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Exploring Manufacturing in Wisconsin

FALL/WINTER 2024

A High School Senior's Journey in Robotics, Manufacturing, and Engineering

Sheboygan Area School District

Violet Piontkowski, a senior at North High School, has participated in Red Raider Robotics for four years, taken ten (10!) engineering and manufacturing courses, worked over the summer at Diverse Tooling, and created a work of art using a CNC plasma cutter!

Violet Piontkowski, pictured above right

Learn more about Violet's experience:

Student Name: Violet Piontkowski

High School: North High School

Grade: 12

What Tech Ed classes are you currently taking, or have you taken in your high school career?

- Materials and Processes
- Metals Fabrication
- Advanced Metals Fabrication
- Red Raider Manufacturing
- Woods Production
- Construction Trades
- Exploring Robotics and Automation
- Electronics, Electricity & Automation
- Introduction to Engineering
- Principles of Engineering

Have you taken advantage of any on-site work experience opportunities?

I had a summer job at a tooling business in Plymouth. The president of the company heard about me and my interest in machining from one of the mentors on my robotics team and offered me a job there over the summer. I learned how to use different machines and techniques and gained a lot of experience with what it's like to work at a machine shop.

What activities are you involved in (clubs, organizations, sports)?

I've been on the Red Raider Robotics team for the past 4 years. I am a Manufacturing Lead and CNC Specialist on the team.

What is your favorite thing about your Red Raider Manufacturing experience?

I really liked learning how to use all the different machines and being able to make really cool projects. It helped me decide what I wanted to do after high school.

What are your future plans?

I plan to continue working in a machine shop after I graduate, along with taking a machining course at Lakeshore Technical College.

What project are you most proud of?

I am most proud of the *Jurassic Park* wall art that I made using the CNC plasma cutter. I really liked this project because I got to make something for my room that was exactly what I wanted. It was also fun to make because I had to figure out how to use the plasma cutter, so getting it to work was really satisfying.

Why should a student participate in the Red Raider Manufacturing program?

Because you get to learn so many skills and do so many cool projects. It's really fun to learn all the different ways that you can make stuff out of metal and how to use all the different machines. And the stuff you make is really cool.

Last fall, Violet was the Pit Crew Leader of an all-female team at the Twist (Together, Women In STEM Thrive) Robotics Competition. The team received the Twist and Shout Award, which is given in recognition to the team with the most team spirit. Violet was also awarded the Student Inspiration Award. Coach Timothy Pasche shared, "Violet has been an integral manufacturer in each and every part of this year's robot. If it's on the robot, she's probably fixed it or assembled it."

Violet shared her experience at the female-driven event, as well. "There were way more girls there than I expected. It was fun because when there were decisions to make I got to make those calls. The drive team did such a good job and had some time to practice, and the level of competition was impressive."

Learn more about SASD's Red Raider Manufacturing Program https://www.sheboygan.k12.wi.us/programs/red-raider-manufacturing

sheboygan.k12.wi.us

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Oconto Falls High School Brighter Image Award

Addison Borst,
OFHS Class of 2025
Oconto Falls High School

The Technical Education Department at Oconto Falls High School was recently awarded the Brighter Image Award. This award is sponsored by the NEW Manufacturing Alliance, with this year marking its 13th year as it recognizes the excellence in manufacturing for K-12 schools. Guided by instructors John Bursa, Mathew Beschta, and David Heisel; the department along with its students has become well-known for their outstanding manufacturing and construction skills. This is evident in the constant success of their students involved in SkillsUSA competitions, along with collaborating with members of the community who are involved with the manufacturing industry, and as well in their school's alumni who are doing what they can to help and encourage students to join the manufacturing workforce.

Every year the Tech Ed Department hosts its annual Trades Day. This event provides numerous opportunities for students who are interested in working in the manufacturing industry, such as meeting many people involved in companies located in Oconto Falls and educating them on real-life experiences while working in a trades-based career. Over 40 vendors in the surrounding area attend and expose students to first-hand experiences with industry professionals. The Oconto Falls High School Trades Day also connects students with potential employers, puts them on straightforward career paths, and gives them initial insight into manufacturing and construction-based careers. It also shows students a whole new route to take after graduation, grabbing the interests of students who might not have even known much about the manufacturing industry. Trades Day promotes a vital connection between the Oconto Falls High School and local businesses as well. They provide as many opportunities as they can for their students to connect with real-world experiences, making certain that their curriculum follows the needs of the industry.

At Oconto Falls High School they understand the importance of and set an exceptional bar for excellence in vocational education. The school offers many courses for students to take and improve their skills. Some of these courses are Woods and Construction, Metals and Welding, Computer-Aided Design, Computer-Aided Machining, and Engineering. While in these courses students are required to work with different types of machinery like CNC machines, manual lathes and mills, welding equipment, plasma cutters, 3d Printers, laser engravers, or cutters woodworking machinery, CAD/CAM software, and measuring tools. The students are also given many opportunities to job shadow or intern to practice their skills. Their students continuously demonstrate these advanced skills and knowledge at the state and national levels of the SkillsUSA competitions. SkillsUSA prepares students and empowers them with the knowledge to become trained professionals in the workforce. Oconto Falls High School students receiving prestigious awards at these competitions stands as a testament to the outstanding training from high school staff to prepare them for life after graduation. The school's commitment to excellence goes beyond competition; it prepares its students for immediate success in the workforce.

The impact of the Technology Education program extends beyond the current student body as well. Oconto Falls holds great pride in and is proud to boast about numerous alumni who have evolved from being skilled students and tradespeople to becoming dedicated technology educators and coaches. These former students are now helping and inspiring the

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Building Futures: Green Bay Youth Apprenticeship Program

Green Bay Packaging is an integrated, full-service manufacturer that produces custom corrugated packaging, folding cartons, and coated label products throughout its 40+ nationwide locations. Our operations also include a forestry division, lumber mill, and paper mills that use innovative sustainability processes to supply eco-friendly paper to the industry. Within our manufacturing facilities, we always seek ways to engage with and develop the next generation of employees through programs like the youth apprentice program.

Youth apprentices working in the manufacturing industry gain valuable technical and interpersonal skills that prepare them for successful careers, whether they seek employment right after high school or continue their education. Safety is paramount at all GBP manufacturing locations. Apprentices learn how to work with machinery and equipment in a manner that prioritizes their well-being and that of their colleagues. They are trained to identify and mitigate potential hazards, use personal protective equipment, and adhere to safety protocols to ensure a secure working environment.

GBP offers two types of youth apprenticeships, one in manufacturing and one in maintenance. A *manufacturing youth apprentice* works with a wide variety of equipment and manufacturing processes where they gain exposure to equipment and processes, including robotics and automation used to move and store products, perform material handling tasks within the facility, and even help sort and ship products coming off the lines. A *maintenance youth apprentice* works in a hands-on learning environment, assisting tenured technicians with preventive maintenance, troubleshooting and equipment installation including electrical, pneumatic, hydraulic, mechanical, server, and PC systems as well as general building maintenance.

At GBP, we work with high school students to ensure a good fit between their interests, skills and the roles available. As noted by Kristyn Johanek, Human Resources Manager, Folding Carton Division, "most apprentices are initially hired for the manufacturing role because many high school students are unsure about their career path and this role allows them to explore various tasks and jobs." For example, a mechanically inclined student may be placed in the maintenance department and a student interested in printing or graphics may be placed in the printing department. At the end of the apprenticeship, students can transition to full-time employment or continue working while earning their degree.

With our headquarters in Green Bay and ten manufacturing locations throughout Wisconsin, Green Bay Packaging offers an unparalleled platform for youth apprentices to explore and discover the vast career opportunities available in modern manufacturing. The skills, knowledge, and experiences gained during their apprenticeship set them up for success within the manufacturing industry and equip them with transferable skills beneficial across various sectors.

Green Bay Packaging is dedicated to sustainability, community engagement, and talent development in the manufacturing industry. Through initiatives like the youth apprentice program, the company is not only contributing to the immediate needs of the industry but is also investing in the long-term development of its workforce and the broader community.

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More Than $408,000 in Technical Education Equipment Grants to Serve Students at 17 School Districts

4,637 students in 17 school districts will benefit from advanced manufacturing training in preparation for high-demand job opportunities thanks to grants from the Wisconsin Fast Forward Program.

The current round of Wisconsin Fast Forward grants from DWD totals $408,123 for school districts across the state to train students for career paths involving robotics, welding, plasma cutting, 3D printing, drones, and more. These grants reimburse school districts for the costs of purchasing and installing technical education equipment used for vocational training and technical education in advanced manufacturing fields. This includes the purchase of new equipment such as computer numerical control machines, robotic welders, fiber laser cutting machines, 3D printers, and more.

The awards announced include:

Wilmot Union High School District

Kenosha County | $12,212

The school district will use grant funds to purchase a Snap-On Precision Measuring Certification Kit to provide students with an industry-recognized certification for precision measuring tools in manufacturing.

Jeff Kehoe, a teacher in the technology and engineering department at Wilmot who wrote the grant, said the grant will help students who are struggling with precision measuring, a foundational skill for most trades.

"One of the things we know most students struggle with is precision measuring skills," he said. "This will get us down to the precision that we need for some of those manufacturing jobs."

Kehoe said the department plans to utilize the kit in all the entry level classes.

"Depending upon enrollment, we're looking at 150 to 200 students a year that would be going through and taking the certifications," he said.

https://www.wilmothighschool.com

Two Rivers Public School District

Manitowoc County | $12,630

The school district will use grant funds for a Snap-On Precision Measurement Training Tool Kit, which will help students understand the fundamentals of working with precision measurement instruments.

https://trschools.k12.wi.us

Port Washington-Saukville School District

Ozaukee County | $29,348

The school district will use grant funds for a Baileigh CNC Press Brake, Piranha P-65 Ironworker, and Miller Multimatic 220 AC/DC Welders. The equipment will enhance welding and fabrication offerings by adding supplemental American Welding Society: Schools Excelling through National Skills Education (AWS SENSE) certifications in shielded metal arc welding and gas tungsten arc welding and increasing the percentage of students earning the AWS SENSE level one certification in gas metal arc welding.

https://www.pwssd.k12.wi.us

Hurley School District

Iron County | $20,258

The school district will use grant funds for two manual milling machines and three manual lathe machines to prepare students for successful careers in the manufacturing industry.

https://hurley.k12.wi.us

Muskego-Norway School District

Waukesha County | $50,000

The school district will use grant funds for Electrical Fabrication and Wiring Learning Systems. This equipment will give students practical, hands-on experience in electrical wiring and thermal processing, diagnostics, troubleshooting, and management processes, equipping students with the skills needed for careers in these critical fields.

https://www.muskegonorway.org

Peshtigo School District

Marinette County | $5,000

The school district will use grant funds for Oculus Meta Quest headsets, iPads, and a hydroponic system to give students experience with skills needed for local, in-demand careers.

https://www.peshtigo.k12.wi.us

School District of Nekoosa

Wood County | $9,538

The school district will use grant funds for six Bambu Lab X1-Carbon Combo 3D printers and two DJI Mini 4 Pro drones to expand manufacturing course offerings, including dual-credit credit courses with Mid-State Technical College.

https://www.nekoosasd.net

School District of Holmen

La Crosse County | $10,869

The school district will use grant funds for a Universal Laser System, a VLS Cylindrical material indexer, and an AD Oracle iQ with a compressor to expose students to new careers in manufacturing.

https://www.holmen.k12.wi.us

Augusta Area School District

Eau Claire County | $35,798

The school district will use grant funds for a CRX collaborative robot integration package and a FANUC CNC Simulator. The equipment will provide students with industry-recognized certifications from FANUC-NOCTI and NIMS, ensuring they graduate with practical skills in high-demand manufacturing sectors.

(See article, Page 30, this issue)

School District of Jefferson

Jefferson County | $38,176

The school district will use grant funds for mechatronics equipment, a Haas CNC Mini Mill machining center, a Universal Laser System, and a WAZER CNC water jet, providing students hands-on learning experience with mechanical systems that use electrical and digital components.

https://www.sdoj.org

Madison Metropolitan School District

Dane County | $49,208

The school district will use grant funds for CNC routers, VEX Robotic kits, and laser cutters, which will help foster student interest in robotics, engineering design, and smart manufacturing techniques.

https://www.madison.k12.wi.us

Stockbridge School District

Calumet County | $5,000

The school district will use grant funds for an Eastwood Elite 4x4 CNC plasma table with a plasma cutter, which will give students the exposure, knowledge, and skill set needed for manufacturing careers.

https://www.stockbridge.k12.wi.us

School District of Superior

Douglas County | $25,243

The school district will use grant funds for Multimatic 255 Multiprocess Welders, Dynasty 210 TIG welders, and accessories to create eight welding booths for students to gain exposure to welding and fabrication processes.

https://superior.k12.wi.us

School District of Spencer

Marathon County | $7,844

The school district will use grant funds for an Epilog Fusion Maker 24 40W laser engraver, which will expand students' exploration of digital manufacturing, addressing critical equipment needs and preparing them for future careers in manufacturing.

https://www.spencer.k12.wi.us

School District of Rhinelander

Oneida County | $46,050

The school district will use grant funds for a Fusion Pro 36 CO2 laser engraver 80W. This equipment will expand rapid prototyping and students' exploration of digital manufacturing, addressing critical equipment needs and preparing students for future careers in manufacturing.

https://www.rhinelander.k12.wi.us

Elkhorn Area School District

Walworth County | $33,556

The school district will use grant funds for a Haas Mini Mill CNC vertical machining center with 4th-axis drive, a servo rotary table, and a classroom simulator. The equipment will be used for advanced manufacturing industry training and certifications and will meet the skills demand of the local manufacturing workforce.

https://www.elkhorn.k12.wi.us

School District of La Crosse

La Crosse County | $17,393

The school district will use grant funds for a 4x4 Foundational Robotics UGV Lab, CNC simulator, and TecQuipment Engineering Science kits. The equipment will enhance course offerings in engineering and manufacturing and provide more opportunities for high school students to earn college credit.

https://www.lacrosseschools.org

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Fab Labs Build Student Competencies in Belleville Schools

The fabrication laboratory (fab lab) at Belleville High School is more than a collection of high-tech machines used to propel discovery and critical thinking. That's a tribute to the commitment of Ed Neumann, a dynamic and award-winning tech education and trades teacher who championed the idea and set Belleville schools on the path to fab-lab learning.

Neumann died unexpectedly on Christmas Day in 2022, at age 46, during a deer-hunting trip. Today, the legacy of the man who advocated for the lab and engineered two of the district's three WEDC Fab Labs grants—for a combined $44,600—is being carried forward by enthusiastic faculty and administrators.

"Ed will be remembered for his dedication to and belief in his students," says Belleville Superintendent of Schools Nate Perry. "Ed would always learn along with his students. He'd try to learn the machines before his students, but often he'd refer questions to a 16-year-old, because they were the expert."

Fab Labs Open New Frontiers

Today, Nico Berthelon, Neumann's energetic successor, advances that legacy, connecting trades to academics, entrepreneurship, and success in life.

"Even if our kids don't go into this field, the fab lab helps build an understanding of math and an appreciation for problem-solving and troubleshooting," Berthelon says. "It opens their minds to new ways of doing things."

Fab labs are generally outfitted with high-tech 3D printers, computerized routers, laser cutters, robotic gear, and computer-aided design software. Using these tools, students gain real-world tech skills and build their critical thinking capacities.

In addition to using the equipment in trades classes, the high school has created a Wildcat Manufacturing class. In the class, students take engineering and trades concepts and manufacture items that are sold in the community, with proceeds helping to fund trades education. They've produced Christmas ornaments, Adirondack chairs, campfire log grabbers, planter boxes, and custom orders for signs and trophies.

"There's a lot of value in getting them career-ready," says Erik Farrar, the district's business manager. "It's an opportunity to be creative, be able to make mistakes, learn from that, and move forward to plan bigger projects."

The district is also part of Project Lead the Way, a program that aligns with Next Generation Science standards. Rebecca Johnson, the district's director of teaching and learning, said the K–12 program exposes students to engineering and science concepts.

"Our discovery teacher at the elementary school uses Project Lead the Way plus the fab lab to get our students started in coding, engineering, and building to try to boost the interest," she says. "So, as they continue through our system, we have continued excitement in our fab lab."

Hands-on experience in the real world

Access to the high-tech gear enables students to grow their skills and deploy them into the workforce. Three Belleville High School students have youth apprenticeships at Kelsch Machine Corp., applying the skills they've gained in the lab.

"Businesspeople know that these students have a supervisor at school who's always checking on them, and they know what they're getting as a youth apprentice in terms of work ethic and attitude," Perry says. "And students can decide if this is something they want to do as a career."

Courtesy of the Wisconsin Economic Development Corporation

belleville.k12.wi.us

Using Fab Lab equipment, Belleville students etched their mascot into wood panel

Application Period Open for Fab Labs Grants

The Wisconsin Economic Development Corporation (WEDC) is now accepting applications for the ninth year of its Fabrication Laboratories (Fab Labs) Grant Program, which provides funding to help public schools build or expand fab labs.

The grant program supports hands-on science, technology, engineering, arts, and math (STEAM) education by assisting public school districts with equipment purchases for instructional and educational purposes in fab labs. These high-tech workshops are outfitted with the latest equipment, including computer-controlled manufacturing components such as 3D printers, laser engravers and computer numerical control routers.

WEDC will provide grants of up to $25,000 to public school districts, or up to $50,000 to consortiums of two or more districts, for the creation and/or expansion of fab labs. The minimum grant amount is $10,000.

The non-competitive grants will be awarded on a first-come, first-served basis, with applicants evaluated on application completeness, evidence of readiness and long-range planning, curriculum, business and community partnerships, financial need, and previous awards.

Applications are due Jan. 13.

For fiscal year 2025, WEDC is allocating $350,000 and anticipates awarding 20 grants. Recipients will be announced in the spring of 2025.

More information on the program, including guidelines, an FAQ, and application details, can be found on the program page at https://wedc.org/programs/fabrication-laboratories-grant/

DD Tech Manufacturing Program: Preparing Students for Tomorrow's Opportunities

Ashley Duchemin,
Marketing & Communications
Delavan-Darien School District

The Delavan-Darien School District opened a Career and Technical Education Charter School, DD Tech, in the Fall of 2022 with a focus on twelve career pathways, employability skills, on the job training, and stackable credentials. Since its opening, enrollment has skyrocketed, specifically, within the Advanced Manufacturing and Production career pathway.

Students enrolled in DD Tech have the opportunity to embark on a career pathway that relates to their future career interests and the modern-day workforce. DD Tech students are able to gain workplace knowledge and skills within industry standard classroom/lab settings, while networking with professionals, and while "test driving" through career and work-based learning programs.

Our collective investment in the DD Tech Advanced Manufacturing and Production career pathway has led to experiences such as job shadows, mock interviews, professional networking, career-based learning experiences, as well as upgraded equipment. This program gives students the opportunity to stand out not only on a resume but as individuals that are passionate about their career path. Students get to demonstrate relevant industry standard applications by having access to state-of-the-art CNC equipment such as mills, lathes, plasma cutters and even a water jet cutter. Advanced Manufacturing and Production career pathway lead, Robert Prager, says "Delavan, Wisconsin is a hub for manufacturing. Our goal is to show students the importance of what's in their own backyard. If these experiences help lead to students pursuing their dream career, then we are doing exactly what we need to do."

This program prepares students for tomorrow's opportunities by focusing on durable skills' development through technical skill application. We believe this work will foster students that are not only ready for the next level but achieving at a level that is relevant to their future.

The DD Tech Advanced Manufacturing and Production career pathway contains around 18% of DD Tech's student enrollment and provides experiences that connect students to industry inside and outside of the classroom. Through this program students have worked with local area business partners to develop projects that positively impact the community. This environment fosters student networking and mentorship opportunities with local industry partners and embraces teamwork, community, and pride.

"Our students have a sense of application that can't be provided in a traditional educational classroom." — Robert Prager.

DD Tech is raising the bar on what students can accomplish before graduating from high school. We look forward to preparing the next generation of workforce leaders!

For more information go to https://delavan-darienwi.sites.thrillshare.com/o/ddtechschool

www.ddtechschool.org

CTE Thriving at Muskego-Norway Schools

Andrew Bavlnka
Director of Secondary Student Learning
Muskego-Norway Schools

TWIST — Together, Women in STEM Thrive

The WarriorBots, Muskego High School's Robotics team, participates in offseason competitions to improve their skills and work together as a group. Last year, they hosted their first offseason event titled TWIST (Together, Women in STEM Thrive). The event was created to empower female students to participate front-and-center in a predominantly male industry. In order to be a part of the TWIST event, participating schools were required to have all-female drive teams. Drive teams generally include five students: two drivers, a coach, a technician, and a human player. Other members of the WarriorBots, which includes a roster of 24 students and 10 mentors, helped with repairs and strategizing in the pit and cheered the girls on to a first-alliance captaincy and a second-place finish.

"It's a great opportunity to show off what we can do as a team of women," said Keira Petersen, sophomore drive coach. "We didn't want the event to be intimidating. Robotics competitions are always really encouraging and welcoming. It's definitely a positive community, so everyone is really supportive of each other." Eighteen teams from Wisconsin and Illinois signed up to participate in the TWIST event. Some teams had students who were drivers for the first time, and some teams were made up of two smaller teams in order to have enough girls to participate. The requirement of having all-female drivers enabled girls to take their skills to the next level.

Not only did high school teams form alliances to compete in a double-elimination tournament, but the WarriorBots also included a space for First Lego League (FLL) teams made up of middle school students. "One of our favorite parts about being in Robotics is mentoring younger students," said Reagan Bucholtz, senior human player. "It's a great opportunity for them to get started and hopefully continue into high school with us."

Robotics is much more than just designing and building a robot. Students gain experience in business, marketing, mentoring, community outreach, and gaining a variety of STEM skills. They frequently communicate with business partners to collaborate and fundraise in order to host events and purchase materials they need to succeed. "We all love what we do," said Kierstin Schlevensky, one of the WarriorBots captains and robot co-pilot. "We are constantly learning so many new things and spreading the word on how incredible and passionate we really are as a team."

Mass Manufacturing class teaches teamwork

Technical Education courses in middle and high school provide students with an introduction to a variety of skills in the trades. At Lake Denoon Middle School, students in grades 5-8 start working with tools including CNC machines and laser cutters. They also learn how to cut, rout, sand, stain, and polyurethane using a variety of hand tools. Eighth-grade students in Mass Manufacturing not only work with these tools necessary to build and create, but one of the greatest lessons they learn is how to work well as a team.

Every year, the class is tasked with coming up with a product to mass-produce. During the 2022-23 school year, the two classes (44 total students) came up with an idea to mass-produce Lake Denoon Timberwolf-themed hook and ring games called Hook N' Howl. Students were divided into groups and were engaged with a variety of

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CTE Programs Making a Measurable Impact on Students' Lives

Augusta Area School District

Augusta High School is proud to offer Career and Technical Education (CTE) programs designed to prepare students for success in industries critical to the local economy. These programs focus on high-demand fields such as mechatronics, Industry 4.0, and automotive repair, with an emphasis on hands-on learning, industry partnerships, and alignment with current workforce trends. This comprehensive approach, supported by recent facility enhancements, provides students with the skills, certifications, and real-world experience needed for post-secondary education or direct entry into the workforce.

The recent referendum in the Augusta School District enabled significant renovations and expansions to the Technology Education spaces. This upgrade includes a state-of-the-art Mechatronics and Industry 4.0 classroom equipped with robotics, smart factory technology, and training systems for hydraulics, electrical maintenance, and pneumatics. These resources allow students to gain hands-on experience with the latest equipment used in today's advanced manufacturing and automation industries, setting them up for immediate success in technical careers.

Central to the growth and success of Augusta's CTE programs is the strong partnership with the local technical college. Through this collaboration, Augusta students can enter the college's electrical maintenance program. This pathway enables students to earn college credits while in high school, giving them a head start on post-secondary training. Another example of Augusta's commitment to industry alignment is the recently awarded Department of Workforce Development (DWD) grant, achieved in partnership with two local businesses (areas of machining and tire and auto) and the technical college. This grant, with additional support from local industry, funds advanced training in machining and automation, allowing students to develop expertise in milling and robotics integration—skills that are increasingly in demand in the manufacturing sector.

Augusta's automotive program has also expanded due to the new facilities and the addition of a dynamic instructor willing to expand into this programming. Students interested in automotive technology benefit from transcripted courses, gaining foundational knowledge in automotive repair, diagnostics, and safety practices. Industry recommendations have guided these program updates, enhancing both the curriculum and the learning environment to prioritize student safety and reflect industry standards.

The growth of Augusta's CTE programs is reflected not only in the expanding resources but also in the increasing student engagement and enrollment. Many students are drawn to these programs for the chance to work hands-on with advanced equipment and learn alongside industry experts. The welding, mechatronics, and automotive courses offer project-based learning, where students develop tangible skills by working on real-world projects. For instance, students in the mechatronics program are learning to operate robots, set up smart factory simulations, and understand hydraulic and pneumatic systems—skills that provide a competitive edge in both the job market and higher education.

Augusta High School's CTE initiatives are also deeply integrated with community and workforce development goals. By partnering with local businesses and technical colleges, the school is helping bridge the gap between education and employment, giving students access to internships, job shadows which allow students to see how their learning translates into real career opportunities, motivating them to pursue technical careers that fulfill critical needs in the region.

In addition to the resources provided, teachers in Augusta's CTE programs have dedicated hundreds of hours to configuring spaces for optimal safety and instructional quality, guided by feedback from industry leaders. This commitment reflects the district's broader goal of fostering workforce-ready skills in students, promoting economic growth within the community, and addressing local employment needs.

Augusta High School's CTE programs have made a measurable impact on students' lives. Students emerge from these courses equipped with valuable certifications, college credits, and the skills they need to thrive in technical careers.

www.augusta.k12.wi.us

CTE Thriving at Muskego-Norway Schools Continued from Page 29

traditional and modern methods of technical education in order to create consistent products. There were also subgroups of students to package, market, and sell the product. Everyone was involved in the decision-making process related to advertising and the overall game look.

"I really enjoyed being able to have a voice in every step of creating the product," said Khannar Lee, an 8th grade student in Mass Manufacturing. Khannar and his classmates began by rotating through each station to learn and experience all parts of the production process. Later in the course, they were able to choose which part of the production process they wanted to continue to support. Although students became "experts" in one part of the assembly line process, they were familiar with all stations so they could work outside of their assigned tasks when needed. "If I or anyone else at my station were struggling, we could always get help," said Khannar. "And we had to use the tools in a safe way. We had to practice safety above all else."

The whole process–design concept, testing and improving, producing, packaging, and selling–took eight weeks. Together, the classes created 60 games and sold them to staff and families. A portion of the sales was donated to the Christmas Clearing Council of Waukesha County. The classes presented their donation during lunch, celebrating the entire process with one final act of teamwork.

During the 2023-24 school year, eighth-grade Mass Manufacturing students created over 90 mass-produced Leash Lodges and sold them to family and friends. The students were able to donate a portion of their proceeds to Hoovers Hause All Dog Rescue. The project this year expanded to not only include Mass Manufacturing students, but students and staff across the school. Seventh-grade Kids Biz students designed print and digital media for the Leash Lodge and advertisements, eighth-grade Teen Cuisine students created and packaged home-made dog treats, fifth-grade General Music students composed and sang musical jingles for advertisements, and Special Education students packaged screws and wall anchors.

muskegonorway.org

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Future Innovators: Ashwaubenon High School Students Excel in Manufacturing

Tom Barnhart,
Technology Education Teacher
Ashwaubenon High School

At Ashwaubenon High School, we are committed to preparing our students for the future of technology and manufacturing. Through our partnership with the Titans of CNC Academy, students are not only learning essential machining skills but also gaining hands-on experience with advanced tools. Recently, we took an exciting trip to the International Manufacturing Trade Show (IMTS) in Chicago, where students discovered a wealth of career options available in the manufacturing sector.

The CNC Academy emphasizes real-world challenges through a hands-on curriculum. Students learn to use design software like Autodesk Fusion and HAAS CNC machines, helping them build the technical skills and creative thinking necessary for success in manufacturing. In class, they design and create precise parts, which allows them to gain confidence and a deeper understanding of the manufacturing process. Additionally, through the CNC Academy, students earn industry-recognized certifications for completing projects, giving them a significant advantage as they pursue careers in this dynamic field.

The highlight of our experience was the recent trip to IMTS, one of the largest manufacturing trade shows in the world. There, students explored cutting-edge machinery and software and had the opportunity to meet industry leaders. This experience allowed them to see firsthand how their classroom lessons apply in real-world scenarios.

The IMTS trip also provided invaluable networking opportunities. Students met professionals in the field and learned about the skills employers are seeking in new hires. This exposure helps them tailor their educational experiences to better meet industry needs.

Many students left the trade show feeling inspired. Junior Jaclyn Luby expressed it well: "Seeing the technologies in action really brought our classroom learning to life. It's exciting to think we could work with this equipment one day."

Our program goes beyond technical skills; it also emphasizes the importance of teamwork, communication, and critical thinking—qualities that are essential in today's workplace. The CNC Academy ensures that students are well-rounded and prepared to tackle the challenges they will face in their careers.

As Ashwaubenon students progress through this program, they're not just learning how to make parts; they're shaping their futures in an ever-evolving industry. The IMTS trip ignited their passion for innovation and motivated them to aim high in their career paths.

As Ashwaubenon students progress through this program, they re not just learning how to make parts; they re shaping their futures in an ever-evolving industry.

"At Ashwaubenon High School, we strive to ignite our students' enthusiasm for technology and manufacturing. Partnering with Titans of CNC Academy allows us to connect their education directly to the industry. The skills they gain not only prepare them for immediate job opportunities but also set the stage for future studies in engineering and robotics," —Tom Barnhart.

In conclusion, the partnership between Ashwaubenon High School and the Titans of CNC Academy exemplifies how education can evolve to meet today's workforce needs. With a strong focus on the future, our students are well-equipped to enter the exciting world of manufacturing and become the next generation of innovators and leaders.

ashwaubenon.k12.wi.us

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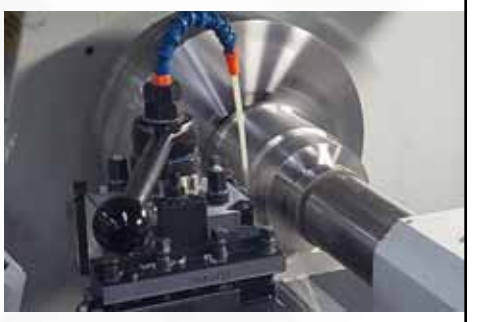


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At JBC Machine, we believe the right combination of people is key to creating a great team! Our management philosophy is one that advocates equally for our customers and employees. The continued investment that JBC Machine makes toward state of the art equipment, and software along with our relentless approach toward employee training truly sets us apart.

JBC Machine is committed to continuing education and training for our employees. As of 2023, we have graduated seven employees through the apprenticeship program with Fox Valley Technical College, making them journeyman machinists. In addition, we constantly cross train every employee to ensure no matter who machines your parts, we will produce the same quality results that we are known for every time.

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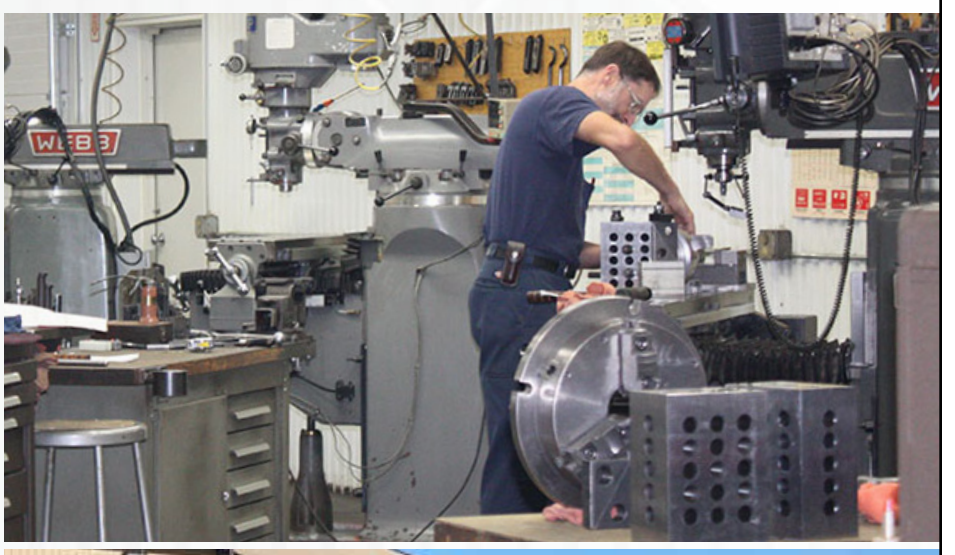
- Tuition assistance for job-related courses

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Filling the Need for Welders in the Kiel Area Companies

Tech Ed Department
School District of Kiel

The School District of Kiel is located midway between Lake Michigan, Lake Winnebago, Green Bay, and Milwaukee serving approximately 1250 students, K-12. The district is located at the intersection of three counties; Manitowoc, Calumet and Sheboygan. Kiel is fortunate enough to be within easy travel distance of three technical colleges. This provides our students with many opportunities for post-secondary learning, if desired. Our district is also fortunate to be located in a manufacturing-rich location, all of which help Kiel provide a plethora of opportunities for students, businesses, and teachers.

The expansion of the welding program at Kiel High School started back in the 2018-19 school year when one local company, Amerequip, was struggling to find welders to fill positions at their manufacturing facility. They reached out to the local high school and Lakeshore College to see what they could do to fill the gap in their personnel shortage. At the meeting that was held, ideas were discussed and the partnership between Ameriquip, Lakeshore College, and the Kiel Area School District was born.

The plan developed during the weeks and months that followed was implemented to advance a welding manufacturing pathway for Kiel High School students. This pathway created an opportunity for Kiel students allowing for direct entry into the workforce with the skills needed to fill the local jobs. Because of continued effort by all parties involved, the welding facility at Kiel High School was expanded to 16 welders and booths with brand new equipment to match Lakeshore College equipment and requirements. This expansion created a 1:1 student to equipment ratio, allowing students to have the equipment necessary to work through the program successfully and in a timely manner. Back in the 2019-20 school year the program started small, with approximately 10 students receiving one dual credit. It has slowly grown into the current program of 52 students during the 2024-25 school year who are working through various levels and courses of the program, and it still shows continued interest and growth into the future.

Our current welding program offers many dual credit opportunities through Lakeshore College which includes the opportunity/potential for students to earn a 10 credit Industrial Welding Certificate prior to graduating high school. Students can earn the certificate by taking three welding courses offered through the Tech Ed department, providing the potential for 9 of the 10 credits. Students work through the welding courses on an individual, self-paced basis throughout the three high school welding courses. They then complete the certificate by taking a Dual Credit technical math class through the math department at Kiel High School. Dual credit course work has also expanded into other curricular areas offered by the Tech Ed department including Industry 4.0 and Mechanical Design. Many of the students also pair the coursework with Youth Apprenticeship opportunities in many of the local companies.

This program could not have been done with the efforts of just one person. It's the partnership with our local businesses and technical colleges that help our school create and open doors for our students and their future employees. We need to send out a big "thanks" to these businesses for helping create these types of programs that allow for the continued growth of our students and Tech Ed program here at Kiel High School.

Continued on Page 36

New Mobile Manufacturing Lab Ready to Hit the Road

Lakeshore College's new mobile manufacturing lab is on its way to directly impacting thousands of people, including high school students. How? Manufacturing is the largest industry sector in Lakeshore's community, providing nearly 24,000 jobs or 22% of total jobs. The lab is helping develop workforce-ready students and graduates for these jobs.

Regional manufacturing employers report a critical need to build a pipeline for advanced manufacturing technicians. The NorthEast Wisconsin Manufacturing Alliance (NEWMA) 2024 Vitality Index study shows over 90% of respondents indicated difficulty locating and acquiring talent. Lakeshore's mobile lab helps address those concerns.

Learning at school and the workplace makes it convenient

The mobile lab makes advanced manufacturing skills training and education more accessible to high schools and businesses throughout the Lakeshore community. The self-contained, climate-controlled lab can be equipped with:

- Programmable logic controller (PLC) machines
- Fanuc robot trainers
- Hydraulic systems
- AC/DC electrical trainers

Students can master 15 different industry-relevant skills in welding, quality assurance, CNC machine tooling, and electro-mechanical systems. These and other in-demand manufacturing skills can earn workers good wages right from the start. Lakeshore area manufacturing workers in 2023 saw an entry wage of $17.75 per hour with a median annual salary of $49,154.

Funding for the lab was provided through a $1.64 million Workforce Innovation Grant program, in cooperation with the Wisconsin Economic Development Corporation and Department of Workforce Development.

Students, schools and employers all benefit

"We're especially excited about having schools host the lab and attracting students who are interested in high-paying, stable career options," says Lucas Dulmes, Lakeshore's Associate Dean of Economic Development. "Most of the skills we can teach in the lab are hands-on and in-demand, meaning there are good jobs available."

These jobs are available today with nearly 3,000 annual openings, and demand is projected to continue. According to the Wisconsin Department of Workforce Development, demand will grow more over the next 10 years in Sheboygan and Manitowoc counties.

Lakeshore College delivers the lab & instructors

Lakeshore College provides instructors and delivers the mobile lab to the schools and businesses. Technical education teachers, other educators, and businesses interested in learning more about what Lakeshore and the lab can offer can visit gotoltc.edu/mobile-lab.

Bring Our Mobile Manufacturing Lab To You

This self-contained training space is a powerhouse on wheels.

Lakeshore College's new state-of-the-art mobile lab makes advanced manufacturing skills training more accessible to high schools and businesses throughout the lakeshore community. The lab can be equipped with:

- Programmable logic controller (PLC) machines
- Fanuc robot trainers
- Hydraulic systems
- AC/DC electrical trainers

Students can master 15 different industry-relevant, in-demand skills in welding, quality assurance, CNC machine tooling, and electro-mechanical systems.

Lakeshore provides instructors and delivers the mobile lab to you, making it easy and convenient for you to provide hands-on manufacturing skills education and training to your students.

Learn more today at **gotoltc.edu/mobile-lab**

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Big Foot Union High School's Tech Ed Numbers Are Growing

Big Foot High School District

Big Foot Union High School, located in southeast Wisconsin, is centrally located between Milwaukee, Madison, Janesville in Wisconsin and Chicago and Rockford in Illinois.

Three years ago, two very qualified teachers, a husband-and-wife team, Will Hibbard and Anna Stamschror were hired for the Tech Ed Department. The pair had been living and teaching abroad. before coming back to the states.

These two were just what the program needed. They made it enticing for students to take their classes and the program's numbers grew every year.

With a school population of 500, they average 100 students who take at least 1 of the classes offered and many take multiple classes.

Classes offered are:

- Intro to 3D Design, Principles of Engineering, Design and Build for Engineering
- Woodworking 1, Woodworking 2 Building Construction
- Metalworking 1, Metalworking 2
- Small Engines
- And a new program "Around the House"

Big Foot HS has partnered with a nearby technical college, located in Elkhorn, to allow students the opportunity to take dual credit classes and receive credits for both college and high school at the same time. Teacher Anna Stamschror stated that 30% to 40% of the students who go through the Tech Ed Program and it's classes are able to go into the trades right away,

Students apply math, science and entrepreneurial skills to the real world by designing parts, building prototypes and learning to code at the professional machine shop at Big Foot.

That kind of empowerment is what the program is all about.

Most reports indicate that Walworth County WI employs about 9,000 workers in the manufacturing industry. The most current unemployment rate for Walworth County is 2.3% for September 2024, which means that 59,900 persons are employed here. In terms of unfilled jobs in the manufacturing industry here, it's a little hard to get a firm number, but it appears between 500-600. This estimate was taken from the Job Center of Wisconsin and Indeed.

Working with industry employers, Stamschror builds pathways to connect the students to manufacturing careers. Unique programs offered help our students learn the skills needed for well-paid advanced manufacturing positions, while also completing their high school courses.

When you have buy-in by the industry and someone else believing in the students other than their teachers. It motivates students to do more.

Big Foot HS has put a major emphasis on work-based learning and each class is designed to produce economic and workforce development potential. A Section of Big Foot's mission statement is "Through diversified experiences, our students discover their potential, achieve readiness for college and careers, and succeed in a safe and caring environment."

The Big Foot HS education system is focused on producing high school graduates who are well-prepared to be productive citizens, whether they choose a career or college.

www.bigfoot.k12.wi.us

Oconto Falls Brighter Image Award

Continued from Page 24

next generation of workers in classrooms across the state. Their success speaks great volumes about the quality of education they received and their passion for giving back to the manufacturing community.

Oconto Falls High School is not only a school that prepares students for rewarding careers in the manufacturing industry but also helps actively shape the industry's future. Through our collaborative approach with partners within the community, their commitment to excellence, and our focus on cultivating future educators; they are building a brighter image for all students around the region who are interested in manufacturing and will continue to do so for years to come.

ofpanthers.com/schools/high

Filling the Need for Welders

Continued from Page 34

Student Quotes

"The opportunity to receive a welding certificate while still in high school means a lot to me, welding is one of my many passions and if I am able to receive a certificate while still in high school I would love to make welding my career. I know there are many opportunities in the welding field and being a certified welder out of high school would put me ahead in the field and a better opportunity to be able to get into the welding field directly out of high school."

—Edward LeMieux, Class of 2025
YA Apprentice, Metko Inc.

"To me, having the opportunity to receive a welding certificate means that I can get one step ahead of all the other high school students wanting to become welders. Working towards getting a welding certificate also means that the classes are much cheaper than if I were to take them in college. I am excited about having this opportunity because it makes me look good to future employers."

—Trevin Heller Class of 2026

"The opportunity to get a welding certificate is a really amazing opportunity because it allows me to get credits for welding in college… I'm excited for the fun and responsibility of being able to weld. Welding is fun for me."

—Madison Reichwald, Class of 2026
(Pictured above, left)

"The welding certificate provided through LTC is a huge jump for high schoolers like me to get ahead in their future careers…. This class means I can leave high school with a welding certificate and a high school diploma and be ready for the real world."

—Ben Gross, Class of 2026

www.kiel.k12.wi.us

DWD Awards Eight School Districts Equipment Grants to Southeast Wisconsin Schools

The Department of Workforce Development (DWD) has awarded $206,130.68 in Regional Career and Education Equipment grants to eight school districts in Southeast Wisconsin. The funding will help schools prepare students for quality jobs and address the state's skilled workforce shortage.

Schools will use the funding to upgrade career and technical education training equipment and facilities, including modernizing a manufacturing lab, launching a meat science laboratory, and providing tools for advanced culinary training.

These grants were funded by a 2020 donation by the IKEA US Community Foundation. The donation aimed to address workforce needs and improve racial equality in employment in school districts located in Kenosha, Racine, Walworth, and Milwaukee counties.

School District of South Milwaukee

Milwaukee County | $29,789.20

The district will use grant funds for a new TRAK CNC knee mill, which will modernize the school district's manufacturing lab and offer students experience working with cutting-edge manufacturing technology.

https://www.sdsm.k12.wi.us

Wauwatosa School District

Milwaukee County | $29,995.51

This grant will be used by the district to purchase 18 new Dell Precision computer workstations with monitors and accessories. They will provide students the opportunity to learn building information modeling principles and Revit, both highly sought after skills in the construction industry.

https://www.wauwatosa.k12.wi.us

Kenosha Unified School District

Kenosha County | $30,000

The district will use funds to acquire two Snap-on electricity introduction, measurement, and circuits certification kits, and a Snap-on hand tool identification and safety certification kit. These kits will help students gain skills aimed at preparing them for an array of careers.

https://www.kusd.edu

Milwaukee Public School District

Milwaukee County | $29,654.25

These funds will be used to purchase equipment to launch a meat science laboratory, including a two-door commercial freezer and refrigerator, commercial-grade Smokehouse digital smoker, a 40-pound meat mixer, motorized sausage stuffers, and a chamber vacuum sealer.

https://mps.milwaukee.k12.wi.us

Williams Bay School District

Walworth County | $30,000

The district will use funds for Amatrol Industry 4.0 Learning Systems, which deliver classroom-based skill performance assessments. The assessment evaluates how well a learner performs a hands-on skill, which includes real-world industrial components, for the closest possible experience to working on the job.

https://www.williamsbayschools.org

Lake Geneva–Genoa City Union High School District

Walworth County | $5,329.75

The district will purchase and install wall ovens to help students gain career readiness in the culinary field.

https://www.lakegenevaschools.com

Elkhorn Area School District

Walworth County | $24,541.97

The grant will be used for equipment to provide culinary students hands-on training and the opportunity to earn industry-recognized credentials from the National Restaurant Association. This includes four free-standing electric range self-cleaning convection ovens, six large countertop microwaves, and an upright freezer.

https://www.elkhorn.k12.wi.us

Oak Creek-Franklin Joint School District

Milwaukee County | $26,820

The district will use grant funds for two computer numerical control (CNC) manual knee mills and a CNC manual mill and lathe mill to create new work-based training programs with local employers and increase industry-recognized credentials.

https://www.ocfsd.org

Milton Redhawk Manufacturing

Tech Ed Department,
Milton High School

Our manufacturing and welding program has been experiencing a bit of a rebirth/ growth phase over the last two years since coming under the new instructor, Terry Schindler.

The programming for all areas of Technology Education at Milton High School have undergone a complete rewrite and rebranding process, which has resulted in major growth in all areas:

The welding and manufacturing course enrollment alone went from 158 to 220, which is an increase of 62 students in the courses since last school year. We have used this momentum to apply for grants and in-kind donations from our industry partners over the last two years.

The School District of Milton has been awarded the AWS Welding Workforce Grant for just over $24,000. Those funds were used to update some electrical and to add 6 Miller Multimatic 220 welders to the shop. This has increased the abilities within each of our welding booths taking us from 7 SMAW machines to 13 as well as adding GTAW and GMAW with the newer machines.

Another Milton instructor, Mason Pautsch, authored a DWD Workforce Development Grant, which was used to replace our old 4' x 4' PlasmaCam table with a newer larger 4' x 8' Boss CNC plasma table.

To help increase awareness and grow our program we also offered a Summer Welding Workshop for Girls. We had 26 participants who were able to learn about the field of welding and produce several take home projects along with practicing GMAW welding skills. The young women were treated to a "Lunch and Learn" session each day where they were able to learn about careers available from our industry partners. To wrap up the week-long workshop we held a roundtable event where women from industry were able to talk about their experiences within the trades and what it has meant to them.

When Mr. Schindler started, we only had 2 or 3 industry partners. He has grown that to 12 active partners, who can be called on at any given time to collaborate on projects and shop initiatives. His extensive ties to the local community have afforded him the opportunity to grow these partnerships.

We have also increased our number of Youth Apprenticeship opportunities over the last two years and are actively working with our partners to grow that part of our program even more.

Our students are the biggest beneficiaries to all of this hard work and dedication by our instructors. Students are able to take up to 6 different manufacturing and welding courses here at Milton High School. Most students will complete the capstone courses earning them the

AWS SENSE level 1 certification, which is a great achievement for our students. Being a one-to-one district our students are able to utilize computer programs like Autodesk Fusion 360 to create designs that they are able to cut on the new plasma table. This takes the students from only using their hands in the shop environment, to using technology that will be useful to them in the future as we add more CNC equipment to the shop here at Milton High School and as we continue to grow and improve our program.

www.milton.k12.wi.us

Blackhawk Technical College Unveils Innovative Manufacturing Education Center (IMEC), Boosting Local Workforce Development

Blackhawk Technical College recently celebrated the opening of its state-of-the-art Innovative Manufacturing Education Center (IMEC) on its main campus in Janesville, Wisconsin. This advanced, 45,000-square-foot facility is purpose-built to equip students with in-demand manufacturing skills, aligning educational experiences closely with real-world industry needs. IMEC represents Blackhawk's commitment to addressing workforce shortages and supporting the region's economic growth by fostering a highly skilled manufacturing workforce.

IMEC offers hands-on training in modern manufacturing technologies such as robotics, computer numerical control (CNC) machining, welding, and advanced manufacturing processes. With workspaces and technology designed to mimic current manufacturing environments, IMEC gives students firsthand experience in the skills they'll need to excel in their careers. The curriculum integrates both technical skills and problem-solving abilities, ensuring that graduates are prepared for various roles in an evolving industry landscape.

The facility was made possible through strong community partnerships and financial support. A significant $7 million investment from the Blackhawk Technical College Foundation played a crucial role in bringing this vision to life, along with contributions from local businesses, including Prent Corporation. Their support underscores the importance of IMEC in strengthening local workforce pipelines and sustaining Rock County's manufacturing sector.

According to Blackhawk President Dr. Tracy Pierner, IMEC not only embodies the college's dedication to educational excellence but also demonstrates a forward-thinking approach to workforce development.

"IMEC is more than a facility," he noted. "It's a bridge between education and employment, enabling our students to gain invaluable skills while responding to the needs of our community."

The center was designed by Angus-Young Associates and constructed by JP Cullen, both well-regarded for their expertise in educational and industrial projects, which ensures the facility meets the technical and spatial demands of modern manufacturing.

One unique feature of IMEC is its emphasis on fostering adaptability among students. As technology reshapes manufacturing, workers must be prepared to embrace new methods and tools. By simulating a dynamic work environment, IMEC allows students to hone their technical skills, expand their adaptability, and build confidence in an industry constantly transformed by innovation.

Local industries in Rock County are expected to benefit from the influx of well-trained graduates ready to take on roles in manufacturing, one of the area's most robust sectors. IMEC aligns directly with regional economic goals by meeting employers' needs for skilled workers and by supporting students who wish to enter high-paying, stable careers.

The opening of IMEC is a milestone for Blackhawk Technical College and the community it serves. As Rock County's manufacturing industry continues to grow, the center is poised to serve as a catalyst for innovation and economic resilience, fostering a workforce ready to meet current and future demands. With IMEC, Blackhawk Technical College takes a definitive step in transforming manufacturing education, bridging the gap between traditional learning and the high-tech demands of modern industry.

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Innovative Manufacturing Education Center

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