

BUILDING 21ST CENTURY MANUFACTURING TALENT

Teaching Factory: Building a sustainable model for collaborative education in STEM technologies

An Education & Workforce Development Initiative for LIFT...Lightweight Innovations for Tomorrow



THE PROBLEM

Hands-on training grows more important each day for manufacturing workers. Not only do companies need highly skilled and trained individuals but also the equipment necessary for training has become complex and expensive enough that many educational institutions cannot house equipment at their facilities. Stand-alone and separate institutions, while they have the technical expertise to teach the workforce, cannot purchase all of the equipment necessary for training. Without access to the proper materials and machinery, students are not as prepared for the world of work in manufacturing and employers are less able to find the workers they need. Companies and educational institutions across the nation face this problem.

ABOUT THE PROJECT

Students engaged in the program will:

1. Earn stackable, portable, credentials that can culminate in a certificate or a degree
2. Have the opportunity to gain full-time employment at one of the many manufacturers in the collaboration

THE SOLUTION

To address this growing problem for educators and manufacturers across the country, Youngstown State University Research Foundation is leading the development of the Mahoning Valley Innovation & Commercialization Center, (MVICC), a collaborative infrastructure for training workers on technical equipment. This model will serve as the first of its kind in manufacturing, creating the "Teaching Factory" by replicating the concept of teaching hospitals across the U.S. The Teaching Factory will use shared equipment, facilities, and training, all focused on the greater purpose of creating the talent of tomorrow and further developing incumbent workers today. MVICC will serve as a hub to connect students to cutting-edge equipment and training. Partners from all levels of education will collaborate and combine assets to create a "living career pathway." Partners include:

- Universities
- Community Colleges
- Career and Technical Centers
- High School STEM Academies

MVICC program features will include:



Shared laboratory for hands-on experience and real-world application



Electronics



Machining



Additive manufacturing



Industry-standard equipment



Robotics



Industrial maintenance



Advanced materials



STEM education



Welding



Mechatronics



Lightweight metals

Sustainable and Replicable Model

MVICC's structure of collaboration is sustainable as new assets will be shared among partners to ensure that as many students as possible have access. Many institutions receive one-time investments of capital for equipment investment but the funding is not sustained as technology changes. By sharing equipment, more organizations can fully utilize equipment and help to alleviate the issue of long-term funding for technology advancement.

MVICC will also be adopting a Teaching Factory model, similar to that of a teaching hospital. Students are able to get hands-on experience while customers are being served. Students at MVICC will create products to generate revenue that offsets their cost of training.

Partners will engage the Ohio Department of Higher Education to identify other collaborative bodies that may be working on a similar concept. The group will also collaborate with the Ohio Federal Research Network to ensure that the training programs created fill the needs of NASA and the Air Force Research Laboratory. This scalable and proven model can be replicated by other national manufacturing innovation institutes and manufacturing collaborations across the nation.

PROJECT LEAD

Youngstown State University Research Foundation

Mahoning Valley Manufacturers Coalition - Representing more than 50 of the region's most influential manufacturers

PARTNERS

Eastern Gateway Community College

Choffin Career & Technical Center

Columbiana County Career & Technical Center

Mahoning County Career & Technical Center

Trumbull Career & Technical Center

STEM Academy

Youngstown City Schools

City of Youngstown

Youngstown Business Incubator

Youngstown State University

ALIGNMENT TO LIFT STRATEGIC FOCUS AREAS



Linking and leveraging resources and related initiatives on the ground today



Ensuring students gain STEM foundational skills for success in manufacturing careers



Creating enhancements to engineering curriculum using lightweighting technologies



Attracting more young people to manufacturing careers



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