



MANUFACTURING TODAY WI™

Manufacturing and Education: Partnerships = Possibilities

Education with the Skills that American Manufacturing needs

Page 4 — Four years ago, the Chetek-Weyerhaeuser High School Technology Education Department set out on a mission to overhaul their technical education department. Since the renovations to the technical education curriculum and department were completed, students, teachers, and administration have worked closely with local manufacturing companies to develop graduates with the knowledge and technical skills to help fill the needs of the local industries.



Viking Manufacturing Products

Page 6 — In a time where the demand for college and career readiness has become a growing focus in Wisconsin public schools, the Frederic School District began exploring creative options for exposing its students to a richer variety of technical skills and experiences. In reaching out to local business owners and relevant community members, a technical education team was developed to begin planning what is known today as “Viking Manufacturing Products”



Northwoods Manufacturing

Page 4 — Northwoods Manufacturing is a student-run business where students learn how to develop a good work ethic, do advanced machining on metal and wood, and enter into the workforce in a manufacturing career. The goal of Northwoods Manufacturing is to provide students with real world manufacturing experiences that will prepare them to enter the workforce with production skills and work ethic to make them desirable candidates for industry.



Getting Things Done Cheesemaker Style

Page 8 — Monroe High School's Technology & Engineering Department offers 20 widely diversified courses. One item our Technology Education staff is most proud of is the department's ability to prioritize and complete the myriad of projects asked of them by the community and other staff members in the school district. The foundation of the department is rooted in the strong support we get from the community, administration and school board.



See More on Page 3

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Manufacturing and Education: Partnerships = Possibilities

Developing a Career in Manufacturing: Rick's Story with Kondex Corporation

Page 10 — As Quality Assurance Manager at Kondex Corporation, Rick Pribnow is a stickler for getting things right. His drive for perfection applies not only to the products and processes he inspects, but also to his mentorship of helping others achieve their goals. With the current overabundant need for manufacturing talent in Wisconsin, those pursuing these careers are faced with a lot of choices.



Three Lakes Fab Lab Going Strong

Page 10 — The Fab Lab at the Three Lakes District has been very active over the course of the past year, and we don't slow down at all during the summer! Besides teaching students during the school year from K-12 about the engineering design process, and designing and creating solutions to everyday problems or for outside people of businesses, we also have a strong community and professional practice presence in the community and the state

Follow Your Opportunities . . . Find Your Passion

Page 15 — Knowing what you want to do for your career and consistently pursuing that dream is not something that comes easily for many people. Some students go straight into the workforce, while others head off to college. Both are hoping that they will figure it out at some point. The reality is that most of us stumble across what we are passionate about through a series of opportunities that are presented to us throughout our lives.



LakeView Technology Academy

Page 12 — While many high schools across the state of Wisconsin are ordering paper, dry erase markers, and installing Promethean or Smart boards this time of year, LakeView Technology Academy is ordering 3000 pounds of steel and truckloads of acrylic. That is just one difference between a traditional high school and LakeView Technology Academy, located in Kenosha, Wisconsin, but the differences don't stop there.



Cardinal Manufacturing

Page 12 — Learning is the main focus of the Cardinal Manufacturing program at the Eleva-Strum School District. Since 2007, Cardinal Manufacturing has been providing exceptional education opportunities for students to build professional, problem solving, and career skills. The program also was designed as a localized way to address the skills gap in advanced manufacturing and to engage our students in meaningful education.

\$25,000 Fab Lab Unveiled at Mps High School

Page 18 — Milwaukee Public Schools has unveiled a new digital fabrication laboratory, known as a "fab lab," aimed at exposing students to high-level technology that develops creativity and innovation. Fab Labs are small workshops equipped with high-tech, computer-controlled technology that allows the creation of a wide array of 3-D items such as a model of a house or wooden display sign.



Eagle Fab Lab & Eagle Manufacturing

Page 16 — The Eagle Fab Lab has been so well supported because those involved see the great opportunities it can provide for both Northland Pines students as well as local community members. Our goal over the next few years is to integrate students from Business Education, Art, Technical Education and other areas to form an actual business model for Eagle Manufacturing with our students learning the various components that are within a business. Our response for this first year was very good and as a result we will be running two sections of this new class.

Bay Link Manufacturing® Summer Program at Green Bay West High School

Page 18 — Each summer, students have the opportunity to work for Bay Link Manufacturing® located at West High School in Green Bay. Andy Belongia, Bay Link Manufacturing® Coordinator, hires a few students each year to keep the shop running through the summer months. "There is no formal instruction during the summer, the students just know what we need to do and how to do it," said Belongia. "They punch in; punch out just like a regular job. It's more laid back in the summer and for that reason we need to have the right students."



Education With the Skills that American Manufacturing Needs



Chetek-Weyerhaeuser Area School District

Four years ago, the Chetek-Weyerhaeuser High School Technology Education Department set out on a mission to overhaul their technical education department. At that time, almost one third of Chetek-Weyerhaeuser's graduating seniors had no plans to continue their education after high school. To better prepare CWHS students with the skills and education that the current American manufacturing industry needs, the technical education curriculum, shop and equipment received a complete upgrade. Now nearly four years later, students are reaping the benefits as they prepare for the transition to post-secondary life.

Since the renovations to the technical education curriculum and department were completed, students, teachers, and adminis-

tration have worked closely with local manufacturing companies to develop graduates with the knowledge and technical skills to help fill the needs of the local industries. Those partnerships have led to a number of new and exciting opportunities that will allow students to get a head start on life after high school.

In December, the CWHS technical education department received an \$8,500 grant from a manufacturing foundation. The funds can be used for student scholarships, SkillsUSA, and NIMS industry certification testing. The foundation's goal is to introduce students to careers options in the machine tool and manufacturing industry. Two years ago, CWHS purchased a Haas TM1-P CNC machining center. Without the generous support and educational discounts offered by the factory retailer, a small school like CWHS would be unable to purchase such a piece of equipment.

Regional and local partnerships have also yielded great success. A company near Chippewa Falls, and another in Chetek have continued to offer scholarships for any student wishing to continue their education in the machine tool industry. CWHS currently has

one former graduate working at the Chetek facilities. He received a scholarship from them and will graduate from a technical college machine tool program this year.

This will be the third year of Chetek-Weyerhaeuser's manufacturing youth apprenticeship program, which has grown from one student in its inaugural year to four last year. Two students are working at a local company that manufactures food-processing equipment sold world-wide. These two individuals are gaining vital real-world experience machining and welding stainless steel products. A local Chetek manufacturer of aluminum docks and a custom machine shop, has stepped up to hire one of CW's students as a youth apprentice aluminum welder. Another business located in Bloomer, manufactures commercial exhaust systems as well as other custom welding fabrication; they, too have hired a youth apprentice for their welding production line. These apprenticeship programs continue to expand and have grown in popularity. They offer students real-life, paid work experience while providing them with technical skills and knowledge. The program also allows a student to try out an occupation before making a decision about the direction of their post-secondary education.

The SkillsUSA chapter is now in its eighth year at CWHS. The students have competed in many events and continue to see success. Students have taken first place medals last year in the Welding and Job Skills Demonstration contests. The club has also had many top-three finishers. As students compete they showcase

their strengths, but they also discover their deficits, which forces adjustments to the curriculum to make sure the content being taught matches the skills that industry needs.

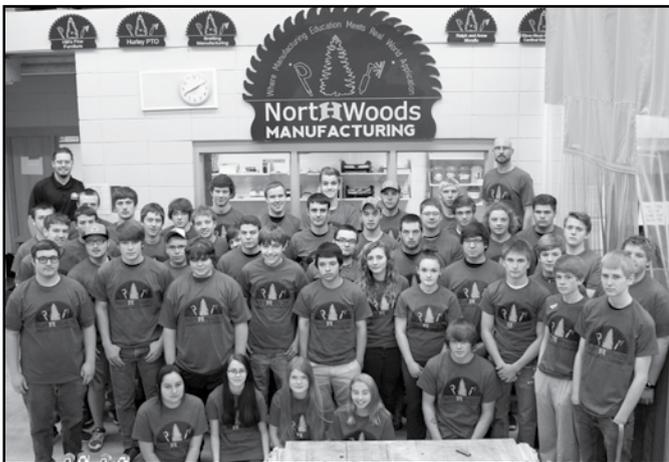
In the spring of 2016, CWHS graduated the first three students earning American Welding Society SENSE Level I welding certificates. CWHS is one of the only high schools in the state to graduate students from the SENSE program. Only students who complete all of the advanced welding courses have the opportunity to earn a certificate, and not all students who take the classes will become certified. It is a very rigorous process that involves passing several written tests as well as performance welds using multiple welding processes. One of our graduates from last year actually chose to forgo basketball and other traditional high school activities his senior year in order to attend technical school welding classes through youth options. This student has now completed his one-year welding degree and has also passed his pipe welding certification.

All of these opportunities have been integral for CWHS students as they transition into their post-secondary life and have given them a head start to their success in the industry.

www.cwasd.k12.wi.us
(715) 924-2226



Northwoods Manufacturing



Jacob Hostettler, Tech. Education Teacher
Hurley High School

Northwoods Manufacturing is a student-run business where students learn how to develop a good work ethic, do advanced machining on metal and wood, and enter into the workforce in a manufacturing career. Northwoods Manufacturing was made pos-

sible when Hurley High School's technical education department underwent a complete overhaul. With support of the industrial partners, the school purchased manufacturing equipment. Students helped by building new welding tables, repainting the walls, and redoing the floor. The goal of Northwoods Manufacturing is to provide students with real world manufactur-

ing experiences that will prepare them to enter the workforce with production skills and work ethic to make them desirable candidates for industry.

Northwoods Manufacturing is in its fifth year of operation, and has seen some new improvements over the years since the beginning such as the addition of more digital

read-outs for the lathes. Improvements have also been made on the mills with the purchase of power feed for the axes, KURT work-holding vices, and even a new mill from SHARP. Northwoods also has a Browne & Sharpe coordinate measuring machine for precise quality control, and other new measuring tools. Another change to the program since the start is teaching the National Institute of Metalworking Skills curriculum. There are around 15 students that are certified in various levels of the NIMS credentialing system.

Student work and partnerships with local industry has increased since its start, seeing business in specialty parts for the paper and mold industries, and is beginning to make parts and tools for the community. Northwoods has also expanded its business from machine tool operations into welding and fabrication by creating custom trailers, bike racks, and even a lightweight, aluminum framed, ice shack.

With the start of 2017, students from Hurley and surrounding areas started their first year in the FIRST Robotics competi-

tion. Through the help of local industries, students are shown engineering practices and programming to build their own robot. The Northwoods Manufacturing shop is a great place for the construction and development of the robot, with all the necessary resources and help required.

Looking into the future, Northwoods plans to move their operations to a larger facility, purchase another CNC mill, and more fabrication equipment. Northwoods also plans to continue the NIMS Certification curriculum with the goal of certifying 70% of all students with at least 4 level one certifications. One of Northwoods Manufacturing instructors Jacob Hostettler also hopes to add community education classes to the program.

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Viking Manufacturing Products



Duane Krueger
Technical Education Teacher
Frederic School District

In a time where the demand for college and career readiness has become a growing focus in Wisconsin public schools, the Frederic School District began exploring creative options for exposing its students to

a richer variety of technical skills and experiences. In reaching out to local business owners and relevant community members, a technical education team was developed to begin planning what is known today as “Viking Manufacturing Products” (VIP). Representatives from local businesses, the community, and a technical college played a

vital role in the development of the VIP programming Frederic offers its students today. The collaborative team toured local manufacturing companies, developed business plans, and scheduled a tour visiting a similar program in the Eleva-Strum School District, known as Cardinal Manufacturing. By the spring of 2016, the vision behind VIP started coming to fruition as local partnerships and funding avenues quickly developed. VIP coursework began in the fall of 2016 with thirteen VIP students designing and producing wood products with a brand new CNC Router. In collaboration with Frederic’s Business Department, VIP students are now responsible for setting up work spaces, organizing and maintaining necessary tools and materials required for individual jobs, training in the SolidWorks CAD and VCarve CNC programs, as well as the design and marketing of business promotions for VIP Manufacturing. The Frederic School District was thrilled to announce the birth of its new business and technical education model and opportunities. Although very young in its development, VIP maintains innovative goals in creating real-world, vocational, and technical experiences for its students. As Frederic begins focusing on the future of

VIP, it would seem that all can collectively agree that the possibilities are endless and lies within the creativity of its own students.

VIP Students

“VIP was a big influence on my decision to attend a university for a degree in Manufacturing Engineering. The hands on involvement and self-paced environment offered through VIP was a great opportunity for my learning style.”

“VIP helped me make a decision to attend WITC for a career in Machine Tooling Techniques. Without my experience in VIP, I know I would not have made this career choice for myself.”

www.frederick.k12.wi.us
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WISCONSIN MANUFACTURING MONTH

Looking for More than Just a Job? Make Manufacturing Your Career.

Each year, we celebrate Manufacturing Month in October. As the state’s largest economic sector, manufacturing plays an important role in Wisconsin’s heritage. However, things have changed thanks to technology and innovation. In short, this is not your father’s manufacturing. Instead of a career that is dark, dirty and dangerous, manufacturing today is high-tech, high-skill and high-pay.

While Wisconsin celebrates manufacturing each year in October, truthfully its impact is felt every single day of the year. At Wisconsin Manufacturers & Commerce (WMC), we work with local businesses, chambers of commerce, K-12 schools, tech colleges and universities to promote the great careers available in manufacturing. We do this through programs like the Coolest Thing Made in Wisconsin, the Future Wisconsin Project and Wisconsin Business World.

To learn more, visit wmc.org.

WMC



According to a recent survey, 77 percent of employers in Wisconsin are having trouble finding qualified workers for the positions they have available. That is why the WMC

Foundation started the Future Wisconsin Project in partnership with organizations like the Department of Workforce Development, the Wisconsin Technical College System and others. What will Wisconsin look like in 20 years and how will we tackle challenges like the skilled worker shortage? Visit FutureWI.org to find out.

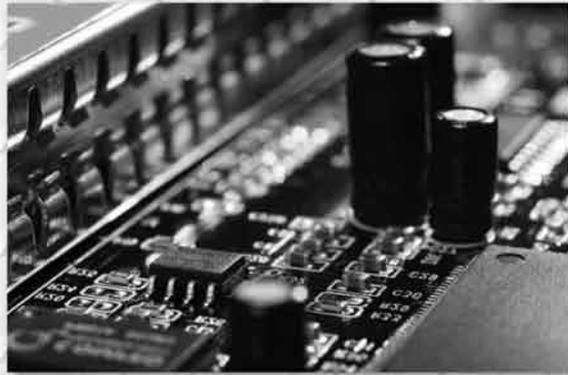


WIBusinessWorld.com

The Wisconsin Business World Program is an education program designed to teach high school juniors going into their senior year the values of entrepreneurship, financial literacy, career planning and the free-market economic system.

To host a Mini-Business World program at your high-school, contact Jack Orton at 608-661-6904 or jorton@wmc.org.

MANUFACTURING DAY EVENTS ALL ACROSS WISCONSIN IN OCTOBER



MFG DAY is an annual celebration of modern manufacturing during which manufacturers invite their communities — including students, educators, businesspeople, media, and politicians — to their facilities in a collective effort to educate visitors about manufacturing career opportunities and improve public perceptions of manufacturing.

Why We MFG DAY

Manufacturing Day is all about celebrating manufacturing. By providing an opportunity to focus collective attention on manufacturing, MFG DAY aims to:

- 1. Empower manufacturers**
- 2. Change public perceptions of manufacturing**
- 3. Introduce people to manufacturing careers**
- 4. Draw attention to the roles manufacturers play in their communities**
- 5. Underscore the economic and social significance of manufacturing**

MFG DAY™

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Getting Things Done Cheesemaker Style



Mass production stations in the Woods Manufacturing Lab

Monroe High School Technology & Engineering Department

Monroe High School's Technology & Engineering Department offers 20 widely diversified courses. We have introductory classes, PLTW engineering classes and manufacturing classes articulated with local technical colleges. One item our Technology Education staff is most proud of is the department's ability to prioritize and complete the myriad of projects asked of them by the community and other staff members in the school district. Members of the department along with their students are being asked time and again to engineer, build, repair, and donate products to various community organizations and the school district. This, in turn, gives students real world problem solving skills, manu-

The foundation of the department is rooted in the strong support we get from the community, administration and school board. At Monroe, we are fortunate to have great community partnerships with many businesses and charitable organizations.

facturing skills and soft skills to complete the projects presented to them. These projects come to life in the school's extensive manufacturing and construction labs. The department also leans on the teamwork of the three instructors working together in their own specialized disciplines to complete these projects.

The foundation of the department is rooted in the strong support we get from the community, administration and school board. At Monroe, we are fortunate to have great community partnerships with many businesses and charitable organizations. Our industry connections support us by donating materials, time and guidance for our programs. Through these relationships we are able to secure the resources for our students to further their experiences in the department.

In both of our manufacturing courses, we do mass production runs of various products. While competing these products, students learn hands on skills associated with the manufacturing tasks of the product being built. They are accountable for producing accurate parts, which in turn lead to a reliable and profitable end product. While completing these tasks, they develop and hone the soft skills necessary for future employment in associated careers. The students deter-



Vegetable washing machine built for a community farmer.

mine the number of products needed and then add in a few extra. These extras are then donated to various nonprofit organizations in the community. The community organizations that receive the donated products use them in silent auctions to raise funds for their needs. Students gain a sense of pride through giving back as the projects are being completed.

As with all districts, budgets are tight. The department and students take on the task of helping with district facilities, classroom projects, and maintenance needs. The instructors work with administration, Director of Buildings & Grounds and various school employees to fulfill the needs that are presented. Some of the projects the metals manufacturing classes have tackled include, track carts, softball carts, utility trailer, rebuilding district snow blower units, classroom stools, handrail systems, performing arts racks and multiple smaller repair jobs. The Woods manufacturing classes and construction classes have also been given their share of work around the district. The Woods Manufacturing classes have built various types of bookshelves and student storage cubbies for the schools in the district. The Construction classes have built Phy Ed. storage cages, Performing Arts Center storage mezzanine, and a two story baseball pressbox.

Our goal for the future is to continue to provide the community and our district with the products and services from our program.



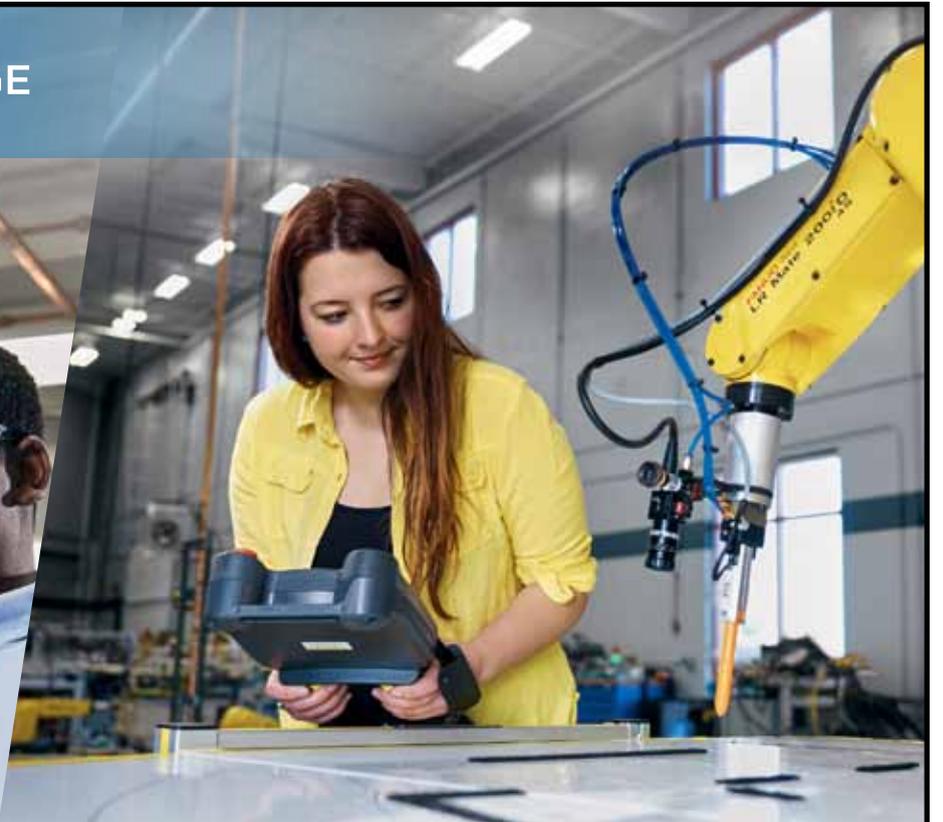
Student welding in the mass production unit.

This is one of the best ways to build the technical skills in manufacturing and give the students a sense of pride when done. Real life jobs and projects that make an impact in our school district and the community we live in.

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Developing a Career in Manufacturing:

Rick's Story with Kondex Corporation



As Quality Assurance Manager at Kondex Corporation, Rick Pribnow is a stickler for getting things right. His drive for perfection applies not only to the products and processes he inspects, but also to his mentorship of helping others achieve their goals. With the current overabundant need for manufacturing talent in Wisconsin, those pursuing these careers are faced with

a lot of choices. Pribnow offers his advice on getting started, developing a career, and what to look for in an employer.

You Don't Need a Four-Year Degree to be Successful.

Kondex, and many manufacturers, offer tuition reimbursement and on-the-job training to help you succeed right out of high school or in conjunction with earning a degree. "I started working for Kondex part time the summer after I graduated high school, and continued working part time while studying Industrial Engineering," stated Pribnow. "This time allowed me to understand and apply what I was learning in school to a real-world manufacturing environment, which proved a significant advantage once I'd obtained my degree. It wasn't long before I was promoted to an operations shift leader."

Keep an Open Mind.

Careers develop faster with experience, but when you're first starting out that experience can be limited. Companies like

Kondex that offer many different paths tend to see higher rates in career development. But candidates must remember to keep an open mind to varying roles and responsibilities. "Get your foot in the door, be willing to try new tasks, and develop your strengths," Pribnow advises. "I started with Kondex in 2001 as a machine operator. I've worked all three shifts in numerous roles, and steadily progressed to my current managerial position. Kondex saw my initiative and work ethic, and worked with me to grow the experience needed to fulfill my goals."

Look for an Employer That Values You.

Today's manufacturing looks a lot different than that of past generations, and the best manufacturers have a culture that values associates. Going beyond strong benefits and compensation packages, Kondex has built its culture around its team. "Some of the things I really enjoy about working at Kondex are the continuous improvement efforts, investments in people and

processes, and a management team that is approachable and looks out for you," said Pribnow. "We've enjoyed bonuses in all but 1 of my 16-year tenure and I've never seen a mandatory layoff, despite some economic downturns. That's very telling of a team-driven culture where top-level decisions take more than the bottom line into account."

Kondex, a manufacturer of cutting and wear-resistant components, uses the latest technologies and manufacturing innovations to strengthen product performance and longevity. For original equipment manufacturers, this elevates market share; for end users, it extends the life of their machinery. With most of its products agriculturally based, these efforts support its mission of helping to feed and fuel the world.

For additional information, please visit Kondex.com.

Three Lakes Fab Lab Going Strong



Al Votis
Three Lakes School District

The Fab Lab at the Three Lakes District has been very active over the course of the past year, and we don't slow down at all during the summer! Besides teaching students during the school year from K-12 about the engineering design process, and designing and creating solutions to everyday problems or for outside

people of businesses, we also have a strong community and professional practice presence in the community and the state.

All year long, the lab is open to community members on Tuesday and Thursday nights. Community members (anyone in the district) are able to come in, purchase a semester membership, and learn how to use the software and hardware that are present in our lab. These software packages include, Adobe Illustrator, for 2D design, Vectric Aspire, for 2.5 D design, and SolidWorks, for 3D design. They are then able to take their designs and bring them to life with a vinyl cutter, laser engravers, 3D printers, a mini-mill, a CNC router, or a CNC plasma cutter. The lab gets to be a very busy place with some nights exceeding 20 people in to be able to work and learn!

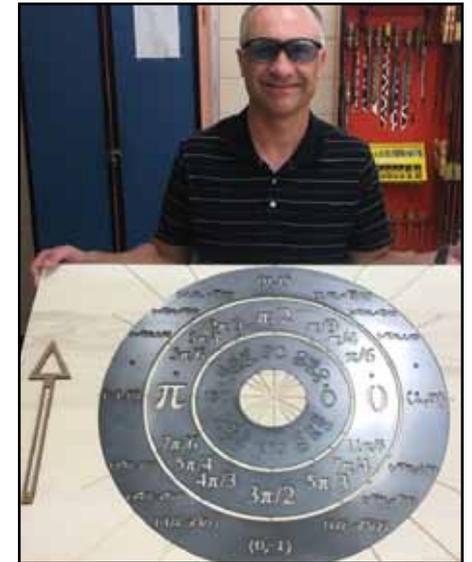
This summer also saw opportunities for the second year during the summer for both local and visiting students with a Maker Camp that lasted for three days in August. Thirteen students attended the event this year, and worked on utilizing the lasers, 3D printers, and programming arduino boards. The event was held in conjunction with the Three Lakes town library, and the local model railroad club pitched in with a real world challenge dealing with programming railroad lights.

Besides students and community members getting to have all the fun, Three

Lakes was also in the third year as a training center for teachers to learn more about fab labs and how to do utilize it. Two different summer sessions were offered, one in June and one in July for teachers from districts setting up their labs to get training in now only how to use the software and hardware, but incorporate it into their curriculum. Teachers from all over the state have been coming to Three Lakes for the two weeks classes, and not only are they gaining experience and all of the curriculum that we use, but we are creating a community of fab labs and users that can work together to help each other expand and continue to improve teaching and learning for students.

One other training session occurred at Three Lakes as well, it was the Summer 2017 Collaborative Curriculum for Engaged Learning project in partnership with the University of Wisconsin-Stout. Teachers from Three Lakes, Florence, and Rhinelander eagerly participated in a challenge that helped them see how the tools in the lab may be used to solve a local problem. The Fab Lab mantra is; empowerment, education, problem solving, job creation and invention. Teachers worked together at building both curriculum, physical objects and relationships.

The Fab Lab at Three Lakes is a busy place all year long, as we strive to become a place for people to learn, share, create and



have fun! For more information, please visit our web page at <https://sites.google.com/a/threelakesd.k12.wi.us/fab-lab-three-lakes/>, or catch us on facebook at Fab Lab Three Lakes!

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LakeView Technology Academy

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Bethany Ormseth, Ed.D, Principal
LakeView Technology Academy
Kenosha Unified School District

While many high schools across the state of Wisconsin are ordering paper, dry erase markers, and installing Promethean or Smart boards this time of year, LakeView Technology Academy is

ordering 3000 pounds of steel and truckloads of acrylic. That is just one difference between a traditional high school and LakeView Technology Academy, located in Kenosha, Wisconsin, but the differences don't stop there.

LakeView Technology Academy opened in 1997 and is a magnet school within Kenosha

Unified School District. The mission of the school reveals the focus: Empower students to succeed by providing in-depth technical educational experiences that prepare students to be competitive in the changing marketplace. The technical experiences and the connection to the marketplace are at the core of LakeView.

To achieve the mission of the school, LakeView uses a strong connection our local technical college. The collaboration between Kenosha Unified School District and the technical college allows for full time college instructors leading classes to high school students. This high level of expertise allows Lakeview to offer classes like Robotics, Computer Integrated Manufacturing, and CNC Technology.

This partnership goes beyond instructors, the facilities are also shared. During the day, the school building is a K12 high school and at



night, the building becomes a technical college campus for them. This ensures our high school has cutting edge technology, updated equipment and the lab environment that is aligned with the needs of today's workforce needs.

There are three programs at Lakeview, or tracks, within the school of 400 students. Each student selects either the Engineering and Manufacturing track, the Biomedical track, or the

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Cardinal Manufacturing



Eleva-Strum School District

Learning is the main focus of the Cardinal Manufacturing program at the Eleva-Strum School District. Since 2007, Cardinal Manufacturing has been providing exceptional education opportunities for students to build professional, problem solving, and career skills. The program also was designed as a localized way to address the skills gap in advanced manufacturing and to engage our students in meaningful education. We are exposing students to the potential of manufacturing-related careers, sharpening their technical skills, and instilling the soft skills and professionalism that employers crave.

Essentially, Cardinal Manufacturing is a student-run machine shop. When you hire Cardinal Manufacturing for your machining, welding, or fabrication project you are helping teach valuable life skills while in return receiving a quality fair-priced product.

Cardinal Manufacturing is made possible because of the support of many groups, businesses, organizations and individuals. The ongoing support has benefitted many

students and our regional economy, as well. As an organization, Cardinal Manufacturing extends its gratitude to the Eleva-Strum School District and the many individuals, businesses, and organizations who have contributed to the success of this program.

The Program

Cardinal Manufacturing is a year-long two credit class which offers more than a standard classroom instruction. Students in this class gain the real life experiences of problem solving, running a business, and working in professional career roles. Students must apply

to be part of this program and manufacturing employees have successfully completed both Metal Working I and II. The application process includes creating and submitting a resume, project portfolio, and a letter of recommendation. Once accepted, student participants are assigned a role that may include:

- Quoting jobs
- Ordering materials
- Manufacturing parts
- Quality control and inspections
- Shipping product
- Receiving product and materials
- Invoicing
- Customer service
- Accounting
- Marketing
- Maintaining work hours

Besides the great experience gained, the students receive a profit sharing check at the end of the school year based upon number of hours worked and other measurement tools. Only a portion of Cardinal Manufacturing earnings are paid to students after expenses and upcoming needs are covered. Most of the money earned supports the purchase of materials, equipment and facility needs to continually grow and improve Cardinal Manufacturing.

From Colin Nyseth, 2017 Graduate and former Production Manager for Cardinal Manufacturing

"To obtain a position in Cardinal Manufacturing you first have to create your resume and go through an interview process, much like applying for a real job. Besides being able to make money, students learn business skills and the technical skills required for a job in manufacturing. The class's main focus is to instill soft skills within students, as these skills are transferable to any career choice. With input from outside employers, teacher Mr. Cegielski focuses the class around creating good people and good employees first, knowing the technical skills will follow. In addition to teaching soft skills, Mr. Cegielski also helps students set short and long term goals that coincide with larger shop goals."

"Cardinal Manufacturing has come a long way since it started in 2007. The shop itself has grown in size as well as popularity. Working with industry leaders, Cardinal Manufacturing has

Continued on Page 17

Quanex

building products

Quanex is an industry leading manufacturer of engineered materials and components for building products sold to Original Equipment Manufacturers. Our Rice Lake, WI facility has been manufacturing window, door and fireplace products for over 40 years, and is home to our custom Rolltrusion® department.



Positions and Skills :

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- Biological Engineers
- Biological Technicians
- Career and Technical Education Teachers
- Cargo and Freight Agents
- Chemical Engineers
- Chemical Equipment Operators and Tenders
- Chemical Plant and System Operators
- Civil Engineering Technicians
- Computer Programmers
- Computer User Support Specialists
- Database Administrators
- Electrical Engineers
- Engine and Other Machine Assemblers
- Environmental Science and Protection Engineers
- Financial Quantitative Analysts
- Forest and Conservation Technicians
- Industrial Engineers
- Industrial Machinery Mechanics
- Industrial Safety and Health Engineers
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- Installation, Maintenance, and Repair Workers
- Hydroelectric Plant Technicians
- Logistics Analysts
- Logisticians
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- Mapping Technicians
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- Medical and Clinical Laboratory Technologists
- Medical Equipment Repairers
- Medical Scientists
- Nanosystems Engineers
- Nuclear Engineers
- Nuclear Power Reactor Operators
- Occupational Health and Safety Specialists
- Outdoor Power Equipment and Other Small Engine Mechanics
- Paper Goods Machine Setters, Operators, and Tenders
- Precision Instrument and Equipment Repairers
- Robotics Engineers
- Robotics Technicians
- Sawing Machine Setters, Operators, and Tenders, Wood
- Semiconductor Processors
- Shipping, Receiving, and Traffic Clerks
- Software Developers, Applications
- Soil and Water Conservationists
- Statisticians
- Telecommunications Line Installers and Repairers
- Textile Cutting Machine Setters, Operators, and Tenders
- Tool and Die Makers
- Transportation, Storage, and Distribution Managers
- Water/Wastewater Engineers
- Welders, Cutters, Solderers, and Brazers

Please note: This represents a broad and not conclusive list of careers within the world of manufacturing.

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Follow Your Opportunities . . . Find Your Passion



Knowing what you want to do for your career and consistently pursuing that dream is not something that comes easily for many people. Some students go straight into the workforce, while others head off to college. Both are hoping that they will figure it out at some point. The reality is that most of us stumble across what we are passionate about through a series of opportunities that are presented to us throughout our lives.

Meet Jecora, Creative and Analytical

Working with hair and makeup has been a passion of Jecora's for as long as she can remember. As a third-year student she realized that college wasn't the best option for her so she left to pursue her passion in cosmetology. As her career grew, Jecora became frustrated that utensils she had spent thousands of dollars on for her job kept breaking. She decided that she needed to figure out how to design them better based on her experience utilizing those tools for her job. This desire led her to pursue her associate's degree in Mechanical Design Technology at MATC in Milwaukee and then to an internship with one of the major manufacturers of hair tool products in the United States. During her internship, she worked on the design of clippers, blow dryers and curling irons.

After her internship, she was looking for a full-time job to utilize her degree as a designer. She applied at TLX Technologies

because she was drawn to the culture of a small company where things would be more personal with opportunities to learn and increase her skills. One of the most exciting aspects of the job for Jecora is to see the products being manufactured that she helped design.

Her advice to students? Be who you are and don't resist change. Take risks early as some of the most exciting opportunities come where you least expect it—and pay attention in math! If a career in engineering and manufacturing is what you want, don't shy away from math because it seems hard. Find a great mentor and stick with it.

Meet Chris, Intern to Design Engineer

Growing up Chris spent a lot of time working with his dad on various projects. He soon realized that he had a talent for solving problems and doing things with his hands. As he began thinking about what he should do for a career, his dad suggested that he might want to consider engineering as a course of study. As Chris weighed the options available to him, he decided that mechanical engineering looked like it would be a good fit. He entered the program at UW Milwaukee where he happily continued to graduation.

While in school, Chris attended a career fair at school where he was introduced to an individual who helped him get an interview at TLX Technologies. The interview led to an



engineering internship that lasted for several years. During the internship, he found that he really liked the projects that the engineering team was working on. Chris joined TLX Technologies as a design engineer after graduation.

The first project Chris worked on was the design of a component for a major consumer brand here in the United States. The project provided something he really enjoyed: a combination of computer design work, hands-on prototype builds and lab testing. When asked, Chris said one of the most exciting things about his job is seeing a component he designed being used in the real world by consumers. His component design will enter the market in 2018.

His advice to students? Take advantage of the opportunities you have. Put in the work at the beginning,

and you will reap the rewards later in life. Do your best, and don't be afraid to fail.

TLX Technologies is excited about the future of manufacturing here in the United States. Regardless of what career path you choose to pursue, there are many opportunities open to you in the manufacturing sector right here in Wisconsin. We would invite you to explore the options that are available to you through classes, programs and internships offered through your school or community. If you have any questions, please contact TLX at pr@tlxtech.com, or visit our website at www.tlxtech.com.

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Eagle Fab Lab and Eagle Manufacturing



Tim Lehman
Northland Pines School District

By now you may have heard the Northland Pines School District received a grant to implement a Fab Lab. What is a Fab Lab? A Fab Lab is a space dedicated to creativity, creative thinking, and invention utilizing digital fabrication. A Fab Lab provides anyone with the opportunity to design and create something. Our lab includes such digital fabrication as laser engraving, 3D printing, dye sublimation, vinyl cutting/printing, Computer Numerical Control (CNC) contouring and engraving, and CNC plasma cutting.

Our newly remodeled lab is complete and we are busy touring students, faculty, school administrators, state officials, and community groups showcasing the Eagle Fab Lab. Much of the Fab Lab initiative was funded through a state grant, as well as community group donations and school district funds. The Vilas County Economic Development Corporation and the Eagle River Chain of Lakes Association are two local groups that contributed financially, and a big, "Thank You!" goes out to them!

The Eagle Fab Lab has been so well sup-

ported because those involved see the great opportunities it can provide for both Northland Pines students as well as local community members.

The word is quickly spreading on another program we are developing in the Technology Education Department, Eagle Manufacturing. Eagle Manufacturing is a small group of students that have dedicated countless hours to developing a student based enterprise. The "business" within the school is designing and building high quality products for other businesses and organizations within our community. Those projects range from employee and event awards laser engraved on wood plaques to specialized parts being manufactured for local businesses that have needs that are not met elsewhere locally. This program is proving to give students real world experiences in design, product development, manufacturing, and problem solving, while also learning soft skills in relation to customer communication, quality control, and teamwork. Students are also responsible for receiving orders, distributing and tracking work orders, and meeting deadlines while also creating invoices and accounting for expenses and profits.



We are starting Digital Manufacturing class that this fall that will be centered in the Fab Lab. Our goal over the next few years is to integrate students from Business Education., Art, Technical Education and other areas to form an actual business model for Eagle Manufacturing with our students learning the various components that are within a business. Our response for this first year was very good and as a result we will be running two sections of this new class.

The Eagle Fab Lab and Eagle Manufacturing are on the leading edge regarding both facility and equipment, rivaling top high schools in the state as well as mirroring industry standards. Both will be able to offer incredible opportunities to our students as well as our community members, and our students will have the potential to leave high school very well prepared for both jobs in industry and advanced education and training. For more information on the Eagle Fab Lab or Eagle Manufacturing, please contact Mr. Lehman or Mr. Fuller.

www.npsd.k12.wi.us
(715) 479-6487



The Community Nights for the Fab Lab that have occurred throughout the summer have been a great experience for all that have attended. Community members came in and saw what the Fab Lab is capable of and learned how to use the different machines and processes from trained and professional educators.

- May 30th was an Open House
- June 13th the focus was Vinyl Cutting/Printing
- June 27th the focus was Sublimation and the CNC Router
- July 13th the focus was the Lazer Engraver
- July 27th the focus was 3D Printing and Vinyl Cutting
- August 15th the focus was on the Plasma Cutter

We will continue to have at least two community nights each month during the school year.

Once individuals are familiar with the processes they want to learn, they will be able to design and create their own masterpieces.

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LakeView Technology Academy

Continued from Page 12



Information Technology track after his or her first year. Students could even gain exposure to more than one program during the high school years. Each of these tracks ends with capstone courses taught by college faculty of. This partnership is essential for the success of LakeView. Lakeview students have the ability to graduate from high school with up to 40 technical college credits.

LakeView has maintained a 98% plus graduation rate with many students directly enrolling in four year universities or technical colleges. The skills the students at LakeView walk away with are aligned with many high demand job opportunities. Students from LakeView graduate well

along the path of preparation for careers such as: automated manufacturing systems, CAD, robotics, civil engineering, electrical engineering, industrial engineering, information technology, biomedical engineering and many more.

The Kenosha region is experiencing great growth from business and specifically manufacturing companies building in our area. The pipeline of workers for these companies

flow through our technical college system but they can only do so much. Our technical colleges need the support from K12 school systems to fill that pipeline and LakeView has aligned with the needs of the workforce today and are supporting our community and as well as the needs of our local businesses.

lakeview.kusd.edu
(262) 359-8155

Cardinal Manufacturing

Continued from Page 12

added a great deal of CAD software and other equipment, including a CNC lathe and two brand new Haas CNC milling machines. We have received a lot of media attention, including two episodes on the Titan American Built television show. We have also benefited from publications like Manufacturing Today WI, Modern Machine Shop, and several others. They have all helped to draw attention to the program and spread the word to other schools and industries that this model of education is working here and can work anywhere in the country. Because of this, we have held several workshops for other schools on how to replicate a similar manufacturing program in their own districts."

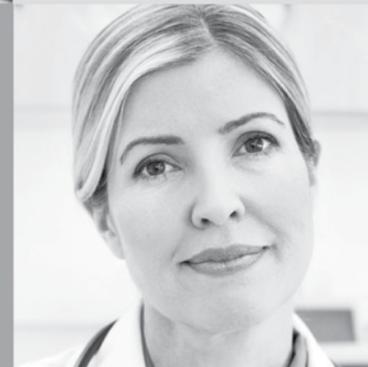


From Cardinal Manufacturing:

Many teachers and administrators contact Cardinal Manufacturing each year to learn how to create a program like it in their districts. We will be holding a workshop on Friday, February 9, 2018 to show you how we started and how we do things today.

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Bay Link Manufacturing® Summer Program at Green Bay West High School



Alex Styczynski
School & Community Relations Intern
Green Bay Area Public Schools

Each summer, students have the opportunity to work for Bay Link Manufacturing® located at West High School in Green Bay. Andy Belongia, Bay Link Manufacturing® Coordinator, hires a few students each year to keep the shop running through the summer months.

The Green Bay Area Public School District and its partners developed Bay Link Manufacturing® in 2014. Juniors and seniors at any Green Bay Area Public School District school are eligible to apply for entrance into the program. Students receive high school credit as well as college credit from NWTC upon completion of the program.

This student-run manufacturing job shop provides students with opportunities to complete projects for local businesses in areas of welding, machine fabrication, and metals. Some of the equipment capabilities include; design/software, CNC machining, manual machining, cutting and welding.

Instructor Andy Belongia has been with the District for 16 years. "There is no formal instruction during the summer, the students just know what we need to do and how to do it," said Belongia. "They punch in; punch out

just like a regular job. It's more laid back in the summer and for that reason we need to have the right students."

Students get hands on experience in learning to produce materials and projects efficiently, effectively and accurately. There is also a business side to Bay Link Manufacturing® where students talk to customers and make sales calls. "We do charge for the work we do, so the money that we make goes back into the program and the students then receive a scholarship based off our profits," said Belongia.

Belongia's favorite part about the program is the summer aspect of it. "We can tell our customers that we don't close once the school year is done. We can continue to keep these relationships going all summer and continue to do the work for them," said Belongia.

This summer, the students have been working on engine stands for diesel truck engines. A local technical college and partner is putting up a building for their transportation area and needed new engine stands for their diesel program. They asked Bay Link students for help in fabricating the parts.

West High School senior, Jack Delsart says, "You learn a lot about yourself. It's hard to explain what you learn; you actually have to do it in order to figure it out." Delsart's favor-

ite part about the program is the skill set and the people.

Delsart says that having a program like Bay Link Manufacturing® offered at West High School is fantastic. "I like challenges so coming to this is actually a big challenge and I like comprehending those challenges," said Delsart. "A lot of people think that this stuff is easy, it's not." Delsart plans to use the skills learned at Bay Link Manufacturing® in his future.

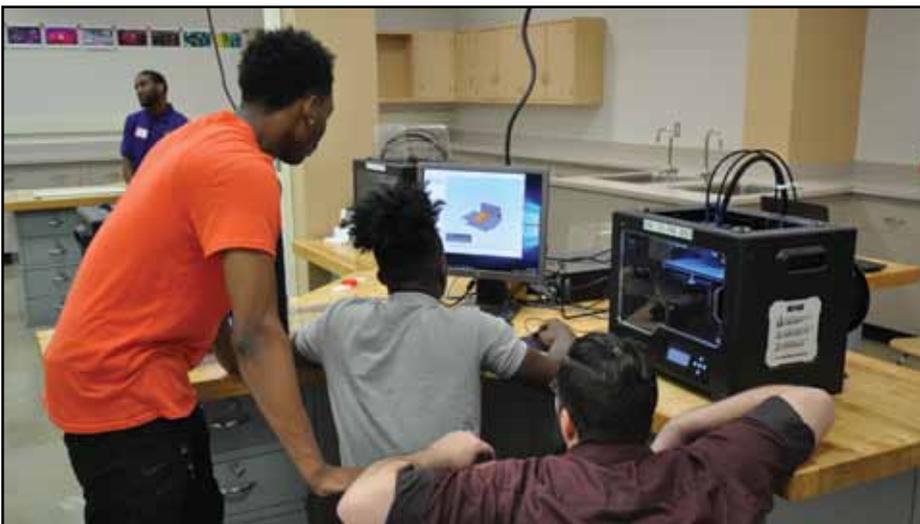
Bay Link Manufacturing®, both as a course and summer employment, is a great addition to a student's resume. By maintaining this program during the summer, students continue to gain experience in the areas of machining and manufacturing, which is important for employers who are looking to hire individuals with prior work experience.

To learn more about Green Bay West's manufacturing program, visit gbaps.org/baylinkmanufacturing and follow them on Facebook at [facebook.com/BayLinkManufacturing](https://www.facebook.com/BayLinkManufacturing).

www.gbaps.org
(920) 448-2000



\$25,000 Fab Lab Unveiled at MPS High School WEDC Grant Brings New Technology to Washington High School



Milwaukee Public Schools

Milwaukee Public Schools has unveiled a new digital fabrication laboratory, known as a "fab lab," aimed at exposing students to high-level technology that develops creativity and innovation. Fab Labs are small workshops equipped with high-tech, computer-controlled technology that allows the creation of a wide array of 3-D items such as a model of a house or wooden display sign.

The equipment at Washington High

School of Information Technology was purchased using a \$25,000 grant from the Wisconsin Economic Development Corporation (WEDC). Equipment includes:

- Two vinyl cutters
- Three 3-D-printers
- A computer numerical control mill
- A 3-D scanner
- A laser engraver, plus the computers to run each of them

Incorporating Fab Labs into educational programs of study has been shown to increase student engagement by providing hands-on opportunities to solve real world problems. In Fab Labs, students learn because they want to, they develop technical skill that builds pride in mastery, improves teamwork, teaches critical thinking, persistence and other 21st Century employability skills. MPS plans to create more Fab Labs within the district.

Milwaukee Public Schools is charged with ensuring children are educated and well

prepared when they graduate. The education-speak term is being "college and career ready," but the mission is simple: MPS must prepare Milwaukee's young people so they can make good decisions and forge a bright future.

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- Manufacturing Month Facility Tour



To learn more about our opportunities, visit
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