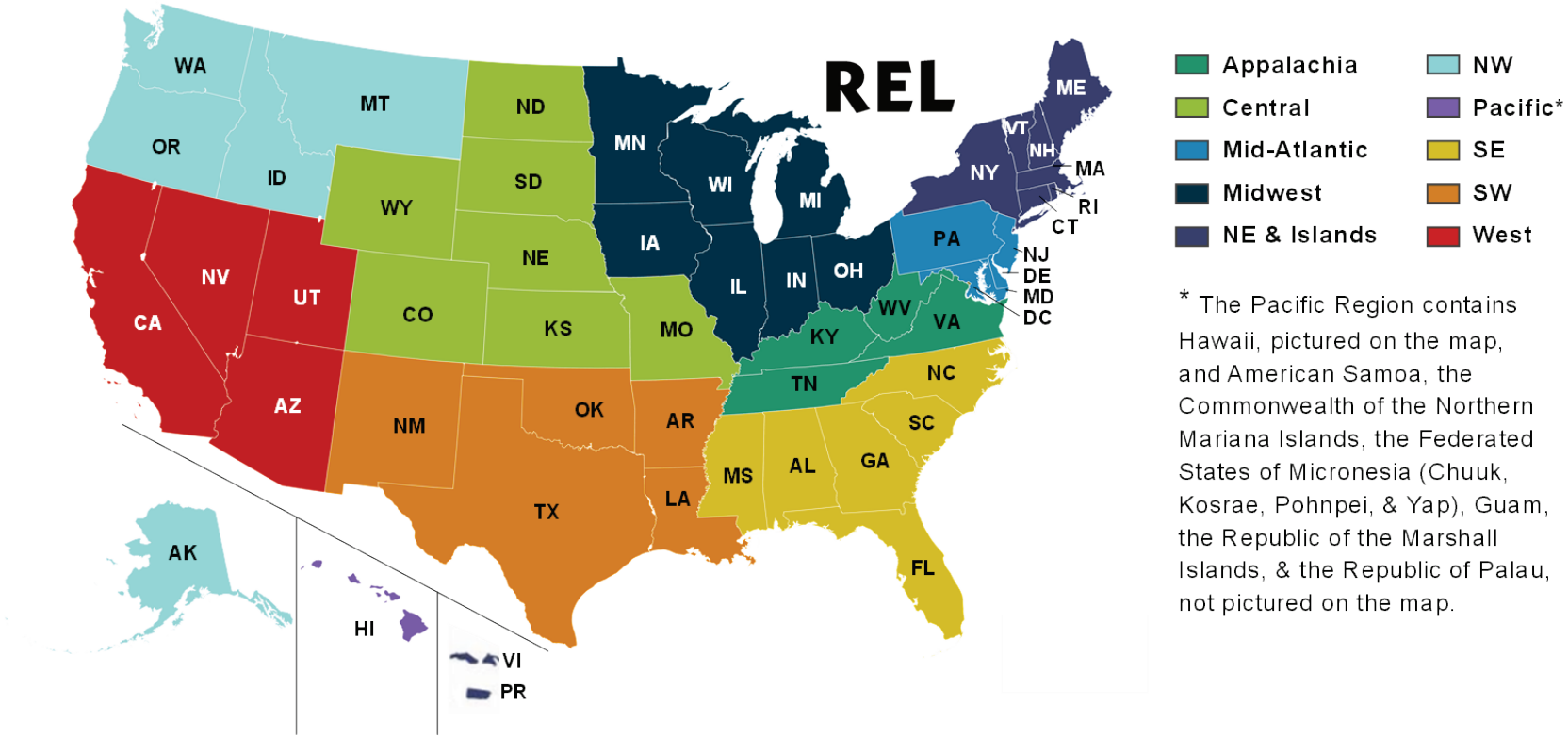
Student
Alexandria Area High School (2022)

Agenda

1. Welcome and overview of REL Midwest
2. Overview of CTE: Programming, possibilities, and promising results
3. District successes in CTE programming: Minnesota and Indiana
4. Panel discussion
5. Wrap-up and closing remarks

Welcome and overview of REL Midwest

Regional Educational Laboratories



* The Pacific Region contains Hawaii, pictured on the map, and American Samoa, the Commonwealth of the Northern Mariana Islands, the Federated States of Micronesia (Chuuk, Kosrae, Pohnpei, & Yap), Guam, the Republic of the Marshall Islands, & the Republic of Palau, not pictured on the map.

How does REL Midwest do this work?

REL Midwest conducts our work through collaborative research partnerships with stakeholders in seven states.

To address the priorities and interests of these states, REL Midwest supports several research alliances as well as emergent partnerships.

Types of support REL Midwest offers

- **Applied research studies** that address partnerships' research questions
- **Events** that support the dissemination and understanding of existing research
- **Workshops** that support the use of data and research
- **Coaching** that supports the use of data and research
- **Technical support** such as survey, interview, or observation protocol development; literature reviews; or tool development.
- **Reviews of studies and interventions** to determine level of evidence to support ESSA implementation
- **Ask A REL** annotated bibliographies produced in response to stakeholder questions

Midwest Career Readiness Research Alliance

- Focus on improving college and career readiness in Minnesota using research and data
- Provided training for Indiana and Minnesota counselors on postsecondary pathways for CTE students
- Created a documentary on career readiness for rural students

Overview of CTE: Pathways, possibilities, and promising outcomes

What is career and technical education?

Career and technical education (CTE) encompasses coursework and programs that prepare high school students for **high-demand jobs** in their community and provide pathways to postsecondary education and careers while they develop college and career readiness skills and knowledge.

CTE course taking: Pathways

Students can take CTE courses in several ways, called "pathways." Pathways enable students to explore options in CTE (samplers and explorers) or create a focused approach to earning CTE credentials or certifications while still enrolled in high school general education classes (concentrators).

Concentrator	Explorer	Sampler	Nonparticipant
Concentrated CTE course taking to earn credentials or certifications in a single career pathway.	**CTE course taking at a high level without a significant focus in any one career pathway.**	**Some CTE course taking without a significant focus in any one career pathway.**	**No CTE course taking.**

The number of courses that a student must take to qualify for the concentrator, explorer, or sampler pathway can vary by state.

CTE course taking: Stackable credentials

High school and CNA Certificate

Certified Nursing Assistant

Associate in Nursing

Registered nurse, Home Care Nurse, Pediatric Nurse, Clinical Research Associate, Patient and Care Coordinator

Bachelors of Science in Nursing

Registered nurse, Critical Care Nurse, Nurse Case Managers, Staff Nurse, Charge Nurse

Masters in Nursing

Registered Nurse Practitioner, Nursing Consultant, Research Nurse, Nurse Educator, Nurse Administrator, Advanced Nurse Practitioner, Nurse Anesthetist, and Clinical Nurse Specialist, Certified Nurse Midwife

Doctor of Nursing Practice

Family Nurse Practitioners, Adult Nurse Practitioner, Psychiatric Nurse Practitioner, College or University Professor, Chief Nursing Officer, Chief Registered Nurse Anesthetist, Nurse Midwife

Some CTE programs allow students to receive **stackable credentials.** Students who achieve certificates in high school through CTE can "stack" their credentials in postsecondary education and work toward more advanced jobs in their field while concurrently working in the field with already-earned credentials.

Promises of CTE: Summary of current research

Employment

- CTE concentrators are more likely to be employed during the first five (REL Midwest, 2021) to eight years after graduation (U.S. Department of Education, 2019) compared to students who are not CTE concentrators.
- Students with a disability who concentrate in CTE are more likely to be employed after high school than students with disabilities who are not CTE concentrators (Theobold et al., 2017).

Earnings

- Students who concentrate in CTE may earn 12–40% more than their peers in the first five years following graduation (REL Midwest, 2021).

Promises of CTE: Summary of current research

Postsecondary degree enrollment and attainment

- CTE concentrators are 4–7% more likely to enroll in a two-year college than similar peers who did not concentrate in CTE (REL Midwest, 2021).
- Students who concentrate in CTE are more likely to attain an associate degree than similar peers who did not concentrate in CTE (REL Midwest, 2021).
- For students who have enrolled in college and have taken CTE courses in high school, the probability of graduating with a college degree increases by almost 2% for each advanced CTE course credit they earn in high school (Kreisman & Stange, 2019).

District successes in CTE programming: Minnesota and Indiana

Guest speaker presentations

District successes in CTE programming: Indiana

Guest speaker presentations

Perry Central Community Schools

Leopold, IN

Perry Central Community Schools

- Small, rural school nestled in the Hoosier National Forest
- Pre-K - 12th grade under one roof
- Community Center
- Small School, Big Opportunities (Innovative Approaches)
- 360 students in grades 9-12, Over 25% of our students do not live in our district
- Designated Early College High School in 2017
  - 30% of our students earn Indiana College Core
  - 80% of students earn 15 or more dual credits
  - Academics + Technical Skills = Success
- Personalized Learning/Flexible Scheduling
- Offer over 14 career pathways - most within our small school

Perry Central
EARLY COLLEGE HIGH SCHOOL
Leopold, IN
-EST 2017-

14 Perry Central Pathways

- **Diesel Technology** - ASE Certification, Snap-On Certification, Diesel Tech Tech Certificate
- **Construction Technology** - OSHA 10 Cert, DOL Pre-Apprenticeship, Ivy Tech Tech Certificate
- **Health Sciences**- CNA Certification, Dementia Care, Pre-Nursing Technical Certificate
- **Biomedical Engineering (PLTW) -** Additive Manufacturing Certification
- **Welding** - Ivy Tech Technical Certificate
- **Advanced Manufacturing-** DOL Pre-Apprenticeship, OSHA 10
- **Education Pathway** - Ivy Tech Technical Certificate
- **Engineering(PLTW)**- AutoCAD Certification, Additive Manufacturing Certification, Ivy Tech Technical Certificate
- **Computer Science (PLTW)**
- **Business** - MOS Certification
- **Precision Agriculture NEW** - Ivy Tech Certificate
- **Industrial Maintenance- Electrical**
- **Surveying** - NEW
- **Criminal Justice** - NEW

Certificate

Courses highlighted in yellow are offered at Perry Central.

Pre-Nursing Studies Certificate

General Education			CREDIT HOURS
_____	APHY 101	Anatomy and Physiology I	3
_____	ENGL 111	English Composition	3
_____	HLHS 107	CNA Preparation	5
_____	PSYC 101	Introduction to Psychology	3

Select one from the following

_____	APHY 102	Anatomy and Physiology II	3
_____	HLHS 101	Medical Terminology	3
_____	HLHS 113	Dementia Care	3
_____	HLHS 118	Diversity in Healthcare	3
_____	HLHS 120	Heathcare in the Rural Community	3
_____	HLHS 121	Customer Service in Healthcare	3
_____	MATH 123	Quantitative Reasoning or Higher	3

TOTAL PRE-NURSING STUDIES CERTIFICATE **17 CREDIT HOURS**

State Earn AND Learn

With Perry Central High School

Indiana Office of Work Based Learning and Apprenticeship

Advanced Manufacturing I

Certifications:
OSHA 10

Work-Based Learning:
Commodore Manufacturing (Paid)

360 RI/OJT - School Year
240 RI/OJT - Summer

GRADE 11

Paid Summer Internship - OJL 240

Advanced Manufacturing II

Certifications:
DOL Pre-Apprentice

Work-Based Learning:
Commodore Manufacturing (Paid)

360 RI/OJT - School Year

GRADE 12

Senior Work Based Learning Experience

GRAD

Certifications:

U.S. DOL Apprenticeship - after 5th Year
22 dual credits towards ITCC Technical Certificate in Industrial Mechanical Technology

Work-Based Learning
Summer Waupaca Foundry

Total: 800 Total hours of On-the-Job Training and Related Instruction

COURSES AT SCHOOL

9th Grade
Principles of Adv. Manufacturing (ADMF 101)

WBL - Manufacturing Night

10th Grade
Advanced Manufacturing Technology (ADMF 102, INDT 113)

WBL - Job Shadowing/Field Trips

11th Grade
Industrial Mechanical Fundamentals - INDT 114, MTTC 101

Student Success - IVY 113

WBL - Commodore Manufacturing

12th Grade
- Work-Based Learning - Internship
- Quantitative Math (MATH 123)
- Honors English 12 (ENG 101)
- Speech (COM 101)

Want to learn more? Visit www.inwbl.com

Perry Central Community Schools/ Waupaca Foundry
DOL Approved Apprenticeship
Industrial Manufacturing Technician

9th Grade	Intro to Adv. Manufacturing ADMF 101/OSHA 10	Summer CM - 240 hours	240 x $10 hour - $2,400
10th Grade	Advanced Manufacturing I ADMF 102	Summer CM - 240 hours	240 x $10 hour - $2,400
11th Grade	Advanced Manufacturing II	Summer CM (240)/ School CM (360)	240 x $10 hour - $2,400 + school stipend
12th Grade	Pre-Apprentice (Internship)/CM	Summer @ Waupaca 320 hours	320 x $19.00 hour - $6,640 + school stipend
			Total Hours - 1,400 + 264 classroom = 1,664 hours
Waupaca	Apply to Waupaca	1,576 hours (Approx. 10 months)	1,576 hours x $ = 20.00 $32,702 + benefits
			3,000 hours = National Apprentice Certificate

Apprenticeship Hours needed: 3,000 264 Hours Classroom/ 2,736 Work Hours

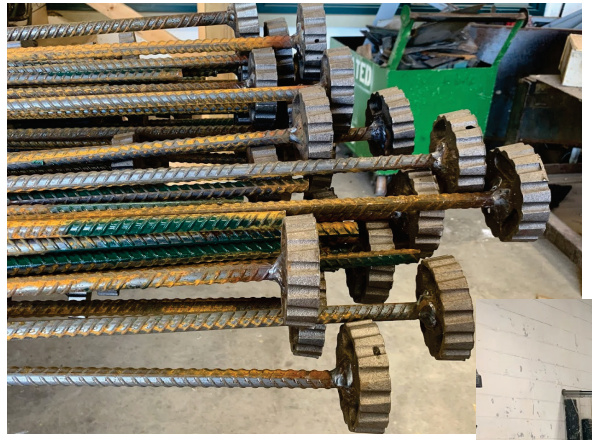
Indiana, Kentucky, Ohio Regional Council of Carpenters Union

Articulated CIM (Certificate of Initial Mastery)

- The parties agree that direct entry and up to six (6) months of apprenticeship credit may be earned as follows with the Program, provided a participating student:
  1. Applies to the Program, meets apprenticeship eligibility criteria and is accepted into the Program;
  2. Has earned a high school diploma as prescribed by Indiana law;
  3. Provides a Letter of Recommendation from their Carpentry Instructor;
  4. Has an overall GPA of 2.0 or better, with 90% attendance or better, notwithstanding any special considerations, without precedence;
  5. Enrolls and successfully completes a minimum of two of the following courses: 7130 Principles of Construction Trades, 7123 Construction Trades: General Carpentry or 7122 Construction Trades: Framing and Finishing or equivalent program of study.
  6. Provides a copy of the included CIM, signed by a school official, certifying that the skill standards listed on the CIM have been achieved.

Embedded Work Based Learning

Commodore Manufacturing



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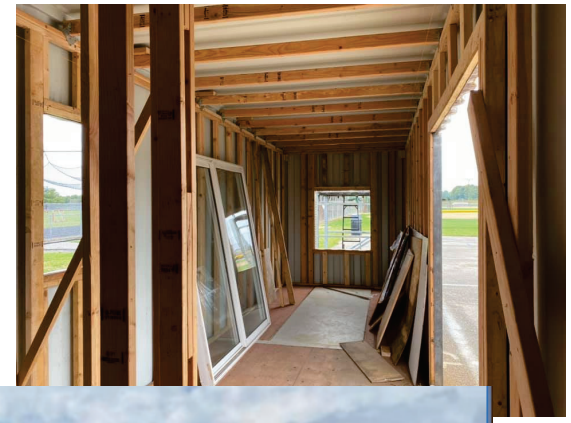
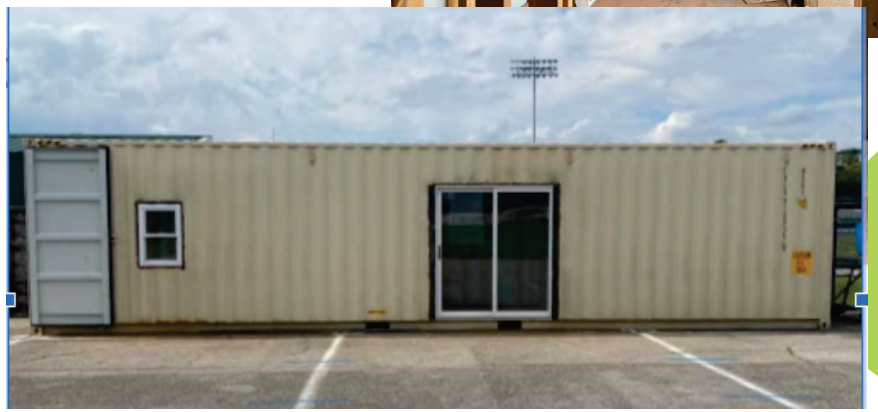


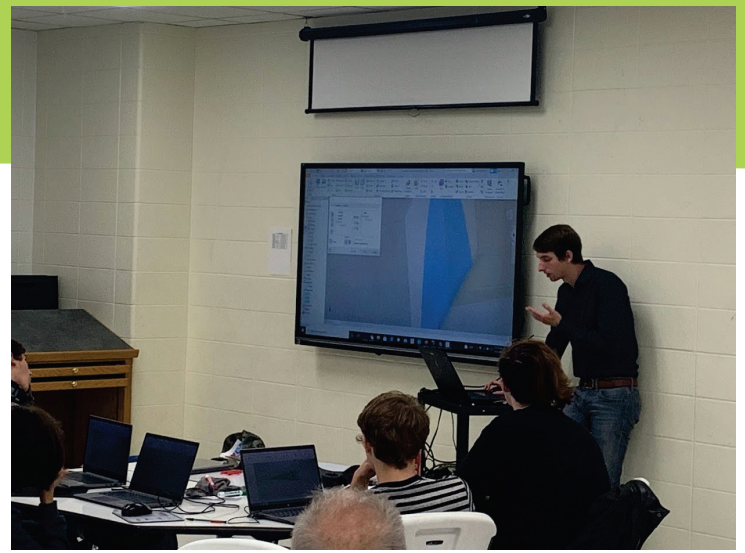


Perry Central Jr./Sr. High School

Authentic Learning Opportunities:

- Workplace Challenges
- Embedded WBL
- Internships - 60% of Seniors
- Competitions
  - Innovate WithIN
  - Harvard Prosthetic Hand Project

Expanding our skills



Our Partners

ARI
ADVANCED REHABILITATION, INC.
PHYSICAL THERAPY

waupaca

EVI
Electric Vehicles

KEITH FRITZ

IVY TECH
COMMUNITY COLLEGE

PERRY COUNTY
CHAMBER
of Commerce

CRYSTAL WATER DESIGNS LLC
Laser Engraving & UV Printing

INDIANA iot LAB
FISHERS

THERMWOOD

PCMH Perry County Memorial Hospital

Student Profile

- Pathway: Engineering
- PLTW IED, POE, CEA
- Additive Manufacturing National Certificate
- AutoCAD Certification
- Innovate WithIN - Entrepreneurship
- Indiana College Core (first year of college for free)
- Student Manager of Additive Manufacturing
  - Prints parts for local business
  - Reverse engineer a Postal Door for Jasper Engines
  - Working with local investor on her own product line (patten)

Student Profile

PLTW Biomedical courses

11th Grade

Health Science Courses and CNA Certification obtained

12th Grade

Internship and job placement with Trilogy

Apprenticeship program with Trilogy Health Services

Post-grad Plans: Attending 2-yr college for Associate Degree to become a labor and delivery nurse

Challenges

- Credentialing Teachers
- Space
- Workplace Challenges/Authentic Opportunities
- Continuing to get our rural families to buy-in to the importance of education and experiences

Thank you!!!!

Jody French, Principal - jfrench@pccommodores.org

Susan Miller, Thermwood - semiller@thermwood.com

Vivian Galey, Senior - galeyv@pccommodores.org

District successes in CTE programming: Minnesota

Guest speaker presentations

Alexandria Area High School

ACADEMIES

OF ALEXANDRIA

FRESHMAN EXPLORATION

HEALTH SCIENCES & HUMAN SERVICES

BUSINESS, COMMUNICATION & ENTREPRENEURSHIP

ENGINEERING, MANUFACTURING TECHNOLOGIES & NATURAL RESOURCES

AAHS Team

Chad Duwenhoegger

AAHS Principal

cduwenhoegger@alexschools.org

Claire Anderson

AAHS Academy Coach

caanderson@alexschools.org

Eric Hartmann

Business Teacher

ehartmann@alexschools.org

Anna Zwilling

AAHS Alumni, Class of 2020

University of St. Thomas Student

Carrie Urness

HSHS Academy Counselor

curness@alexschools.org

Meghan Orgeman

BCE Academy Counselor

morgeman@alexschools.org

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Big Idea

Programming for students that provides career readiness opportunities through real-life authentic partnerships with local businesses/organizations

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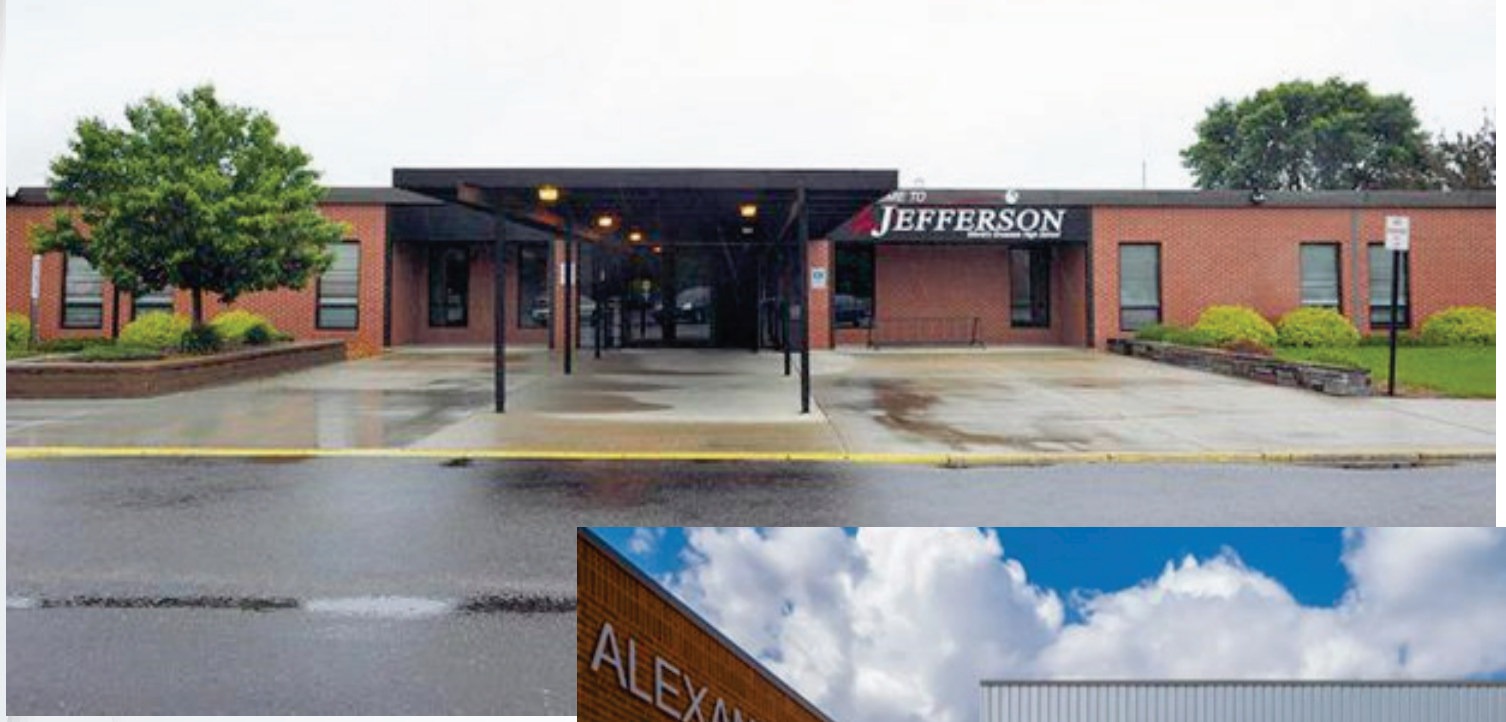

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How did we do it?

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AAHS Drivers

- Flexibility
- Collaboration
- Small learning communities
- Community partnerships
- Technology
- Relationships

Timeline

2012	Conducted research on schools to learn from their programming models
2013	Established drivers to assist with decision making
2013	Formed advisory boards aligned with our academies
2014	AAHS opened with the Academies of Alexandria programming model
2014	Provided professional development for staff on authentic learning
2014	Changed to an A/B block schedule
2015	Researched and explored CAPS programming - joined network
2016	Established three CAPS courses - one per academy
2017	Added Healthcare CAPS
2018	Adopted Portrait of a Graduate
Ongoing	Continue to expand partnerships into other courses
Ongoing	Continue growing authentic experiences across academies, content and grade levels

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ACADEMIES

OF ALEXANDRIA

FRESHMAN EXPLORATION

Freshman Exploration Academy

All freshman enter in upon starting their high school career; focus on career awareness, academic readiness and social/personal development.

ENGINEERING, MANUFACTURING TECHNOLOGIES & NATURAL RESOURCES

EMTNR Academy

Includes career pathways within agriculture, food & natural resources; architecture & construction; manufacturing; and STEM.

HEALTH SCIENCES & HUMAN SERVICES

HSHS Academy

Includes career pathways within education; government & public administration; health sciences; human services; and law, public safety, corrections & security.

BUSINESS, COMMUNICATION & ENTREPRENEURSHIP

BCE Academy

Includes career pathways within the arts, audio/video technology & communications; business, management & administration; finance; hospitality & tourism; information technology; and marketing, sales & service.

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Overview of Experiences

1. **CAPS Experiences**
   Real-life projects with authentic business partners that provide mentorship throughout; presented to authentic audience

2. **Authentic learning experiences**
   Authentic learning experiences embedded throughout courses in the academies at all grade levels

3. **Career exploration opportunities**
   9th - Career expo
   10th - Career field experiences
   11th - Job shadowing; College fair
   12th - CAPS experiences; internships

Examples of Authentic Learning Experiences

Entertainment & Sports Marketing

Intro level course that partners students with a local restaurant in a burger challenge

Culinary III

Students interested in culinary careers spend time in local restaurants prior to starting up their own cafe

Cardinal Innovations

Provides students with a real-world manufacturing experience as they create products and market them in their own school run business

Physics in Manufacturing

Students apply manufacturing and physical science concepts to building a remote controlled car and partner with local manufacturers in throughout the process

Civic Service & Engagement

Students complete a community impact service project along with shadowing careers within human services

Emergency Medical Responders

Students study basic skills of emergency care, basic life support and first aid and have the opportunity to become certified as an EMR within the state of MN

Additional Course Examples

HSHS Academy

*Citizen's Academy I

*Citizen's Academy II

*Basics of Officiating & Coaching

*CNA

* Forensic Science

BCE Academy

*Marketing I

*Marketing II

*Entrepreneurship

*Video Productions

*Game Design

*Computer Hardware & Operating Systems

*Programming in Python

EMTNR Academy

*Building Trades

*Metal Fabrication

*Advanced Metal Fabrication

*Advanced Woods

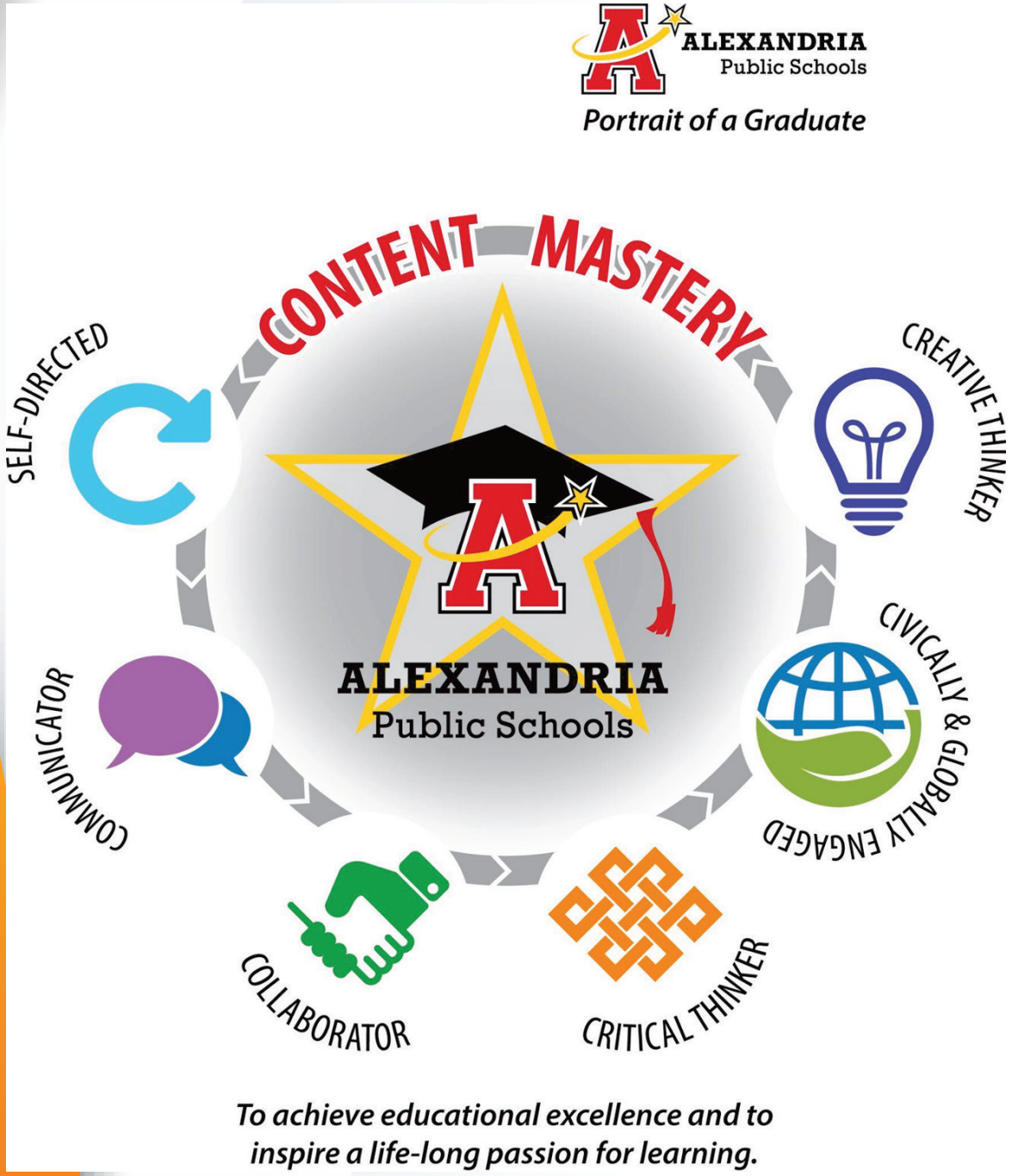
*Advanced Small Engines

*Advanced Robotics & Automation

*CNC Manufacturing

Portrait of a Graduate Skills

- A collective vision that articulates the community's aspirations for all students
- Roadmap for 21st century skills
- Provide experiences beyond content mastery
- Developed with input from community groups, advisory boards, leadership teams, committees and school board



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17,874 hours

Community partnership hours

$510,124.00

Monetary worth of partnerships

Priceless

Value of partnerships towards student experience and success

Geneva Capital

"Investing both time and money in the AAHS CAPS program has been a great way for our team to get to know our local youth and give them a network of business-minded adults to connect with. Projects with real-world application (and in some cases, actual business returns) gives students tangible accomplishments to lean on for resumes, scholarship applications, and job interviews. It's our hope that we can continue this mentorship program, because an investment in Alexandria's young people is an investment in the future of our community. After all, it's the next generation of business leaders who will keep Alexandria growing and thriving long into the future."

Advice for others:

- Find a subject matter or area of study relating to your line of work
- Get to know the educators within that department
- Talk about their curriculum and get a feel for how the teaching staff is already (or could be) providing real-world learning experiences
- Brainstorm ways your business (or others in the community) can get involved

"We haven't found a teacher or administrator yet who didn't want to expose their students to real-world, educational experiences within their area of study!"

Now vs. Then

Academy Selection

*Intentional focus on planning for the future

*More concentrated emphasis on career exploration

*Encourages more conversations with parents

Advisory

*Grade level focus by academy

*Scope and sequence of career readiness activities

*Relationship building

Senior Meetings

*More clarity about post-high school plans

*Speak to more exposure to careers because of authentic experiences

Business Partner & Student(s)

Sam Steidl,

Certified Financial Planner, Ameriprise

Anna Zwilling,

Class of 2020

University of St. Thomas student

Hailie Kent,

Class of 2022

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AREA HIGH SCHOOL

Thanks!

Inquiries are welcome!

Email Chad or Claire:

cduwenhoegger@alexschools.org

caanderson@alexschools.org

Phone: 320-762-2142

Panel discussion

Panelist questions: Practitioners

What was the biggest "win" you've experienced in implementing your CTE program?

What advice would you give other districts that are trying to develop a similar CTE program?

Panelist questions: Students

What has your experience been like participating in CTE courses?

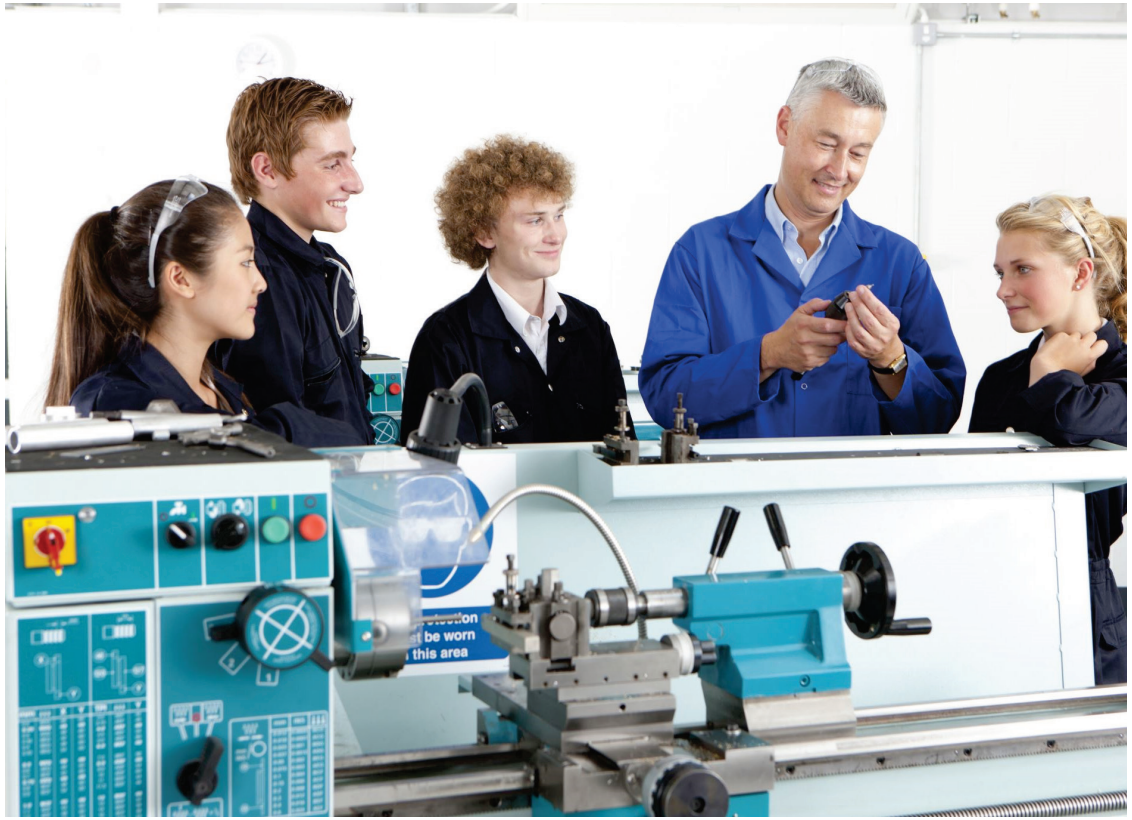
Do you have a goal or target for your CTE experience (credentials, certificates, exploring careers)?

What advice would you give other students who are thinking about pursuing a CTE pathway?

Panelist questions: Business leaders

What was your motivation for partnering with the district to offer CTE opportunities?

What advice would you give other business leaders to develop a successful partnership with districts?



Wrap-up and closing remarks

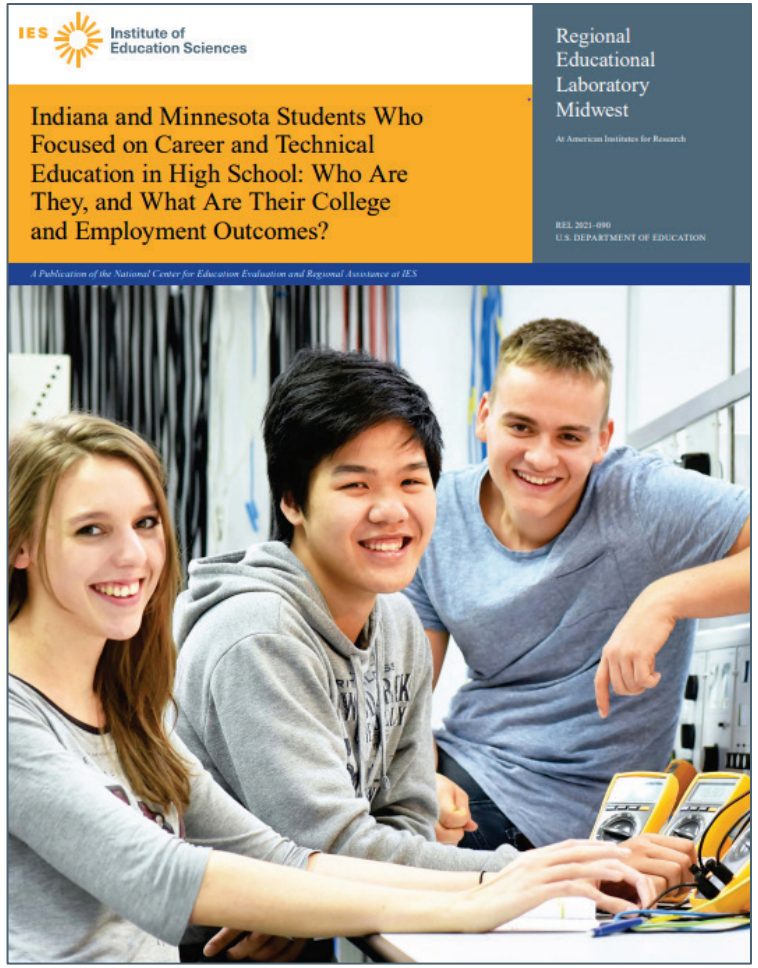
Follow us on Twitter @RELMidwest

Sign up for our newsletter to stay up to date on additional resources and events.

REL Midwest applied research report

Find the report, infographics and resources here:

https://ies.ed.gov/ncee/edlabs/projects/project.asp?projectID=4655



Thank you for joining us today.

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Survey

Please complete the survey available at this link: Survey (datstathost.com)