

ADAPT: Cultivating Skilled Manufacturers in Rural Wisconsin

Dr. Joshua Gamer

ADAPT: CULTIVATING SKILLED MANUFACTURERS IN RURAL WISCONSIN

The manufacturing industry has long been central to the livelihoods of people in rural Wisconsin. Increasingly, however, the speed of change and innovation that many of these businesses need to incorporate to stay competitive are profound. This change, known as 'Industry 4.0', is being applied to businesses both large and small. In Western Wisconsin, the Trempealeau Valley Cooperative 2.0, Western Technical College and Ashley Furniture Industries are collaborating to develop a new educational model that will equip a new generation of students with the necessary skills to retain a cutting-edge manufacturing industry in the region.



Manufacturing in Wisconsin

Rural Wisconsin has historically been dependent on manufacturing and agriculture for much of its income. With a population of about only 3,000 people, Arcadia is the major employment center for the region. This city is home to both global companies and many more small businesses.

Ashley Furniture Industries, Inc. – the world's largest manufacturer of furniture, and one of the largest employers in Western Wisconsin – has been headquartered in Arcadia since

1970 and employs more than 30,000 people throughout the world. Each day, over 4,000 people either live in or travel to Arcadia to be a part of the company's growing team of employees.

The nearest post-secondary educational institution to Arcadia is Western Technical College, located about an hour away in La Crosse, Wisconsin. With such limited opportunities for people to gain skills relevant to their home region, the need for collaboration between Western Technical College and Ashley Furniture Industries was recognized as a necessity.

An exciting new partnership between local school districts, Western Technical College, and Ashley Furniture Industries aims to ensure a skilled workforce by providing innovative new educational programs. This project will ensure that cutting-edge techniques are at the forefront of advanced manufacturing in rural Wisconsin, in addition to providing fulfilling career opportunities for young people who live there.

The ADAPT Project

A core component of this partnership is a project entitled Automation Workforce Development through Aligned Industry Partnerships and Training (ADAPT), which is spearheaded by Dr. Joshua Gamer at Western Technical College.

The ADAPT project is centered around creating a pipeline of trained graduates in the field of mechatronics. This multidisciplinary branch of engineering concerns both electrical and mechanical systems, combining fields as widely varying as robotics, Industrial Internet of Things (IIoT), telecommunications, and product engineering. Mechatronics graduates who are skilled in advanced



Jason Everett of Amatrol Inc. shares with a middle school student the capabilities of an advanced piece of equipment called the Skills Boss, which is used to evaluate the skill levels and competencies of future machine operators.

automation and IIoT technologies are urgently required in the shift to 'Industry 4.0'. This concept, which first emerged in Germany, describes the increased automation of traditional manufacturing practices, using smart technology.

Incorporating lessons learned from the Applied Sciences College in Mosbach, Germany, the ADAPT project aims to incorporate cutting-edge manufacturing processes into innovative new educational programs. Dr. Gamer and his colleagues' approach involves merging traditional classroom lessons and apprenticeships with an active engagement in industry – enabling students to apply their skills at real job sites as they earn their degrees.

Launching such an ambitious project initially presented Dr. Gamer with numerous barriers to success. One of the most significant challenges related to the project's economic costs: not only would expensive equipment be required, but extensive training for college faculty and high school educators would also be needed. Furthermore, since the

technology associated with advanced manufacturing is so cutting-edge, it changes rapidly – meaning that training courses would need to be continually updated to keep up with new advances. There would also be the need to identify industry-recognized credentials, which could be offered at the high schools while also being embedded in college credentials.

Just as importantly, the scope of the project meant that communities would need to be educated on 'Industry 4.0', the importance of a skilled workforce, and what is needed to make a region competitive. A skilled workforce provides economic opportunities for businesses to grow, raises the standard of living, and as a direct result, enriches an area.

Although these challenges were significant, Dr. Gamer realized that they could be overcome through collaboration. He knew that Ashley Furniture Industries was planning on investing in local educational initiatives, and was coordinating their efforts with the Trempealeau Valley Cooperative 2.0 (TVC 2.0) – a collaboration between

different school districts in Western Wisconsin. 'The timing was perfect to try and connect the efforts of Ashley and the TVC 2.0 to Western Technical College, and build pathways for students in high school,' says Dr. Gamer.

Founding the TVC 2.0

At the same time that Dr. Gamer was conceiving of the ADAPT project, Mike Beighley, the Superintendent of Whitehall School District, already knew that change was urgently needed within the K-12 school system, particularly within the small rural communities in Trempealeau County. He knew that if the region's schools continued along the same traditional path, that their local economies and their students' career opportunities would suffer.

Mike and the superintendents in the neighboring school districts of Arcadia, Blair-Taylor and Independence – all situated within Trempealeau County – began discussing how they could better utilize the available resources. From these discussions, the TVC 2.0 was created. The vision for the TVC 2.0 is to develop career-ready and college-



Through a continued and collaborative effort between Ashley Furniture Industries, Inc., students also have the ability to learn and work with cutting-edge technology in the Ashley Automation Laboratory at Western Technical College's Integrated Technology Center in La Crosse, Wisconsin.

ready students by providing high-caliber learning experiences, preparation and pathways, in partnership with the greater community. By achieving this vision, the ultimate aim is to achieve regional stability and a greater quality of life for the citizens of Trempealeau County, Eastern Buffalo County and Western Jackson County.

During the same timeframe, Ashley Furniture Industries was also going through a transition of their own. As mentioned, Ashley is one of the largest employers in Western Wisconsin and has grown to become 'the world's largest manufacturer of furniture'. To continue to be the world leader in manufacturing furniture, Ashley puts an incredible amount of time and effort in researching and implementing new technologies and machinery into their advanced manufacturing facilities.

On one of the company's many trips to furniture manufacturing tradeshows in Germany, there was a great deal of discussion around the concepts 'Industry 4.0' and the 'Industrial Internet of Things (IIoT)'. It was clear that such technologies would soon become commonplace in manufacturing, and that Ashley would need to incorporate them in order to remain competitive. However, finding technicians with the necessary skillsets to operate advanced automation technologies proved to be extremely difficult.

In 2016, Mike Beighley made some connections and was able to schedule a meeting with both the founder, Ron Wanek, and CEO, Todd Wanek, of Ashley Furniture Industries, to see what he could learn from two incredibly successful individuals who grew an empire in the furniture industry. This was the first time that these three individuals had met. After some introductions and pleasantries, Ron Wanek asked the question: 'So what is it that you would like?' Mike's reply was simple. 'To be completely honest, I don't know,' he replied. 'I'm tired of feeling like we're getting our butts kicked [in not fulfilling the educational requirements that employers are seeking]; education needs to change.'

Setting Out Goals

Working together, this collaboration between the TVC 2.0, Western Technical College and Ashley Furniture Industries has now set out three broader goals for the ADAPT project.

Firstly, the team aims to increase opportunities for mechatronics training programs. This will involve developing state-approved programs which align with industry standards, to be integrated into the curricula of local schools and Western Technical College. Secondly, they plan to increase recruitment, retention, graduation, and employment of the mechatronics-skilled workforce, specifically focusing on increasing workforce diversity. Finally, the team aims to expand the commitments of local industries in supporting the co-delivery of these courses and forge pathways from the programs into universities.

A variety of smaller-scale objectives also arise from these goals, including creating clear pathways to employment for students in high schools and technical colleges, and utilizing work-based learning opportunities such as internships and apprenticeships.

In setting out these numerous goals, the team first needed to identify a rigorous curriculum through which students could earn a credential in Advanced Mechatronics upon graduation. Throughout the program, students will develop critical skills including rapid prototyping, robotic maintenance, robotic programming, IIoT, and industrial safety. Furthermore, these skills will be solidified through the hands-on operation of specific technologies – with tasks including troubleshooting, design, installation, and programming.

For a program with such an ambitious scope to run smoothly, it is critical for students across numerous institutions to have easy access to equipment. Since it would be far too expensive for every institution to own such advanced equipment themselves, high school students must instead be given access to mobile equipment. To do this, Western Technical College,



Grand opening of the Mobile Skills Laboratory at Whitehall School District. From left to right: Ron Wanek, Founder and Chairman of the Board at Ashley Furniture Industries, Rebecca Kleefisch, Former Lieutenant Governor of Wisconsin, Todd Wanek, President and CEO of Ashley Furniture Industries.

Ashley Furniture Industries and TVC 2.0 have developed a state-of-the-art training facility.

The Mobile Skills Laboratory

Imagine yourself as a middle-school or high-school student who has been given an opportunity to step out of a traditional classroom and into a state-of-the-art laboratory, which allows you to learn about and physically operate some of the most advanced equipment and technology on Earth. Now, also imagine yourself being offered the opportunity to acquire technical skills that many employers are continuously searching for within their workforce. Would you take it?

For many students who attend school in rural Western Wisconsin, their answer to this question is simply 'Yes'. This new-age classroom experience, known as the Mobile Skills Laboratory, is a \$3 million investment made by Ashley Furniture Industries, to provide students with valuable technical skillsets and allow them to become 'future-ready' for wherever their career path takes them.

The conception of the Mobile Skills Laboratory required three years of research and visits to over 100 K-12 schools, colleges and universities, to determine where the gap was between educational offerings and the employment needs of many advanced manufacturing companies.

The Mobile Skills Laboratory was then launched in August 2018, at Ashley Furniture's annual charity event, 'Ashley for the Arts', which raised money for over 40 local non-profit organizations. During the festival, more than 10,000 visitors walked through

the 900-square-foot lab, where they could interact with advanced manufacturing equipment – providing them with a unique educational experience. The Mobile Skills Laboratory has now gone from an interesting public exhibition to a vital tool in preparing students in Western Wisconsin to become 'future-ready'.

The Mobile Skills Laboratory provides competency-based learning opportunities for students, focusing on advanced manufacturing processes, electronics, smart sensors, programmable logic controls, automation and robotics. With over 300 courses available within the lab, students have the ability to earn high school and technical college credit recognized by real industries. These industry-recognized credentials are awarded by Western Technical College and the Smart Automation Certification Alliance (SACA).

Throughout the academic year, the facility now travels between the high schools involved in the project – providing a key element of the training required for ADAPT's Advanced Mechatronics program. Since these schools have full access to the equipment through this partnership, they aren't required to own it themselves – offering significant cost reductions both to institutions and their students.

Overall, the Mobile Skills Laboratory has provided innovative solutions to challenges that seemed insurmountable just a few years ago, enabling the project first conceived by Dr. Gamer to become a reality.



Betty Baker (right), Domestic Casegoods Product Engineer for Ashley Furniture Industries, welcomes students, parents and educators into the Mobile Skills Laboratory at Ashley for the Arts.

Furthermore, that 30-minute meeting between Mike Beighley, Todd Wanek and Ron Wanek in 2016 has blossomed into an educational model that includes many K-12 schools, technical colleges, universities, businesses, economic development organizations and government. All of these participating groups are putting their best foot forward in an effort to close the 'skills gap' and grow Wisconsin's economic prosperity.

The same passion that Ron Wanek has for manufacturing furniture has now grown to include a passion for providing youth with high-quality educational and career opportunities. He believes that the Mobile Skills Laboratory is simply scratching the surface of what can be achieved, as the involved parties continuously have discussions with education, industry and legislation to grow this partnership to become the 'national model'.

'At Ashley, supporting education at all levels is a priority of ours,' said Ron Wanek. 'We are extremely proud of the developments that have been created to help inspire students and provide them with the necessary tools to become the next generation of our country's skilled workforce. This is just the beginning and we are looking forward to growing our already successful partnerships.'

Successes and Impact

The collaborating partners are proud of the project's successes thus far. In short, these include the creation of the new academic program in Advanced Mechatronics, the alignment of the traditional academic programs to SACA credentials, creating a high school pathway of up to 10 credits through the use of the Mobile Skills Laboratory, addressing the language barrier in recruitment and marketing material, the creation of a transfer agreement from Western Technical College to the University of Wisconsin-Stout, and the upskilling of high school teachers in nine school districts in addition to Western's own faculty.

Once high school students graduate with an Advanced Mechatronics certificate, their skills will enable them to go directly into the workforce, or to further their knowledge by enrolling within a technical college. Additionally, upon graduation from a technical college, the credits can be transferred towards the completion of a Bachelors degree in Engineering Technology, with a specialization in Automation.

As this partnership continues to grow, students may have the opportunity to possibly earn an Associate degree at the time of their high school graduation. This would provide them with an

incredible start to a Bachelors degree if they so choose.

Ultimately, the ADAPT project and the Mobile Skills Laboratory provide students with a realistic view of what the world of work will look like after graduation, and offer them clear pathways towards fulfilling careers through which they can earn excellent wages without moving far from home. At the same time, faculty staff can be assured that their teaching is relevant to the needs of their local region, and can actively contribute to its economy.

Revitalizing an Industry

Having started from just a few individuals, the Mobile Skills Laboratory and the ADAPT project are still in their early stages, and will require highly skilled and continually adapting leadership as they progress to their next stages. Western Technical College, Ashley Furniture and TVC 2.0 are confident that through their approach, many skilled graduates will be produced in the coming years.

In the near future, this will provide the long-established manufacturing industry of rural Wisconsin with access to workers skilled in the most cutting-edge technologies – ensuring its continued success for years to come.



Meet the researcher

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Dr. Gamer earned his Ed.D. in Career and Technical Education at the University of Wisconsin – Stout in 2017. His transition into education followed a 10-year career in the manufacturing industry, where his most recent role was Director of Operations. While at Western Technical College, he took on many responsibilities including three years as an instructor, two years as the Associate Dean of the Business Division and a year as the Interim-Vice President of Academics. Dr. Gamer is currently the Dean of the Integrated Technology Division at Western Technical College, where he aims to infuse cutting-edge technology and skills into STEM education. Through his numerous efforts, he has secured funding to expand advanced manufacturing education into new areas; worked with local correctional departments to help establish new vocational training programs in skilled crafts; and overseen the planning and construction of a new state-of-the-art apprenticeship center and the newly remodeled Integrated Technology Center. Dr. Gamer was formally recognized as a Rising Star under 40, a 2020 Friend of Correctional Education, and has served in multiple volunteer capacities within his community. Using business acumen acquired through his MBA and industry experiences, he enjoys bringing local industry and education together in unique partnerships aimed at addressing the skills gap and ensuring the vibrancy of the local economy.

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