Intersections Between Career and Technical Education (CTE) and Graduation Measures

Ensure access to career and technical education (CTE), including internships and work-based learning opportunities for all students across New York State.

Presentation to the Board of Regents
March 10, 2025

NYS ED .gov

Blue Ribbon Commission on Graduation

NY Inspires: A Plan to Transform Education

Phase 1 (Fall 2025-Summer 2027)

- Require instruction in financial literacy (effective SY 26-27).

Phase 2 (Fall 2027-Summer 2029)

- Students entering grade 9 in 2027, and beyond, are required to earn one CTE credit, which could include financial literacy.

Promising Practices

Multi-level partnerships between LEAs and BOCES to create diverse and tailored student-centered CTE experiences

District and BOCES Collaboration

Penn Yan Academy & Wayne-Finger Lakes BOCES

BOCES Collaboration

Monroe 1 BOCES & Monroe 2 BOCES

Colleague Collaboration

Ulster BOCES & Broome-Tioga BOCES

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Industry partnership leading to apprenticeship opportunities for students at Broome-Tioga BOCES
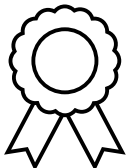
- An articulation agreement has been created between the Bricklayers and Allied Craftworkers Local No. 3 and Broome-Tioga BOCES.

- Students fulfill some related instruction requirements through their NYSED-approved CTE program in masonry.
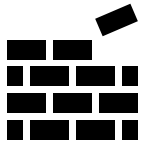
- Students participate in on-the-job training provided by industry partners.

- Students earn one year credit towards the four-year apprenticeship program.

Postsecondary partnership to develop future educators through the Pathways in Education program at Questar III BOCES

- Promotes a "grow your own" philosophy

- Provides opportunities for students to earn college credit directly applicable to a variety of educational careers

- Prepares students to complete the New York State Level 1 Teaching Assistant certification

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QUESTAR III
PUTTING STUDENTS FIRST

Erie 1 BOCES

Fashion Design Technology

Social Media Marketing

Video Production Recording Arts

Virtual Production and Design

Web Technologies and Game Programming

Erie 1 BOCES Initiatives

E1B Fashion Show

Fashion Design joins Calspan CTE Center

WNY Music is Art Jazz Festival

erie boces

THE URBAN ASSEMBLY
New York
HARBOR
SCHOOL

The Urban Assembly New York Harbor School CTE Programs

AQUACULTURE (AQ)

Aquaculture students work towards understanding the fundamentals of water chemistry, organism biology, business, and marketing. Sophomores work with local species of New York Harbor. Juniors learn the dynamics of monospecies culture. Seniors apply their knowledge growing oysters for the Billion Oyster Project.

MARINE SYSTEMS TECHNOLOGY (MST)

MST prepares students for careers in building, maintaining and repairing boats, and culminates in an American Boat and Yacht Council's Marine Systems Technician Certificate. Students put their vessel maintenance skills to use building "oyster cabinets" — the infrastructure for many BOP reefs.

MARINE BIOLOGY RESEARCH PROGRAM (MBRP)

MBRP employs Phenomena-Based Learning strategies to teach the basics in ecology, research, GIS, and oceanography. Our scholars design and implement research projects that address environmental issues and present their work to the broader NYC community while consulting with mentor scientists. Our scholars have worked with various organizations including the EPA, HRF, ESRI, ConEdison, SUNY, CUNY, among others.

VESSEL OPERATIONS (VO)

VO prepares students for careers as licensed deck crew, and serves as a stepping stone into management and operations positions aboard small passenger vessels and commercial towing units. Students receive extensive theoretical and practical training in navigation, boat handling, seamanship, safety and industry rules and standards. VO students operate the vessels required to build, maintain, and monitor BOP's oyster hatchery, nursery, and reef sites.

MARINE AFFAIRS, POLICY & ADVOCACY (MAPA)

This course examines the world's marine affairs and resources; usage and management efforts from the numerous stakeholders' perspectives. Economic, legal, and policy issues are considered as well as conservation measures. Students will be able to communicate the role of citizen engagement in policy making, as well as the roles of community, education, and government in the development and implementation of laws, restoration projects and policy in our waterways.

OCEAN ENGINEERING (OE)

OE introduces students to engineering in an ocean environment. They design, build, and operate Remotely Operated Vehicles that can be used to collect data and monitor BOP's oyster reefs. Ocean Engineering students also design the 3D structures used in BOP's reef building.

PROFESSIONAL DIVING (PD)

PD is the only program of its kind in the United States, training public high school students as effective scientific SCUBA divers and putting them to work underwater on real environmental restoration projects. Professional Diving students can graduate to careers in the commercial and recreational diving industries and work directly on Billion Oyster Project as they dive to install and inspect reef structures and oysters.

Harbor School's
Post Secondary Success

⚓ Post Secondary Pathways

- 4-year college - 62%
- 2-year college - 21%
- Career Apprenticeships - 3%
- Military Enlistment - 1%

Harbor School and P-TECH

- ⚓ Partnering with SUNY Maritime to provide students free and supported access to an Associate Degree in Maritime Technology
- ⚓ 6 year program
- ⚓ Integrates high school coursework with college-level credits from SUNY Maritime and workplace learning
- ⚓ Career-focused
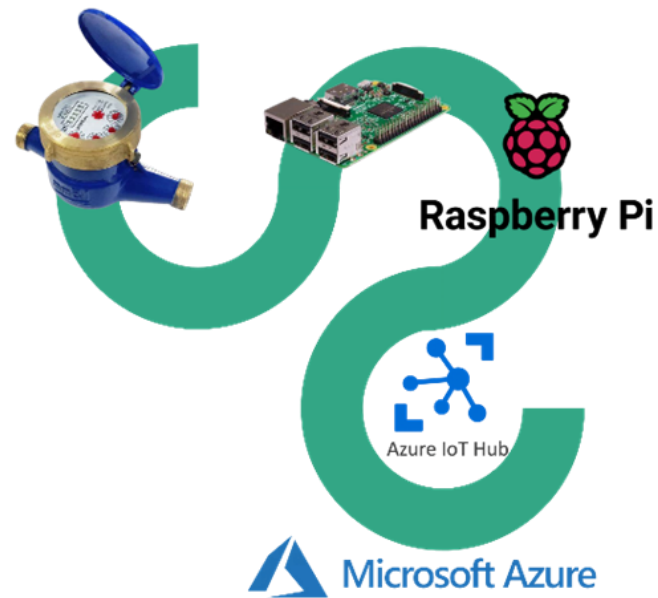 - ○ Industry connected learning experiences

Innovative Learning Experiences for All Students

PROBLEM STATEMENT:

Buffalo based company approached CAM P-TECH to solve problem of remotely reading water meters using technology

Technology & Design

01 **Water Meter OCR:** Leverages optical character recognition to read water meter displays.

02 **USB Camera & Raspberry Pi:** Utilizes a USB camera attached to a Raspberry Pi for daily image capture.

03 **Azure IoT Integration:** Data is transmitted to the Azure IoT platform for real-time visualization and analytics.

04 **Scheduled Operation:** The device activates once per day to conserve power while ensuring timely readings.

WESTERN NEW YORK
P-TECH
CAM
ACADEMY
CAREERS IN ADVANCED MANUFACTURING

Raspberry Pi

Azure IoT Hub

Microsoft Azure

Technical & Power Specifications

- **Battery Powered:** Designed for energy efficiency with a focus on prolonged battery life.
- **One-Year Operation:** Optimized duty cycling and low-power hardware enable operation for 1 year on a single battery.
- **Low Energy Consumption:** Minimal processing during daily activation reduces power drain.
- **Robust Connectivity:** Reliable data upload and remote monitoring through secure cloud connectivity via Azure IoT.

Expanding Learning Experiences

CTE

17 programs at **four** educational centers

1,405 currently enrolled students

New: New Visions in Education

96 teachers & support staff

100+ articulation agreements, **300+** internship sites

Male: 54%
Female: 45.7%
Nonbinary: 0.3%

Economically Disadvantaged: 52%

P-TECH

Four pathways at Dunkirk
Mechatronics, Mechanical Technology (Design & Machine Tools), Welding

Two pathways at Springville
Electrical & Computer Information Systems

Enrollment:
Springville - **49**
Dunkirk - **98**

30 teachers & support staff

CAM P-TECH hosts **NY Science & Tech Entry Program** for 7th-9th graders

Male: 86%
Female: 13.8%
Nonbinary: 0%

Economically Disadvantaged: 32%

Navigating the Path Forward: Advancing Towards the Portrait of a Graduate

- New Visions in Education
- College Connections & DL Regional Work
- More Partnerships with Higher Education
- Expanding Utilization of the Early College Co-Ser
- Health Sciences, Electrical & HVAC Program Expansion Possible

How Ulster BOCES has been fostering the shifts of NY Inspires

Portrait of a Graduate

Redefining Experiences

Assessment

Our North Star
Deeper Leading & Learning

Crew

"We are Crew, not passengers."

This metaphor refers to a group in a boat on a long voyage, where everyone is needed to pull at an oar and no one sits by watching.

In adhering to this motto, "Crew" can be used to reference both individual classrooms and the entire school/organizational community.

We strive to instill a sense of responsibility, participation, and cooperation among individuals, the student body, the school community, and the greater community.

This motto represents our commitment to inclusion and action in the service of self and others. Crew is how we actualize our NORTH STAR.

Equity Based Project Based Learning

Launch:

A project launch is an engaging, active experience with multiple entry points for diverse learners that invites multiple perspectives and fosters diverse, innovative thinking.

Iteration:

Students and teachers generate multiple iterations of their work informed by critique, models, or instruction, in a trajectory towards increasingly meaningful and beautiful work.

Tuning & Reflection:

Students and teachers look at their work and ask questions designed to foster thoughtful, deliberate practice.

Presentations of Learning:

Bring student work into the "real world" to share work with important community members and to foster meaning by ***putting student work in the position of serving others***.

How We Actualize

Deeper Learning In Action
Whole Brain - Whole Child Unit / PROJECT DESIGN Template

Pathways Learning at Ulster BOCES

Hierarchy of Audience

CTE Technical Assistance Center of NY

TRAIN & SUSTAIN

OSWEGO
STATE UNIVERSITY OF NEW YORK
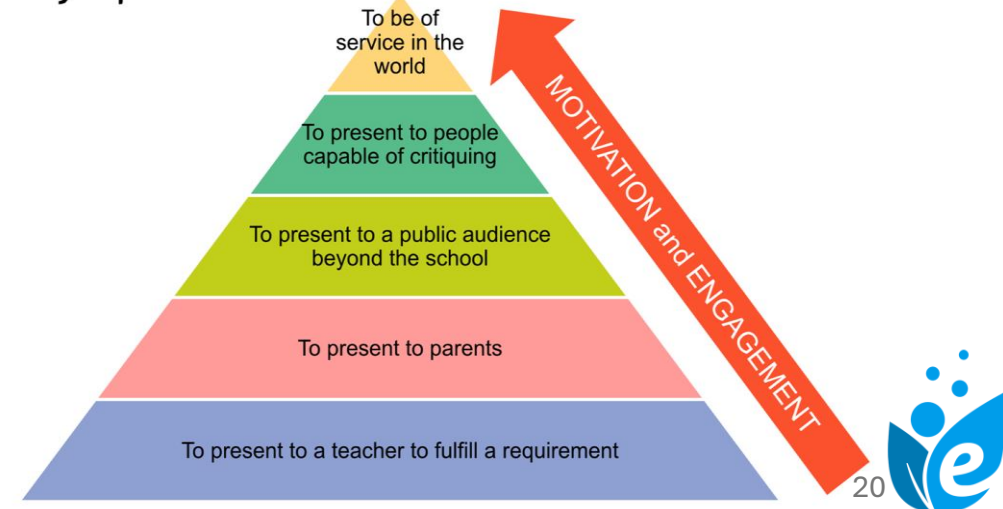
2024-25 Pilot Program Statistics

✅ **11 Instructors** from 9 schools and BOCES completed the Curriculum and Instruction 5-Day Express Course

✅ **10 Instructors** went on to complete the Fall 2024 Virtual Course Serving Special Needs Learners in CTE with PD provided by the CTE TAC to support learning

✅ Between August 2024 and January 2025, **6 teachers had all 9 credits required** for initial CTE Certification

2025 Program Expansion

Gianna ★★★★★

"I've learned more here than I really have in my entire year of teaching. So I think anyone from year one to year five can really benefit from it."

John ★★★★★

"I know that I'm going to be a better teacher as a result of this program when I get back to school in the fall. The instructors taught us by using the strategies we were learning about."

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The CTE TAC conducted a research study to identify barriers and supports needed to support students with disabilities in CTE.

CTE TECHNICAL ASSISTANCE CENTER OF NY

REPORT & RECOMMENDATIONS
IDENTIFYING PROMISING PRACTICES FOR SUCCESSFUL LEARNING EXPERIENCES FOR STUDENTS WITH DISABILITIES IN CTE PROGRAMMING

nyctecenter.org/supportingswdsincte

Prepared by
CONCEPT SYSTEMS, INC.   June 28, 2024

The overarching question the project sought to answer was:

"One way Career and Technical Education (CTE) programs and partners could ensure a successful experience for students with disabilities is to…"

385 total stakeholders answered the prompt, resulting in 79 unique statements.

These statements were sorted into the following cluster themes:

- Professional Development
- Instructional Assistance & Resources
- Equitable Access & Accommodations
- Industry-Aligned Approach
- Career Assessment, Awareness, & Exploration
- Expanding Opportunities to Include the Community
- Stakeholder Collaboration

Emerging Themes

- PROFESSIONAL DEVELOPMENT
- INSTRUCTIONAL ASSISTANCE & RESOURCES
- EQUITABLE ACCESS & ACCOMMODATIONS
- INDUSTRY ALIGNED APPROACH
- CAREER ASSESSMENT, AWARENESS, & EXPLORATION
- EXPANDING OPPORTUNITIES TO INCLUDE COMMUNITY
- STAKEHOLDER COLLABORATION

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Supporting Special Populations in NYS CTE Programming

SUPPORTING ALL STUDENTS IN NEW YORK STATE CAREER & TECHNICAL EDUCATION PROGRAMS

CTE TECHNICAL ASSISTANCE CENTER OF NY

SUPPORTING SPECIAL POPULATIONS IN NEW YORK STATE CAREER & TECHNICAL EDUCATION PROGRAMS

CTE TECHNICAL ASSISTANCE CENTER OF NY

COMING IN 2025

SUPPORTING ENGLISH LANGUAGE LEARNERS: A GUIDE FOR CAREER AND TECHNICAL EDUCATORS

CTE TECHNICAL ASSISTANCE CENTER OF NY

GUIDES FOR IMPLEMENTING

Universal Design for Learning in CTE

IN 14 CAREER CLUSTERS

- Clusters align with Advance CTE's Modernized National Career Clusters Framework.

- Each cluster-specific guide includes:

  - An overview of Universal Design for Learning (UDL);

  - How UDL can be implemented in each cluster;

  - Data on special populations in each cluster;

  - Sample lesson plans to showcase UDL in action; and

  - "Try It" activities and guided applications to help teachers adapt existing lessons.
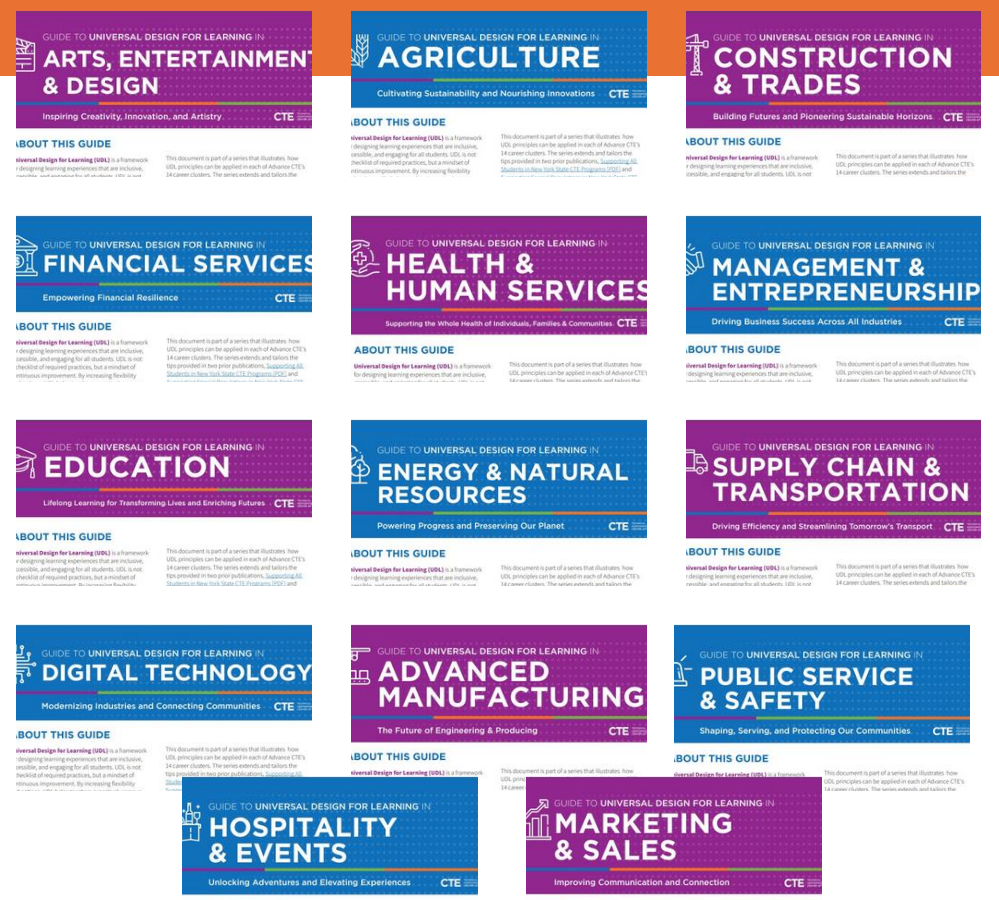
Regional Collaboration Guide & Self Assessment Tools

Project Focus and Goals:

- Supports education and workforce partners in strengthening collaboration around CTE

- Helps implement best practices for regional coordination

- Addresses growing needs & resource limitations

- Facilitates discussions & priority setting for educational pathways in CTE and workforce preparation

Five Key Elements

Stakeholder Engagement

Shared Resources

Work-Based Learning

Educational Support

Engaging Options

Thank You