WASHTENAW COMMUNITY COLLEGE: HOW COLLABORATION BETWEEN EDUCATION AND INDUSTRY CAN ADVANCE THE TRANSPORTATION WORKFORCE

OVERVIEW

This case study looks at how Washtenaw Community College (WCC), located in southeastern Michigan, leveraged the experience of the Michigan Department of Transportation (MDOT), local Michigan Road Commissions and the burgeoning automotive and transportation technology sector, to tackle the short-and long-term workforce needs for diverse technical skills that employers in the region are seeking.

Today's transportation workforce challenges are in some ways, no different from those of the past. Public agencies and private companies need a steady pipeline of engineers to plan, design and manage the transportation system in the jurisdictions they serve. Moreover, they require a cadre of technicians to work in tandem with engineers to build, operate and maintain those systems. However, the emergence of a range of technologies from IT to the computerization of transportation processes and services has been a game changer. This demands a more diversified workforce, trained in IT who can analyze and interpret new sources of data to make the roads safer and less congested.

WASHTENAW COMMUNITY COLLEGE
Leveraging its Unique Location and Intellectual Capital

Community colleges are the backbone of local economic development in America. They develop the talent that business and industry require to remain competitive. Two-year public institutions primarily have two academic priorities: to prepare students for a successful transfer to baccalaureate granting institutions and to provide career and technical education to students looking to enter the workforce. They do this by granting associate degrees and certificates to those students who earn them to indicate to employers and four-year universities that the student met specific industry-related requirements.

Additionally, as part of their local economic development focus, they develop and deliver incumbent workforce solutions to business and industry that include professional development training. Their name derives from the fact that community colleges were established to support local economic development opportunities. As such, they primarily attract and accept students from the local community and may sometimes be supported by local property tax revenue, other government taxes, and/or the business community.
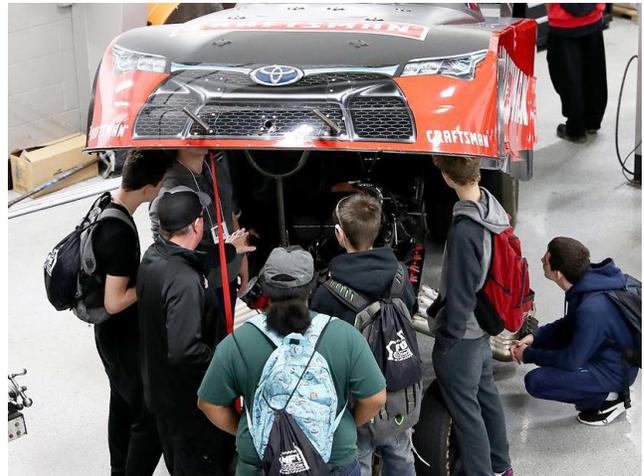
About seven years ago, Washtenaw Community College in Ann Arbor, Michigan, reflected on how best it could serve the local community. With the assistance of a Department of Labor grant, it envisioned that local workforce educational needs should be tailored to Michigan's strong regional transportation sector, including the automotive industry and a highly regarded array of state, county and local transportation public agencies that currently reside in a high technology innovation corridor. The demand for a transportation technology workforce was high and often met by out-of-state workers. The idea of meeting these needs through local education and training to help Michiganders had great value. Further, establishing a K-12 pipeline to encourage young people to consider careers in the transportation technology field could help sustain the supply of a trained workforce long-term.

It helped that senior officials at WCC had a background in the field and were influenced by an appreciation for the Port Huron I-69 international corridor on the east side of the state. Every region in the country has its own unique niche and the business model for WCC was predicated on funding and sustainability.

GETTING STARTED

With initial funding from a Department of Labor grant and the vision that transportation sector employers would need employees who could apply a new generation of technical skills for intelligent transportation systems (ITS),

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WCC started working with the University of Michigan (U-M) and the University of Michigan Transportation Research Institute (UMTRI) to understand the nature and scope of the demand for ITS. Through its exposure to U-M and UMTRI, meeting with senior officials, and participating in symposiums, WCC established relationships with key players in the space. Through U-M's MCity, partners from industry, government and academia came together "to develop the foundation for an ecosystem of connected and automated vehicles for moving people and goods." WCC's involvement in these programs led to a collaborative partnership with MDOT.

MDOT's needs were two fold. It had real-time workforce needs to fill its ITS and other technical jobs. However, it also held a long-term aspiration that the region be able to create opportunities for K-12 students so they could become interested in ITS careers.

To help MDOT, WCC did some analysis, and then sorted out the key elements to create an Advanced Transportation Center (ATC) within the college that would include a curriculum sufficient to train ready to employ workers. To be viable, WCC would need to generate revenue from coursework offered. So getting the courses right was essential. To do so, WCC worked closely with employers including Integral Blue (IB), an Intelligent Transportation Systems integrator that provides professional and technical services in all aspects of ITS, from system design to comprehensive maintenance services.

The WCC/University of Michigan Transportation Institute (UMTRI) connection fostered further collaboration in the form of grant acquisition to develop a college credit curriculum and professional development training. This led to the development of a module-based ITS Technician just-in-time online training and certification class that consists of approximately 10 hours of instruction as well as two college credit courses: the first being Ethical Hacking and Computer Sensors that is used in the second, Information Technology and Automotive Service. Just-in-time online training options have also expanded into cybersecurity with help from an online vendor. Additionally, WCC introduced new online training for Unity Basics: Maps and Apps, which teaches the basic concepts of maps and application

development in Unity which is a cross-platform game engine developed by Unity Technologies, and another online training course for Automated Vehicle Localization Techniques.

> New training modules currently in development at WCC include DSRC, Mobility Analyst, Sensor Hands-on Applications and Middle Skill Engineering. The college is also working with an online vendor to sell its training worldwide.

Essential to all of this was understanding the long-term needs of employers to create synergy among all the players. Examples of this synergy included reviewing open job descriptions, understanding the employer skills gap needs and identifying available grants to help fund the development of classes to teach those skills. In that sense, the effort was bigger than transportation and included building a skilled workforce needed to create Smart Cities and Connected Corridors woven together by technology.

Again, this needed to be sustainable for WCC. Start-up funds were necessary to help build the curriculum, and tuition revenue was necessary to help maintain the curriculum. Relationships with the key players were necessary to make sure WCC was getting this right. An important element of gaining and sustaining trust from prospective employers has been an internship program with both public and private sector transportation entities. By seeing students firsthand in a work environment, the companies, MDOT and other employers have come to trust job applicants that studied at WCC.

As WCC became a fixture in the space, its presence at key events and collaborations with other organizations grew. They included:

- Global symposiums on connected and autonomous transportation

- Collaboration activities with MDOT at ITS-MI/ITS America events

- Various strategic partnerships and collaboration activities with MICHauto, Planet M, the Center for Automotive Research and MDOT CAV Workgroup sessions

- The Smart City Symposium hosted by the college

- The North American International Auto Show, AUTO-ISAC and others

Recently, WCC's Advanced Transportation Center building project was selected by the state of Michigan to receive matching funds through the state's Capital Outlay program. Construction of the 12,348 square-foot building is expected to start in spring 2019 and be completed in 2020. The new space will be dedicated to teaching cybersecurity, programming, data science and related advanced transportation and advanced manufacturing technology courses in a laboratory setting. The focus on technology for connectedness has become WCC's sweet spot and the college sees transportation as one part of that Smart Cities infrastructure.

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K-12: THINKING LONG TERM

Rather than focus solely on high school graduates seeking certifications and associate degrees, WCC worked closely with the region's key transportation players to look at the challenge and opportunity of K-12 education.

For instance, WCC built classes for coding, drones, V2X and other STEM-related topics for K-12 students. WCC mainly offers these classes in the summer, but some classes are also run throughout the school year. These fee-based STEM summer camps are a revenue source for community colleges.

For disadvantaged young people in some of Michigan's indigent communities, WCC worked in partnership with MDOT to provide career exploration services to help young people find opportunities in technical careers.

Most of the college partners already have their own K-12 outreach classes/camps that they are all running locally. With the emergence of the American Center for Mobility (ACM), efforts are underway to create a signature activity/event for K-12. ACM is a non-profit testing and product development facility for future mobility, designed to enable safe validation of connected and automated vehicle technology, and accelerate the development of voluntary standards. ACM is in the process of hiring an educational coordinator to oversee all activities that interface with education. One activity already in place is ACM's annual K-12 Transportation Career Exploration event, which is currently being planned for this year.

The K-12 element is critically important to the Michigan partnership. An important manifestation of it is the MDOT-sponsored Youth Career Fairs that WCC has helped to organize and host. The intent is to support the region's efforts to advance workforce development to implement the state's Connected and Autonomous Transportation and Smart Cities initiative.

The most recent Youth Career Fair drew nearly 300 students from across southeastern Michigan and included presentations on:

- Life on a college campus
- Academic/career choices
- Financial considerations
- College success strategies
- Choosing a career pathway
- Exploring MDOT machinery and vehicles
- Occupational options and skill requirements

WCC has become a visible player in the space, embodied recently by its partnership in the Center for Connected and Automated Transportation

(CCAT) under the auspices of the University of Michigan. CCAT will play a unique regional role in promoting connected and automated transportation research, education, workforce development and technology transfer

activities, which are of critical importance to the future of the region's economy. Washtenaw Community College is one of six academic partners in the CCAT Grant. CCAT will play an important role in the development of for-credit programs and K-12 STEM Projects, especially regarding V2X connectivity with its partner, Square One Educational Network.

RECIPE FOR SUCCESS

In less than seven years, WCC has come a long way in the transportation workforce space. Keys to its success and long-term sustainability to attract, train and supply skilled transportation professionals to the field have been the following:

- Seed funding for and strategic thinking to determine its niche role, given its location in southeastern Michigan

- Effective, ongoing engagement with transportation employers to better understand their needs and develop realistic career pathways

- Partnership with academic institutions to better contextualize and interact with all facets of the education field

- Testing of programs to ensure they offer the right skills

- Visible, sustained interaction in the fast-moving transportation field with key partners and stakeholders to remain aware of workforce needs and opportunities

- Creative work to develop revenue generating services to ensure sustainable programming

- Long-term investment in K-12 programs to foster future interest in technical transportation services

FURTHER INFORMATION

NOCoE Knowledge Center: https://transportationops.org/knowledge-center