

2022 Youth Skills Training Grant Recipients



Eleven partnerships across Minnesota will receive funding to develop and implement programs to offer meaningful career exposure and paid work experience for students 16 years of age and older.

The grants are part of a Minnesota Department of Labor and Industry's (DLI's) Youth Skills Training program that was signed into law in 2017 with bipartisan support to create and provide employment training for student learners ages 16 and older in high-growth, high-demand occupations.



"Working with these partners gives us the opportunity to support workforce development in a unique and specific way that meets the community and employers' needs," said Roslyn Robertson, DLI commissioner.

Youth Skills Training grants will be awarded to the following 11 partnerships,



which will receive and split \$1 million in funding. The partnerships will offer safe, meaningful work experience in advanced manufacturing, agriculture, automotive, health care and information technology.

- Bemidji Career Academies
- Chisago Lakes High School
- East Grand Forks High School
- Forest Lake Area High School
- Genesys Works Twin Cities
- Grand Rapids Area Chamber of Commerce
- Mankato Area Public Schools
- Milaca High School
- Otter Tail County
- Roseville Area High School
- Spark-Y Youth Action Labs

Grants can be used to create programs, recruit students and employers, provide training, transport students and pay for student certifications. Thirty-two local partnerships throughout the state applied for this fifth round of grants; a sixth round of grant applications will open in winter 2022.

For more information about Youth Skills Training, contact Rich Wessels, program manager, at 651-284-5184 or rich.wessels@state.mn.us.



Tiffany Kobbermann is MAITC's 2022 Outstanding Teacher

Tiffany Kobbermann, a Family and Consumer Science teacher at Minnewaska Public Schools in Glenwood, MN has received the Minnesota Agriculture in the Classroom (MAITC) 2022 Outstanding Teacher Award. Tiffany uses agriculture in every lesson with her students to provide a well-rounded perspective of agriculture and their local community.

She was recognized at the National Agriculture in the Classroom National Conference in Saratoga Springs, NY in June 2022.

Tiffany lives on a ranch in rural Hancock, MN with her husband Dan and 7 children. They raise beef cattle, corn and soybeans on their 2,500 acre farm. The family is actively involved in Swift County 4-H and the 4 oldest kids participate in FFA. She is in her 2nd year teaching Family and Consumer Science at Minnewaska High School and formerly taught at Benson Schools. She teaches Global Foods, Exploratory FCS 7 & 8, Culinary & Foods classes, Interior Design, Independent & Teen Living.

Tiffany is a very active member with Pope County Farm Bureau and currently resides as the county president. Pope County is well known for their active members engaging in school activities, helping to host the high school Ag Career Day, and also putting on the Pope County Breakfast on the Farm, which serves 2,7000 meals and hosts educational activities annually. Along with county activity, she is also a member of the Minnesota Farm Bureau Federation Promotion and Education Committee. As part of this committee, she helps to host agricultural events, Ag in the Classroom activities, hosts online educational opportunities and helps to promote positive mental health to farm families all over the state.



The FCS and AG department at Minnewaska Schools has partnered up with Pope County Farm Bureau to offer a CTE based career day to students in grades 7-8-9. The goal of the partnership is to expose students to as many careers as possible within the 3-county area showing students that there are great jobs available right where they live. Having 14 inhouse speakers, student rotate halfway through the day and also have the experience of touring 3 businesses within the community. This has been a very positive partnership that has been embraced and readily welcomed. With recent workforce shortages, the school received fantastic feedback from local businesses thanking these 2 teachers for sharing opportunities to the students. Minnewaska school also offers Co-op Placement and Apprentice Experiences as class opportunities to gain employment skills as a Senior.

The Minnewaska CTE Career and Technical Education department has collaborated to build and design a greenhouse in the near

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Viking Bridge — Every Student Has a Path



*Patrick Tepoorten
Community Relations Coordinator
North Branch Area Public Schools*

Viking Bridge, North Branch Area High School's partnership with area industry employers, continues to grow and thrive! Through this program, students learn usable skills so they can leave high school marketable as a student at a university, college technical college program, or an employee in a career path. As the Viking Bridge program builds and grows, the focus is giving students real-life opportunities and experiences.

One of the flagship opportunities within Viking Bridge is the Advanced Welding Company, which teaches students not just welding skills, but also general work skills students will be expected to have when they enter the workforce, such as quality control expectations, deadlines, work climate, safety requirements, inspections, new application training, and more. More experienced students are expected to act as "foremen," and assist students who are less skilled. At the end of the day, the hope is that students are learning just as much about how to thrive as an employee as they are about the skills they need for the workplace.

Recently, junior Logan Holcomb talked about his experiences with the Advanced Welding Company to the North Branch Area Chamber of Commerce. He spoke of not having a solid career plan as he made his way through high school and how that changed when AWC instructor Art Tobin encouraged him to give welding a try. At the time, Holcomb was taking Beginning Welding and was enjoying it, but not thinking about it as a career option. "I was hesitant at first but ended up doing it because, why the heck not?," said Holcomb.

With over 30 years of welding experi-

ence in a variety of workplace settings, Tobin saw the unique gifts and talents in Holcomb and invested time into helping Holcomb explore career options where he could continue to ignite his passion and make intentional choices about his future. Now, just over a year later, Holcomb is thriving at the AWC and serving as teaching assistant to Tobin. He is also availing himself of PSEO options and attending welding classes at Century College. Over the summer, Holcomb was hired by a local manufacturing company working in parts and sorting. Since then, he has been approved to work with the company's CNC machine.

Graduation is still almost two years away for Holcomb, but he feels confident that by the time he graduates he will have the skills he needs to enter the workplace as a welder. "I'm going to jump right into it," he said.

Every student has a path and Viking Bridge, through courses like AWC, helps chart that path by bringing innovative changes to traditional classes, including real-world experiences and interest-based, relevant coursework. For students like Holcomb, gaining a better understanding of what to expect "on the job" made his career path much easier to identify and to follow!

The Advanced Welding Company (AWC)

At North Branch Area High School, the newly formed Advanced Welding Company (AWC) takes a unique approach to addressing a multitude of work-related issues while also teaching important skills necessary for a career in the trades. To accomplish this, AWC operates with an employer/employee dynamic as much or more than a teacher/student dynamic.

The uniqueness of AWC starts from the moment students enter the class. Rather than what you would expect to see in a high school classroom, AWC is taught not by a teacher in the traditional sense, but rather the school district's Director of Building and Grounds, Art Tobin. Tobin brings decades of experience in the trades to the position; he has worked with hundreds of employees over his career, and is schooled in a wide variety of trade skills, job supervision, project planning and execution, site management, project budgeting, policy, and job site coordination, to name just a few.

"I like to think of the Advanced Welding Company as being the pin in the compass," said Tobin. "It gives students a 360-degree view of the careers they are considering so they can make decisions about their future with their eyes wide open."

To accomplish this, classes are structured to reflect real-world conditions on job sites. Students "punch" in and out of class as though they were employees rather than

students. Once in class they are exposed not just to advanced skills such as TIG, MIG, and acetylene welding, brazing, and soldering, but also to quality control expectations, deadlines, work climate, safety requirements, inspections, new application training, and more.

One of the reasons this approach is so effective is that NBAPS worked with industry partners to ensure students are learning on industry-standard equipment. With their help, the equipment these students learn on, including the welding gear, lathes, CNC machines, saws, and presses, are exactly what students would expect to find in private industry. Private industry is also very much a part of the AWC in an ongoing way; multiple welding companies have provided instructors already to assist students with some of the more refined skills, and guest speakers from the pipefitters union, steelworkers union, and other related industries are in the works — to provide students with a better picture of what to expect from jobs in a wide variety of industries.

The goal of the program is to help students become career-ready by the time they leave high school. "We need to shift away from the mentality of one-and-done decisions at the time of graduating from high school," said Superintendent Paul. By knowing the industries they are interested in, students can make informed career choices. Students have access to opportunities through the relationships formed within their chosen industry.

"For me, the best part is seeing a light go on," said Tobin about his students' experience and the moment they find a skillset that appeals to them. "I'm helping students go from being good students to excellent employees."

NBAPS' goal for the program is to continue growing the program and expanding the available opportunities for students to consider multiple on-ramps into their future, including opportunities right out of high school, with a two year degree or four year degree. With the AWC, students are learning and preparing for their futures — getting the experience and confidence they need to go from classroom to jobsite before ever leaving high school.

"We have a spirit of abundance as we approach alignment of our educational programming with workforce needs," said Supt. Sara Paul. "We are fortunate to have strong industry partners, skilled staff, and industry standard equipment to provide new pathways to lucrative careers for students."



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Tech-Ed Facilities at Detroit Lakes Offer Opportunities for Students



Detroit Lakes Schools

In 2021, the Tech-ed facilities of Detroit Lakes High School went through some renovations.

Work was done on the Metal Fabrication/ Welding Lab, Finishing Room, CTE Computer Lab, Wood Shop, Building Trades Area, Small Engines Shop, Ag Growing Lab and Ag Classroom.

The Metal Fabrication/Welding Lab has 11 welding bays, a grinding room, a CNC

plasma cutter, a manual plasma cutter, tube benders, metal saws, a CNC lathe, an ironworker, a hydraulic shear and various other machines. It's a lab where students can create just about anything related to metal.

There is also a small business office between the two labs where students can conduct sales and business activities for the Laker Woods and Laker Metalworks businesses that are part of the curriculum for each area. Students complete sales, accounting, customer service and marketing

activities in that space.

Many local businesses and organizations have assisted in the purchasing or donation of equipment in these areas. This has enabled us to offer our students up-to-date technology and equipment.

DLHS Exposing Students to Careers in Manufacturing

"You Can't Be 'It' Unless You See 'It'." Nashville Public Schools shared this catchy slogan with us on one of our district's visits to learn more about their career academies. "It" refers to all of the different opportunities available to our students that they aren't aware of when they begin high school. How does Detroit Lakes High School make sure students see and know about "It"?

At DLHS, we feel it's our responsibility that a number of different things take place during our students' four years to ensure they know about the many different "Its." First, we help freshman students learn about their different interests and aptitudes. We want them to determine what they like and, of equal importance, where do they excel? The next step is to expose them to all these different "It" opportunities that are high skill, high wage and high demand. We expose them to many different opportunities in our five pathways. Our pathways

were determined by utilizing DEED data, a community business survey and a student interest survey. Finally, we offer them different work-based learning opportunities at each grade level that build on each other. We start with very broad-based exploration activities during their freshman year and progress toward more focused and defined activities throughout their senior year. This is all based off the students' area of interest and pathway they've selected. We feel by offering these experiences to all of our students, they will leave DLHS with a much better idea of what "It" means for them and how they can most effectively get there.

One of our pathways is Production. A large component of the Production pathway is our manufacturing curriculum. Manufacturing is a large part of our community's business sector with several large and successful businesses located in Detroit Lakes. These businesses offer great career opportunities with the chance for upward mobility for students that are interested in those occupations. To assist our students and regional manufacturing sector, DLHS offers students some in-depth and quality work-based learning experiences.

DLHS received a Youth Skills Training grant in 2020. One of the areas of focus in the

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Inspiring, Training, and Guiding Youth to Be Extraordinary

METAL CRAFT

Robert Judson, Riverside Machine & Engineering, and Metal Craft

Do you remember back when you were seventeen?

Of course, some of us might have to remember harder than others, but I can guarantee you that there is one question you were asked, "What do you want to be when you grow up?" This question, for some, can be a daunting task to answer. Although being put on the spot and asked to give an answer to one of life's biggest questions is almost a rite of passage, there is not always a straightforward answer. Everyone from your teachers, friends, and even that aunt who wears too much floral perfume want to know what great things you will do in the future.

For the past few years, **Riverside Machine & Engineering**, and **Metal Craft** have been at the forefront of setting Wisconsin youth up for success and discovery.

Riverside Machine & Engineering, along with our sister company **Metal Craft**, have been a leader in manufacturing industry for over 40 years in the fields of aerospace and medical manufacturing. We do everything

RIVERSIDE



I really like the people I work with and the stuff we make is cool.

—Kylee, Youth Apprentice

from CNC Machining, wire EDM, vacuum aluminum brazing, and more.

You might want to know about our people and our passion — and the fact that if you have a passion for machining and engineering, for

service and excellence, for precision and innovation, you're going to get along pretty well with us. This passion was the personal philosophy of Jack Mowry — Captain Jack — our founder and original CEO. Jack knew machining, he knew craftsmanship, and if someone said something couldn't be done, he knew they were wrong. Today, Sean and Trisha Mowry continue these values into the next generation of Metal Craft and Riverside.

We have a history of partnering within our communities in Eau Claire, WI and Elk River, MN and into the Twin Cities. We have collaborations with everything from K-12, to youth programs, to our community technical schools and colleges such as Dunwoody Institute of Technology. We embrace introducing the manufacturing of today to learners of all ages, from pre-teen through to adults looking for a new opportunity.

Riverside Machine & Engineering has partnered with the Department of Workforce Development's Youth Apprenticeship program. YA allows Junior and Senior High School students the opportunity to build skills, college credits and get paid while in the program. In addition, we provide first-hand, real-world experience that can help determine and develop a student's passions and skills.

Riverside Machine & Engineering currently has five students working in all areas.

One of those students is Kylee; she started YA and plans to attend a technical college for welding and prefabrication after graduation. I asked her what she thought of the program so far. *"I knew I wanted to get a job in manufacturing or prefabrication. I want to be a welder, and I plan on going to the technical college for welding and prefabrication; this job has been a good fit. I really like the people I work with, and the stuff we make is cool."*

Riverside Machine & Engineering's Elisia Gonsowski, Human Resource Generalist, shared this, *"One benefit of YA is that it is a good opportunity to introduce high school students to manufacturing. YA's usually start at Riverside as floaters. Floating gives students real-world exposure to different areas of the manufacturing floor. Students can then share their experiences with other students and create more interest in manufacturing."*

We hope that as students work with us, they take this passion for doing impossible things with them. We are very proud of our students and look forward to being a part of a future we can build together.

If you are interested in the YA program or want to know more about an exciting career with **Riverside Machine & Engineering** or **Metal Craft**, visit us at <https://mcndrs.com/> or call us at 715.726.2066



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MOMENTUM Program at Minnetonka High School Expands Opportunities for Students in the Trades



Minnetonka Public Schools

Minnetonka High School is often referred to as a 'school of opportunities,' able to support and challenge students to discover and pursue their passions while achieving personal excellence. The growing MOMENTUM Design and Skilled Trades program, launched in fall 2020, provides opportunities for students to explore the trades through pathways focused on manufacturing, construction, architecture, engineering & design and engine & automotive careers.

The vision for MOMENTUM began as a reimagining of the high school's technical education department.

"As we dreamed about what MOMENTUM could become, we looked to the success of other signature programs at the high school, such as VANTAGE and Minnetonka Research," shared Jeff Erickson, Minnetonka High School principal. VANTAGE is an advanced professional studies program that launched in 2013, and Minnetonka Research is an interdisciplinary research program that

challenges students to pursue authentic, collaborative research projects based on their own curiosities and interests.

In Minnetonka High School's signature programs, students engage in real-world learning through experiences such as site visits, collaborative projects, mentorships and guest lectures from industry professionals.

"We saw the passion in our students to learn about the trades in an experiential way, and we saw the opportunity to partner with businesses and organizations in our community to provide authentic learning and mentoring as part of the courses. It's been amazing to see the excitement that students, staff and community members have brought to the table," said Erickson.

Recently, a new addition was added to the High School to provide space for the MOMENTUM program expansion. It includes a four-car automotive garage to host MOMENTUM's growing transportation track, which includes courses like Automotive Career Investigation, Automotive Braking Systems, Automotive Engine Performance and

more. The recent addition also includes other flexible 'makerspace' classrooms, to be used for MOMENTUM's other career pathways.

Spotlight on Manufacturing

The Manufacturing pathway, which is one of five pathways MOMENTUM offers, includes four courses: Metals I, II and III and Metal Sculpture. The Metal Sculpture course is an interdisciplinary offering, allowing students to complete part of the arts credit that is required for graduation.

In Metals I, class is run rotation-style. Small groups within each class take turns completing units on metal removal with lathes and mills, metal forming (including Sheet metal, casting and forging) and metal joining with gas and arc welding. "By the end of the semester in Metals I, students are well experienced in using most everything in the Metals classroom," said Dave Kitzmann, Metals instructor at Minnetonka High School. "In Metals II and III, students are ready to design and build their own projects using the CNC plasma cutter and MIG and TIG welders."

Guest presenters from nearby colleges and the ICATT Apprenticeship program meet

with students in Metals courses to discuss opportunities for high paying and high demand jobs in the manufacturing field. Students also visit job sites and training facilities periodically throughout their courses to gain real world insights and experiences.

In addition to MOMENTUM courses, students interested in the Manufacturing pathway are encouraged to further their learning through extracurricular activities such as the Robotics Team and the Supermileage Challenge, a fuel economy competition hosted by the Minnesota Technology and Engineering Educators Association each spring. Competing students and clubs build a one-person, fuel-efficient vehicle powered by a single cylinder, four-stroke cycle engine. In 2021, the MHS Supermileage Team received the award for state runner-up in the modified class. Its car got 313 miles per gallon while competing at the state contest.

For more about MOMENTUM, visit www.minnetonkaschools.org/MOMENTUM

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- 22–23: Automotive Career Investigation
- 22–23: Automotive Braking Systems
- 22–23: Automotive Engine Performance
- 22–23: Metal Sculpture II
- 22–23: Advanced Engineering Design II
- 23–24: Automotive Electrical/Electronic Systems
- 23–24: Automotive Steering and Suspension Systems

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Careers in Manufacturing



Manufacturing is a vibrant, innovative field with an array of in-demand career paths. Advanced technologies and computerized systems are paving new paths for modern manufacturing workers. Much of today's manufacturing careers are lean, green, high-tech, and highly creative, allowing people of all skillsets to take part in producing goods

Production

Production is the process of creating and assembling goods. These professionals may work with machines, materials like metal, glass, and wood, electronic systems, and specialized welding equipment.

- CNC Machinists
- Welders
- Automotive industry workers
- Production Supervisors
- Metalworkers
- Certified Production Technicians
- Precision Machinists

Manufacturing Production Research, Process Development

This manufacturing career path is the design sector of the industry and is a necessary step in the production of manufacturing goods. The professionals in this pathway are responsible for designing the goods that will be produced, as well as developing and programming the processes that will be used to produce them.

- Industrial Designers
- Industrial Engineers
- Engineering Technicians
- Research Analysts

Logistics and Inventory Control

Those working in this manufacturing career pathway oversee activities like the purchasing inventory, the transportation of products, and the warehousing of goods. They ensure that there is a constant movement or cycle of inventory, and that materials and products are all accounted for on a daily basis.

- Shipping and Receiving Specialists (and Supervisors)
- Inventory Control Specialists
- Industrial Traffic Managers
- Inventory Manager
- Supply Chain Specialists
- Logistician

Quality Control

These professionals may test manufactured goods to certify they work and are assembled properly. They may also write the

rules for quality for a company or product.

- Quality Controller
- Quality Supervisor
- Receiving Inspector
- Manufacturing Quality Inspector
- Supplier Quality Assurance Supervisor
- Quality Auditor
- Quality Customer Service Representative

Health, Safety, and Environmental Assurance

These professionals will conduct safety and health inspections within the workplace, certifying that it is a safe environment for employees. They may also teach employees safe working practices, train them on equipment and emergency procedures, and implement incident and hazard investigations as needed. Additionally, some professionals will confirm that goods can be used safely by consumers.

- Health and Regulatory Inspectors
- Industrial Safety and Health Technicians
- Environmental Engineers
- Health and Safety Engineers
- Safety Supervisors

Maintenance, Installation, and Repair

Maintenance, installation, and repair professionals provide routine checks of manufacturing equipment. In addition to installing and onboarding machinery, they may run regular tests of machines, evaluate the performance of tools, upgrade software programs, troubleshoot any problems, and/or make recommendations for new tools and technology. Their work is important for the safety of employees as well as for the quality of production.

- System Setup Specialists
- Manufacturing Repair Technicians
- Computer Maintenance Technicians
- Maintenance Supervisors
- Steamfitters
- Pipefitters
- Millwrights

A Growing Sector

As with any industry, some jobs are growing at a faster pace than others and potentially offer more opportunities for people looking for work in those fields. This list (according to the Bureau of Labor Statistics' Occupational Employment Statistics) shares the occupations that are growing at the fastest rate within the U.S. manufacturing

industry and the median hourly earnings for each profession.

Computer numerically controlled (CNC) machine tool programmers, develop programs to control machining or processing of metal or plastic parts by automatic machine tools, equipment or systems.

Median hourly earnings: \$30.00

Welding, soldering and brazing machine setters, operators and tenders set up, operate or tend welding, soldering or brazing machines or robots that weld, braze, solder or heat treat metal products, components or assemblies. This occupation includes workers who operate laser cutters or laser-beam machines.

Median hourly earnings: \$19.00

Computer-controlled machine tool operators, operate computer-controlled machines or robots to perform one or more machine functions on metal or plastic work pieces.

Median hourly earnings: \$23.00

Coating, Painting, and Spraying Machine Setters, Operators, and Tenders, set up, operate, or tend spraying or rolling machines to coat or paint any of a wide variety of products, including glassware, cloth, ceramics, metal, plastic, paper, or wood, with lacquer, silver, copper, rubber, varnish, glaze, enamel, oil, or rust-proofing materials. Includes painters of transportation vehicles such as painters in auto body repair facilities.

Median hourly earnings: \$19.00

Machinists set up and operate a variety of machine tools to produce precision parts and instruments. Includes precision instrument makers who fabricate, modify or repair mechanical instruments. These workers may also fabricate and modify parts to make or repair machine tools or maintain industrial machines, applying knowledge of mechanics, mathematics, metal properties, layout and machining procedures.

Median hourly earnings: \$23.00

Tool and die makers analyze specifications, lay out metal stock, set up and operate machine tools, and fit and assemble parts to make and repair dies, cutting tools, jigs, fixtures, gauges and machinists' hand tools.

Median hourly earnings: \$28.00

Engine and other machine assemblers construct, assemble or rebuild machines, such as engines, turbines and similar equipment used in such industries as construction, extraction, textiles and paper manufacturing.

Median hourly earnings: \$24.00

Industrial machinery mechanics repair, install, adjust or maintain industrial production and processing machinery or refinery and pipeline distribution systems.

Median hourly earnings: \$29.00

Welders, cutters, solderers and brazers use hand-welding, flame-cutting, hand-soldering or brazing equipment to weld or join metal components or to fill holes, indentations or seams of fabricated metal products.

Median hourly earnings: \$22.00

Millwrights install, dismantle or move machinery and heavy equipment according to layout plans, blueprints or other drawings.

Median hourly earnings: \$29.00

Fiberglass laminators and fabricators laminate layers of fiberglass on molds to form boat decks and hulls, bodies for golf carts, automobiles or other products.

Median hourly earnings: \$18.00

Source - Bureau of Labor Statistics



St. Cloud State University TEC Network and T & E Express



The TEC Network (Technology, Engineering & Careers) is all about building partnerships with school and businesses around the state.

Each school selected to be a part of the Technology Network will engage in:

Equipment access

- Over \$1,300,000 worth of equipment
- Supplies and maintenance of the equipment
- Opportunity to purchase equipment at demo rate
- New equipment added to meet changing needs of industry
- Equipment is scheduled for 2-3 weeks at a time throughout the year.
- Concrete & Masonry tools, equipment, and demonstrations

Professional development

- Summer workshops
- On-site support
- CTE License
- Graduate courses
- WBL License

Program review

Advisory board support Program enhancement plan (district will determine items needed) Examples include:

- Youth apprenticeship plan
- Career awareness /readiness
- Recruitment ideas / plan
- STEM activities / curriculum

Network meetings of all teachers, administrators, and business partners

Mike from Maple River noted:

“Our local Perkins consortium used funds for the next 5 years to help join the SCSU TEC program. This has been the best thing to

ever happen to our program. I always tell local community members it is like joining a blockbuster for shop equipment. The TEC program has allowed our students to experience a CNC router, virtual welder, virtual painter, and later this year and CNC plasma cutter. My first 10 years of teaching no students were able to experience this technology.”

Technology and Engineering (T & E) Express

The T & E Express brings high-tech reality using hands-on experience with modern STEM (science, technology, engineering, and math) techniques and equipment typically not always available to Minnesota schools through a grant for approximately 25 schools around the state.

St. Cloud State is dedicated to preserving and promoting an integrated STEM program at a time when schools must make difficult decisions based on tight budgets and reduced funding. The T&E is composed of 2 trailers designed to deliver equipment for use in the schools.



Our goals:

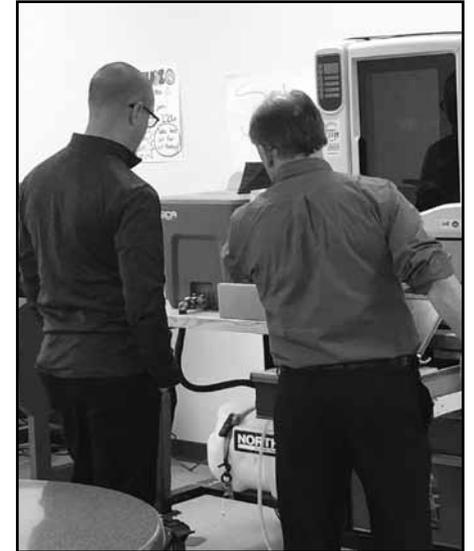
- To provide comprehensive access to high-tech industry-standard equipment and high-quality teacher-written curriculum to schools in a 50-mile radius.
- To preserve and promote integrated STEM programs at a time when schools must make difficult decisions based on tight budgets and reduced funding.
- To develop curriculum for use with equipment and to encourage development of additional curriculum.
- To promote a holistic approach to education that all students need as they prepare for college and careers.
- To show how business and education can work together toward common goals.
- To encourage collaboration among science, technology, engineering, and math teachers.
- To build networks of support for teachers in the region.
- To partner with businesses as a way to build access to state-of-the-art equipment.

The T & E Express provides state-of-the-art / industry-standard equipment in such areas as:

- 3D printers
- Laser Engravers
- Laptop Computers
- CNC Equipment
- Robotics

The following curriculum packages are available to be used with our program:

- Course Introduction to Engineering Design (High School)
John Donohue
- Industrial Technology (Middle School)
Timothy LeMoine
- 3D Printing Curriculum Guide (High School and College)
Stratasy



If you are interested in the equipment, please complete the grant application.

- The grant value is approximately \$5,000
- Equipment is generally available for 2-3 weeks
- Delivery and all supplies are included at no cost

This program is made possible through partnerships with:

- Haldeman Homme, Inc
- Stratasy
- TEAM Industries

Questions about the T&E Express or the Mobile Lab Program please contact:

Kurt Helgeson
Department Chair
320-308-3127 | HH 216
krhelgeson@stcloudstate.edu
<https://www.stcloudstate.edu/teexpress>

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- Environmental Studies
- Environmental Science

Graduate Programs:

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- Career and Technical Education (CTE)
- Work Based Learning

For additional information:

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Productivity is Helping Grow the Pool of Skilled Manufacturing Employees through the Gene Haas Foundation

Productivity Inc is pleased to share with educational organizations scholarship monies and grants provided through the Gene Haas Foundation, established in 1999, by Haas Automation, Inc. Founder and CEO Gene Haas. Productivity Inc works with schools in Minnesota, North and South Dakota, Iowa, Nebraska and Western Wisconsin.

Recognizing a growing need for skilled manufacturing employees, industry wide, the Gene Haas Foundation expanded its mission to include support for manufacturing training programs throughout North America and beyond. By providing scholarship grants, sponsoring individual and team CNC competitions, and partnering with the very best CNC training programs in the world, the Gene Haas Foundation helps expand the availability of high-quality manufacturing technology training worldwide.

Greg Buck, president of Productivity Inc. says, “Gene has long recognized that the future of manufacturing in the United States – and around the world – depends directly upon the availability of skilled workers. Expanding the pool of skilled workers hinges on recruiting more young people to pursue careers in manufacturing and creating state-of-the-art advanced manufacturing training programs to ensure that graduating students have the skills necessary when they enter the workforce.”

The Gene Haas Foundation donates millions of dollars every year to manufacturing education and the communities where Haas Automation Inc. facilities are located. In 2021, the Gene Haas Foundation provided more than \$17 million in grants, bringing the total since inception to more than \$100 million. In addition to providing grants as scholarships to students pursuing machining and manufacturing careers, part of the grants can be used towards programs like FIRST, SkillsUSA, SAE and Supermileage.

Alan Wessels, machine tool sales manager, says, “I have spent the best part of 40 plus years in manufacturing. During that time, I began to realize that the very root of any country’s economy is manufacturing. There are careers that service industries and people. For example, medical clinics and hospitals are a service industry. But they only exist because manufacturing brings them the instruments, pharmaceuticals and technology to perform in today’s modern world. We absolutely must have a healthy manufacturing economy in this country if we expect to continue to prosper. Careers in manufacturing are some of the most rewarding and fulfilling because you are at the ground floor of everything you see or use daily.”



Upsala Area High School

(UPSALA, MN) — \$15,500 Gene Haas Foundation grant

Over the last few years, students at Upsala High School began asking more questions about physics, making custom metal parts, and wiring sophisticated components – all to make the robots they designed themselves come to life.

Thanks to funding from the Gene Haas Foundation, this small-town team is

introducing students to many exciting possibilities in manufacturing and engineering. The challenge this year, for example, is to design and build a robot that can collect tennis balls, shoot them into baskets nearly 5 and 8 feet up in the air, and then climb a set of monkey bars at an inclined plane.

Last year Upsala High School placed third out of nearly 30 teams representing Northern Minnesota and North Dakota in a FIRST Robotics Competition. That’s not bad considering there are only about 125

students in the entire high school; about 15 percent of them participate on the team.

“The funding has been really helpful,” said Upsala High School Instructor and Coach Curtis Robertson. “As a smalltown team, we usually rip down and recycle parts and pieces every year to make the dollars stretch. This money helps pay for new parts we need as well as our upfront registration fee to compete.”

He went on to say the funding for scholarships have been an added boost. “When we received the first grant, we had very little to offer when it came to precision manufacturing,” Robertson said. “With the funding we’ve received, we’ve been able to grow this program and see more kids become interested in these fields.”

www.upsala.k12.mn.us



Braham Area High School

(BRAHAM, MN) — \$48,500 Gene Haas Foundation grant

Since 2016, the Gene Haas Foundation has been supporting this school’s team, which competes annually in the Supermileage Challenge, a fuel economy competition for technology students. Students are challenged to build a one-person, fuel-efficient vehicle powered by a single-cylinder, four-stroke cycle engine. The result is a car that

runs super clean – and students who are revved about manufacturing.

“Our school record is 449 miles per gallon running on 98 percent ethanol,” said Luke Becker, technology instructor, who was recently awarded the 2022 National Association for Career and Technical Education (ACTE) Teacher of the Year. “When I first started 10 years ago, everyone in my school wanted to be a welder. But when students started realizing scholarships were available,

and as projects became more fun and interesting, we’ve seen a shift in interest toward machining and engineering programs.”

When Becker’s class wasn’t building a fuel-efficient car this past year, they were busy building a prototype microgravity washing machine for NASA. The challenge was to build a washing machine for the astronauts on the International Space Station that would use less than 16.9 ounces of water at room temperature with no detergent in less than 2 feet of cubic space.

“My objective is to help kids make sparks and chips and discover all the opportunities available to them,” Becker said. “This funding helps with that. And a lot of the kids who have gotten scholarships have come back to help me solve problems in my shop, so they don’t just leave and take that money with them. They reinvest it back into the community.”

www.braham.k12.mn.us



Hope Riska, education and events administrator shared, “We, as industry, parents, family members and colleagues have not only an opportunity, but a responsibility to share the manufacturing career pathways. We need to encourage today’s youth (and adults) to pursue careers in manufacturing. Manufacturing pathways include

everything from research and design to sales and marketing, and we need creative, detail oriented people.”

To learn more about the Gene Haas Foundation and grants available to schools, visit ghaasfoundation.org/content/ghf/en/education-grants.html or contact Hope at hriska@productivity.com.

This is part of a larger article by Melissa DeBilzan for Precision Manufacturing Journal. Reprinted with permission.

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Working Together to Shape the Future



Don Bosch, WBLAHS — South Campus
Principal
White Bear Lake Area High School
White Bear Lake, Minnesota

Where are we now? What began as a Manufacturing Career Pathway seven years ago has now evolved into an all encompassing Career Pathways program at White Bear Lake Area School (WBLAS) District 624. Learn more about how the community of White Bear Lake, MN is working together to shape the future.

Seven years ago, WBLAS was fortunate to receive a Greater Twin Cities United Way grant that helped create the original WBLAS Career Pathway. Thanks to the work of faculty, staff, and dedicated industry partners, WBLAS Career Pathways now focuses on seven industries: Automotive, Business, Construction, Education, Engineering & Manufacturing, Health & Wellness and Information Technology. All of these pathways are experiencing local, statewide, and national workforce shortages. Thus, WBLAS Career Pathways serves three key populations.

First, White Bear Lake Area High School (WBLAHS) students are priority number one. Teachers, counselors, equity specialists and members of the administration help students make informed decisions about their career choice and appropriately match post-secondary plans

related to their interests and skills. Students have the opportunity to participate in listening sessions, job shadows, job site tours, and paid internships to name a few. Second, faculty and staff are able to focus on quality instruction and student relationships by receiving additional resources such as industry connections, teacher externships, and grant writing support. Finally, WBLAS Career Pathways creates and aligns educational opportunities based on the local community's workforce needs.

Through various grant opportunities, Career Pathways teachers are able to purchase a variety of industry relevant

equipment and curriculum that deepens their classroom instruction. Teacher Externships allow teachers to work at a local employer for a week in the summer to learn more about the industry. The Manufacturing Lab has machines that include, but are not limited to: Haas and Tormach Mills, Bridgeports, Lasers, and 3D printers with the same or similar technology currently used in today's industry.

As the district's Manufacturing Career Pathway continues to evolve, opportunities for students to participate in apprentice programs are also expanding. This past summer students were selected to join local industry partners in a three-year full-time apprenticeship. Not only were the students getting paid as full-time employees, but they also had the opportunity to obtain a Mechatronics Degree paid for through a local Technical College and will have an additional opportunity to work two more years in a full-time position of their choice at the industry partners company location.

The Manufacturing Career Pathway starts with career exploration embedded in the classroom instruction. As WBLAS continues to pursue concurrent enrollment

opportunities along with industry credentialing, additional experiences such as listening sessions, job shadows, job site tours, scholarships, and paid internships are offered to students in the related pathway. The district's Career Pathways also supports students' desires to be in a variety of elective courses. In an effort to close the opportunity gap, all students are encouraged to sign up to be a part of the program.

WBLAS Career Pathways and the Manufacturing Career Pathway continue to grow into a program for all students regardless of their academic ability. As industry partners continue to create and align educational opportunities with their workforce needs, students make more informed decisions about their career path and WBLAS employees work to understand the reality of the future workforce, the White Bear Lake community proves that working together to shape the future is possible.

www.isd624.org



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Kingsland Public Schools Expands its Trades Program with the Purchase of a Plasma Cutter



“We’re literally creating the next generation of our local workforce,” said Scott Klavetter, the elementary school principal and incoming superintendent.

Since last year, students at Kingsland High School have been learning how to use a new machine some of them may come across in the workforce after graduation.

With the help of the school district’s 2019 operating levy, the high school purchased a CNC plasma cutter. The device can be used in sign-making, auto repair and industrial construction, among other uses.

The school district hailed the purchase as another step in the expansion of its trades program, allowing students to have a glimpse of another option after high school.

“We’re literally creating the next generation of our local workforce,” said Scott Klavetter, the elementary school principal and incoming superintendent.

Klavetter referenced a number of companies in the area that rely on skilled tradesmen and tradeswomen. Kingsland Public Schools covers the communities of Spring Valley and Wykoff, about 30 miles south of downtown

Rochester.

The school’s guidance counselor, Bruce Rohne, reiterated Klavetter’s enthusiasm, saying that a significant number of the district’s graduates take career routes other than a traditional four-year college degree.

Like many school districts, Kingsland has a variety of hands-on classes: welding, engines, electricity, construction, home improvement. With the new plasma cutter, the district added “metal arts” to that list of classes.

Industrial Tech Teacher Tyler Heimermann said there were smaller versions of the plasma cutter the district could have purchased. They decided on the larger version to benefit students who end up working with similar machines after graduation.

“We wanted to have stuff that the kids could possibly see in the industry,” Heimermann said. “You could go from here, go off and do your schooling, and then get into a job and say ‘oh yeah, I used to use one of these in high school.’”

Outside the shop where the students work is a shelf displaying a handful of their projects. Klavetter pointed out that the students made it all — not just the projects, but the shelf itself as well.

Senior Walker Erdman was working with the plasma cutter Wednesday. Along with his teacher, Kristal Brogan, he manipulated the design and settings on the computer to make sure everything would come out as planned.

Even if students don’t end up using that specific machine during their careers, Erdman said it’s a good example of how they will have to have a baseline of digital awareness, since the plasma cutter is controlled by a computer.

“A lot of people think the trades are all about working with your hands,” he said, “(but) a lot of this is computers and there’s a lot of technology in the trades.”

He plans to enter an electrical apprenticeship after graduation.

After getting the software worked out, they pulled some heavy plastic, red curtains around the plasma cutter to contain the sparks and shield their eyes from the brightness of the flame.

Klavetter clarified that the district doesn’t just focus on the trades, explaining it also offers courses to channel the academics, like College in Schools. Offering that range of options, he explained, is one of the ways the district aims to stay competitive when parents are deciding where to educate their children.

“The kids have options,” he said. “The priority is giving the students what they need.”

By Jordan Shearer for the Rochester Post Bulletin. Reprinted with permission.

kingsland.k12.mn.us



YEAP (Youth Employment Acceleration Program) in Mankato

Mankato Area Public Schools

YEAP’s Mission

To encourage and build hands-on youth education within manufacturing. Offering high school students the opportunity to develop technical and career skills.

The earn-as-you-learn program was established in 2013 with three local businesses. This youth apprenticeship program in advanced manufacturing, offers students anywhere from 450 to 2,000 hours of experience at these companies before they graduate high school.

YEAP Students Will:

- Participate in a MN Dept. of Education Program
*Supervised by an industry mentor
Supported by Work-Based Learning Coordinator*
- Be prepared to successfully enter the workforce
- Learn using a hands-on approach
- Decide if they want to pursue a career in manufacturing
- Learn technical skills

- Gain in depth career experience
- Obtain skills and knowledge for postsecondary and career success

Students in the program are employed and work at one of the advanced manufacturing facilities in the YEAP partnership.

The students have an opportunity to be exposed to and learn nearly all of the positions on our production floor, from receiving, to all the areas of production, to packaging for shipment. Many of these areas are hand assembly type positions where they will learn to prepare or assemble product according to our procedures using a variety of hand tools. They will also learn the basics of operating some of the automated equipment in our facility. This includes the machines that make up the surface mount line such as screen printers, pick and place machines and inspection equipment. Besides the surface mount line they will also learn the basics of our coating equipment as well as a variety of test systems.

—Tony Grack, Production Manager, local manufacturer and YEAP partner

Classes involved in the YEAP/Manufacturing program include: Mechatronics, Intro to

Metals, PLTW Intro to Engineering, Welding and Fabrication Technology, and Machining & Metalworking Processes.

Each year they host an annual Open House/Tour for students and families to learn more about the YEAP Program and the youth apprenticeship opportunities in advanced manufacturing offered by each business. During the open house students and parents/guardians are able to tour each employer’s facility.

“I believe that this program is one of the best things you can do for yourself. It’s designed to give you hands on experience and an idea of what its like to work in industry. You will be taught a variety of skills and pursue every aspect of manufacturing. If your considering going into engineering or manufacturing, the YEAP program will give you a head start and give you a better idea of what you want to do.”

—Kyle Hansen, Youth Apprentice

www.isd77.org



Students in Mankato Area Public Schools have access to the following CTE facilities at each high school in the school district:

- ▶ Automotive Lab
- ▶ Welding Lab
- ▶ Construction Trades Lab
- ▶ Engineering Lab
- ▶ Culinary Arts Lab
- ▶ Business/Multimedia Lab
- ▶ Health Science Lab.

Creating Centers of Excellence

Luke Adam is a mathematics teacher who also teaches the Spartan Angling class as a part of the Natural Resources Pathway.

“I have taught math for nearly 20 years and have always loved to fish,” said Adam. “I have always wondered how I can integrate the two, as teaching students how to fish doesn’t even sound like work! I don’t have a degree in Natural Resources, but just a passion for the outdoors and teaching.”

Spartan Angling is staying busy with projects this year, including learning how to build fishing rods and how to tie knots. Students are also beginning to learn about fish behaviors, biology and migratory patterns. The class is preparing for their first trip to Blue Lake where they will fish for panfish, as well as a trip to Lake of the Woods. Students will stay overnight at Border View Lodge in early March to fish for walleye and learn about running a resort.

Joe Gabardi is an industrial arts teacher at Nashwauk-Keewatin High School and teaches classes that are a part of the Manufacturing Pathway. He teaches Industrial Metals 1, Industrial Metals 2, Industrial Metals 3, Production Management, Women’s Shop, as well as the Career Pathways capstone Manu-

facturing Career Internship Course.

“My father was an automotive and welding instructor for 33 years,” Gabardi shared. “Growing up I always had an interest in hands-on work. Throughout my high school years, my knowledge and passion for the trades only grew. It was a perfect fit for my passions of industrial tech along with the enjoyment of helping others.”

Gabardi said there is always exciting projects happening in the shop program. Currently, one of his classes is working on an electric conversion vehicle. “We are in the process of taking a 1984 Pontiac Fiero and converting it into an electric vehicle,” Gabardi explained.

Furthermore, Gabardi is looking forward to beginning year three of the career internship program within the Manufacturing Pathway. Beginning in the second semester of this school year, he will have 15 students from Nashwauk, Grand Rapids, and Greenway out working with industrial partners all throughout the local area.

“It has been a very successful program and continues to grow each year,” Gabardi stated. “I can’t thank all our business partners enough for their willingness to step up and



welcome our students each year.”

He extended his thanks to the manufacturing business partners for the 2022 school year.

“We are getting our future workforce exposed to many different opportunities across our region. Industry is looking for workers, and I have students looking for job possi-

bilities,” Gabardi said. “The career internship program is helping bridge that gap.”

Braden Depaulis and Myles Nagles are both in their senior year at Nashwauk-Keewatin High School. The two have been taking classes in the Manufacturing Pathway since

Continued on Page 20

Integrate Robots with PLCs and Mechatronics

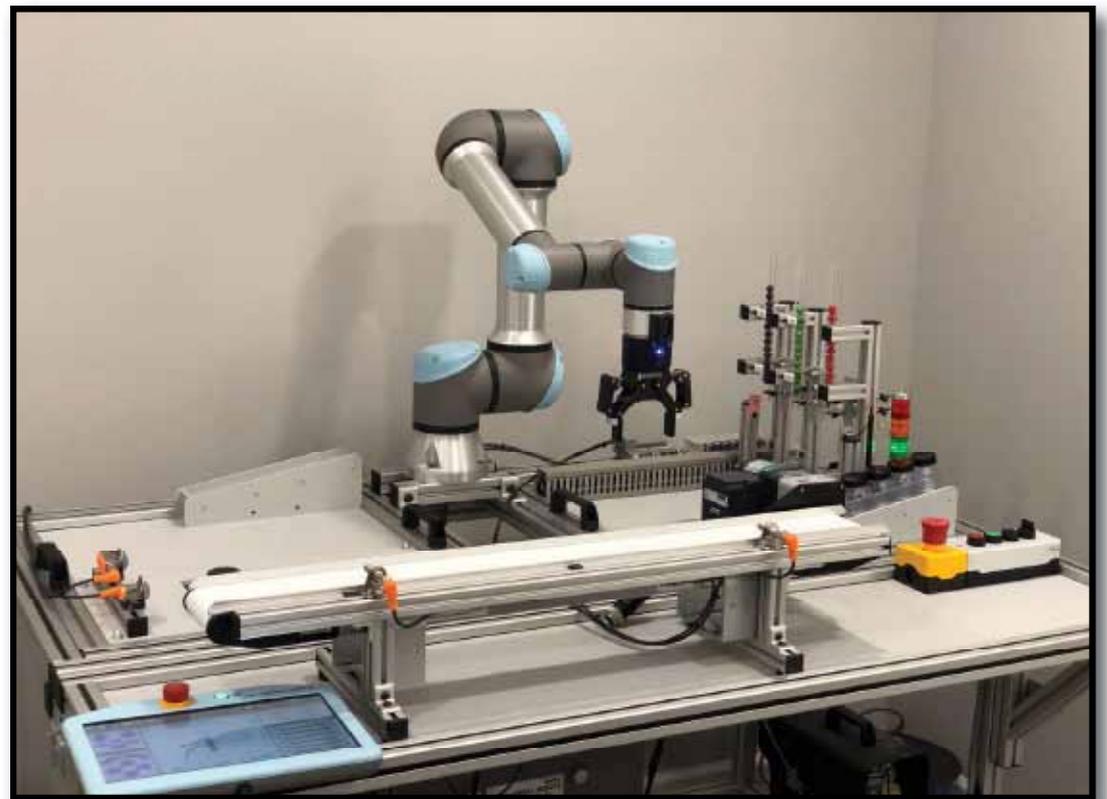


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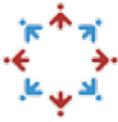
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Students Can See Future Possibilities in Lakeville

Youth Skills Training Program Continues to Fill Workforce Needs



Brandon Wright was one of the five Lakeville Area School District students who participated in the Youth Skills Training program this year.

In 2020, the Lakeville Area School District was awarded a grant from the Minnesota Department of Labor and Industry to create a Youth Skills Training program to complement Career and Technical Education programming at Lakeville North and South high schools.

This program is made possible through a partnership between District 194 and the Lakeville Area Chamber of Commerce.

Students enrolled in CTE classes learn industry-specific skills and, in some courses, may earn free college credit and industry-recognized credentials. CTE courses help students and their parents make informed decisions about post-secondary education and career choices, the chamber says. It adds that the program serves the community by aligning educational opportunities with local workforce needs.

Students have a wide variety of opportunities within the manufacturing and automotive/transportation industries that provide class instruction, industry-recognized credentials, paid internships, job site tours and interviewing skills.

YST introduces high school students to paid internship opportunities that have the potential to grow a strong and sustainable workforce in the community.

Kevin Delk, owner of one of the program's inaugural company partners, thinks YST is a great way to get students on the right track.

"Our workforce is getting older, and we need people to come in and learn what we do," he said. "They have an opportunity right here in Lakeville, right out of school that pays a good wage and offers great benefits."

Since inception, the Lakeville program has allowed 28 high school students to pair with local manufacturing firms and transporta-

tion/automotive-related companies.

Prior to starting their work-based learning opportunity, students met with instructors for soft-skills training and completed the OSHA 10 course.

The students got to learn from, and work with, employees doing their daily work. They got a chance to see and hear about work/life balance and learn about different work environments.

YST allows local businesses to meet students entering the workforce and possibly spark some interest in a future career path, in addition to helping students and parents make a positive connection between a viable career and the fields of manufacturing or transportation.

"It was a great opportunity," said Joe McGinley, who interned at BTM Manufacturing. "There was a lot to learn and absorb. I got to see the whole process beginning to end. Amazing going from raw steel to finished product."

"We hope that we have given students the platform to make a decision, and grow," Abbie Torbert, a senior human resources generalist with BTM. "Trade schools are what we need to promote. Thank you to Lakeville Area Schools for building that bridge."

Career fields within the trades are very high tech, pay well, provide benefits and community and technical colleges are affordable with students often graduating with little to no debt, as they can work in the field as they go to school, the chamber said.

Businesses can benefit from the program because they have the opportunity to engage with the next generation of workers and understand what they might be looking for in a future career. One unintended benefit is the renewed excitement and engagement employ-

ees have toward their job after spending time mentoring students, demonstrating what they do and what they are capable of.

One of the reasons that District 194 was awarded the grant was because of their partnership with the Lakeville business community, through the Lakeville Area Chamber of Commerce's Lakeville Works program.

Lakeville Works is focused on creating awareness of local in-demand careers, with a focus on the trade industry. This program is made possible through strong partnership with the schools and the city of Lakeville, as well as a group of chamber member donors who have contributed funds for equipment, scholarships, intern and externship opportunities, and additional workforce development funding like the YST grant.

Like many industries, the transportation/automotive and manufacturing industries are undergoing a huge demand for new workers. Students who enjoy hands-on work, have the ability to maintain reliable, regular attendance, have ambition to solve problems, have the ability and willingness to communicate and adapt to changes will likely succeed in the program and related careers.

"We are very proud of the partnership that continues to make career exploration and selection possible for our high school students as they make decisions for the next chapter in their lives," said Krista Jech, Lakeville Area Chamber president, who spearheads the program. "We want students and parents to know that there are several roads to success, and there are many business owners, managers and employees in town ready and willing to share their own life experiences as well as offer students hands-on opportunities to learn what exciting career path they want to pursue."

Students who would like to learn more about the program should contact their dean of students. For Lakeville businesses who would like to learn more about how to get involved, contact Krista Jech at 952-469-2020 or krista@LakevilleChamberCVB.org.

Article courtesy of the Lakeville Area Chamber of Commerce

www.isd194.org



Tech-Ed Facilities at Detroit Lakes

Continued from Page 6



district officials and parents summarizing their experience. Some of the students have continued with BTM in part-time jobs during the year and full-time employment in the summer.

DLHS has also had students that are 18 years old complete paid and unpaid experiences with other manufacturing and trade businesses in the community to explore those occupations as possible future careers. Our goal is to market as many of these opportunities to students as possible before they graduate. We also try to create partnership activities with as many businesses as possible to provide the opportunity for the business and students to develop a relationship. These activities include guest speakers, field trips, classroom demonstration/ work activities and one-day job shadows.

Providing these career exploration and work-based learning activities in manufacturing will assist our students in seeing and doing "It." With a consistent effort over the next few years, this should provide many of our students with great opportunities in manufacturing and assist our local businesses with their workforce needs.

grant is Advanced Manufacturing. We have had students (ages 16-18) complete paid internships at BTM Manufacturing. BTM is one of the largest custom metal manufacturing businesses in the United States. The students have had internships in welding, tool & die, quality control, engineering and maintenance. Interns spend three to four periods of their day working in a paid internship learning and working in their area of interest. At the end of the semester, students create and deliver a final presentation to BTM management and employees, school

www.dlschools.net



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Technology Education at Centennial High School



Andy Angell, Technology Education Teacher
Centennial High School

One of the goals of the Centennial School District's strategic plan is to expand programming to address the vocational, college prep, and remedial needs of each student. At Centennial High School, the need to prepare students to enter into career and technical fields has taken a top priority. With the many advancements in manufacturing, students that choose this path are

likely to be working in top-notch facilities with great benefits and pay upon high school graduation. Many employers are looking for students with a strong desire to work, and with some added knowledge of manufacturing processes, this makes them a very strong candidate. Over the past six years at Centennial, the Technology Education department has responded to the need of preparing students and have implemented a series of PLTW classes including Introduction to Engineering Design, Principles

of Engineering, Civil Engineering, and most recently, Computer Integrated Manufacturing.

Other courses that have evolved in preparing students for the skilled workforce include Small Engines, Robotics and welding. With the addition of new courses at Centennial we have looked to industry to purchase equipment that would allow a seamless transition for students from high school to work. Centennial was able to purchase a HAAS Mini Mill six years ago which has allowed students from Computer Integrated Manufacturing classes to create their own parts using CAD software, write toolpaths, set up and machine them. The robotics team has also utilized the CNC mill to create custom parts. In addition, the Centennial super mileage team, also part of Centennial High Schools Small Engines and Welding class, used the CNC mill to machine custom parts for their car. Some parts included an F1-style steering wheel, brackets, and custom suspension components. The HAAS mini mill purchase was made possible through a \$15,000 Perkins grant and additional school district funding.

A fairly recent addition to Centennial High Schools tech. ed. program is welding. Over the summer of 2019 Centennial was able to purchase welding booths and in the 19-20 school year, students are learning how to cut, fabricate, and weld. There is a very high demand for people to enter into welding careers. Centennial has begun

developing partnerships with local industry to support the program. Support from industry includes a donation of 5 new Mig welding guns.

Student enrollment grew from 89 students in 20–21 to 200 students in 21–22. Over 60 students enrolled in Small Engines and Robotics 1 earned their OSHA 10 General Industry safety certification in the fall of 2020. Despite the challenges of COVID-19, students in small engines and robotics have still completed hands-on welding projects. Students have also assisted in completing supermileage cars for the MTEEA supermileage challenge.

Centennial has been awarded \$11,000 in grants from the Gene Haas Foundation to support students entering careers in manufacturing. Last spring, three student scholarships totaling \$2,500 for students entering technical education post-secondary in machine tool technology or in engineering with a manufacturing emphasis. Centennial also has a goal to continue working to expand and strengthen its partnerships with local manufacturing industries to facilitate internships and job placement for students.

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Creating Centers of Excellence Continued from Page 17

9th grade. Both seniors shared that being a part of the Manufacturing Pathway has been helpful as they think of their plans past high school.

"It gives us a big idea on what we want to do and how you can do it," Nagler said. "Especially with the teachers we have, and the machines and the equipment we have. The possibilities are endless with them."

Nagler plans to attend a nearby community college next year to pursue a career in law enforcement. Depaulis also plans to go to college to be a part of the heating and cooling technician program.

"It gives you a big jump on life," Depaulis said. "It's just a good experience."

Both Nagler and Depaulis are currently in Gabardi's welding class. Earlier this year the class built a trailer and now they are working to build a raised grill with a seating area around it for the high school.

"It was a big learning curve for all of us to see what you go through to make something like that," said Nagler.

The two seniors complimented their teacher, Gabardi, for the work he has done with his classes.

Depaulis added, "especially all of the knowledge he has. He just passes that onto us to make us better and smarter."

Gabardi commented that the program is always looking to add more industry partners to the team and to contact him or Scott Patrow, director of Next Career Pathways, if they would like to get started.

Adam also shared his excitement as the Nashwauk-Keewatin school district voters approved a referendum this week which will invest \$47.7 million to build a new school and an attached community wellness center. The new school is set to be built near the O'Brien Reservoir which will open many doors for the Spartan Angling class.

"A class period could be actually going fishing for an hour! Great opportunities await! We are currently working with the wood and metal shop to construct a spear house that will be used for the class and can be placed on O'Brien," said Adam.

Another goal for Adam is to expand his program to other schools.

"I want to keep producing anglers who are passionate about the outdoors and are pursuing careers in Natural Resources,"

Adam stated. "I would love to expand this class to other Iron Range Schools to offer more opportunities."

Gabardi echoed this sentiment with his vision for the future of Next Career Pathways. He hopes to see schools within the program specializing in different pathways. He explained that each school could focus on one pathway in order to provide the best opportunities for students.

"Nashwauk could become the center of excellence for manufacturing and turn its focus more in the direction of manufacturing," Gabardi said. "As students build interest through the manufacturing pathway in their home school, then they could travel over to N-K for half days their junior and senior years, and really focus on perfecting that interest. This is something we could accomplish fairly easily, and each school could participate and focus on specific areas."

Currently, each school offers multiple pathways for its students to be a part of, but focusing on one could potentially save money.

"We all know education can be expen-

sive, especially in the Technology Education areas," Gabardi said. "By creating centers of excellence, we could focus equipment, training, and business exposures through one spot. It would be a win for both industry partners as well as the students in the pathway."

The possibilities seem to be endless for Next Career Pathways as schools and business partners all work together to give students an opportunity to find their passions.

"Next career pathways as a whole are offering students the ability to get exposure to different career areas of interest," Gabardi commented. "We can have students explore areas of interest and have a chance to see if it might be something they truly want to continue to explore. I see our program as an opportunity for students to find areas they are not interested in just as much as areas they are interested in."

Reprinted with permission in part from a larger article by Emily Carlson, Grand Rapids Herald-Review

You can see the article at <https://next-pathways.com/creating-centers-of-excellence>

ISD
728
★★★★

Educating and Recruiting a Younger Workforce in Manufacturing



Amy Lord, CTE Coordinator
ISD 728 — Elk River, Otsego, Rogers and
Zimmerman

Independent School District (ISD) 728 serves Elk River, Otsego, Rogers and Zimmerman communities as the 8th largest school district in Minnesota. The communities in this area are composed of many manufacturing businesses. Labor shortages are an issue in all industries at this time, but manufacturing has

been working to build their pipeline for several years as they saw the baby boomers retiring and had little interest from the younger generations. Local manufacturers reached out to the high schools to discuss a partnership to educate teachers and students about career options as manufacturing has high tech, high skills careers that provide good wages.

The ISD 728 developed classes based on industry standards and offers 2 years of Computer Aided Engineering & Design classes to introduce students to drafting and design along with 1 year of Welding Fabrication and up to 3 years of Design, Engineering & Manufacturing Courses at the high school level. The trade and industry instructors are amazing and very passionate about what they are teaching their students to ensure they have the skills to help them excel in post-secondary education or the workforce. In these classes, students are learning about the manufacturing industry as a whole, safety on the job, blueprint reading, technical skills, operation of industry standard tools and equipment, quality control and inspection and employability skills. They invite local employers in as guest speakers and offer tours.

In the 2018-19 school year ISD 728 added CTE Internships as the school board and

administrators are committed to supporting and funding strong CTE programs. After completing related CTE courses, like listed above, students can register for the CTE internship to provide hands-on experience in local manufacturing businesses. The changes in legislation to allow “student learners” ages 16 and 17-year-olds to work in manufacturing in partnership with schools and the Department of Labor and Industry created a new opportunity for students and employers. ISD 728 hosts paid internships with over 20 local manufacturing employers in our communities. Some interns have chosen to continue employment after graduation, while furthering their education or pursuing their dreams. Some interns have even made the transition from trainee to trainer in their career path.

ISD 728 is committed to helping all students explore and learn about a variety of career paths. To support the manufacturing pathway, ISD 728 has been awarded a \$100,000 YST Grant, \$10,000 Gene Haas Scholarships, received donations from local employers to purchase equipment, hosted Employer Manufacturing Breakfast, Chamber Sponsored Cool Jobs Tour and even started a small partnership with the local nursery to sell fabricated signs to support the welding program at Zimmerman High School. ISD 728 encourages innovation



and new partnerships to educate, inspire and empower our diverse learners, to shape their futures, to accomplish their dreams and to contribute positively to our local and global community.

www.isd728.org



Bemidji Career Academies = Real-World Experiences



Bemidji Area Schools

Our Youth Skills Training approved programs continue to help our students have meaningful paid internships at local businesses and industry partners. 70 business and industry partners in the Greater Bemidji area that financially sponsor our career academy program.

Mechatronics and manufacturing courses through the Minnesota Innovation Initiative (MI2) program continue to be popular class choices. Mechatronics with MI2 has trained a host of Bemidji High School students since the Fall of 2015 and placed numerous students in jobs at our community manufacturing companies.

The Bemidji Career Academies were created in 2017 with the mission to build learning opportunities for our local businesses and industry partners to help prepare the next generation of employees and community leaders. In doing this, our vision is to create a pathway for every student at Bemidji High School to succeed and thrive in our greater Bemidji community. We wish to train our students and retain our talent thus strengthening our local workforce.

The Bemidji Career Academies program's goal is to equip students with the skills necessary to obtain high-skilled employment while staying in the community. Rather than sending

students out of the community to attend college, perhaps never to return, the Bemidji Career Academies seeks to partner with local businesses, agencies and schools so that students can find an opportunity to earn a vocational certificate or diploma without leaving Bemidji. Through community collaboration and intentional coursework design, Bemidji Career Academies allow students the opportunity to thrive in today's workforce while staying in Bemidji and becoming productive income earners contributing to the economy of the Greater Bemidji area.

The uniqueness of the Bemidji Career Academies lies in the tremendous numbers of collaborating businesses and agencies that support the 15 existing career academies and 22 career pathways. Bemidji Career Academy students are given the opportunity to assess their skills and talents as they pertain to the world of work, build skills transferable to the workplace by taking courses specific to their chosen Career Academy, access free college courses while in high school, and have the opportunity to participate with community businesses who provide invaluable “real world” workplace experience.

Students completing all academy requirements, earn a certificate of completion and a medallion to wear at graduation showing the hard work they have put in during their time at BHS!

The Bemidji Career Academies exist



because of our hardworking community and our curious and excited students, and we are thankful for both. You can see a list of our academies below, with more information found on our Bemidji Career Academy website (bemidjicareeracademies.com), including over 70 community sponsors and partners that we have here in our own backyard!

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Staples Motley Agricultural Education Program is Outstanding!



Staples Motley Agricultural Education Team

The Minnesota Association of Agricultural Educators (MAEE) has named the Agriculture Program at Staples Motley Public Schools the Outstanding Middle/Secondary Ag. Ed Program for 2022.

The Staples Motley School District serves over a thousand students, birth to grade 12, from four counties. Striking the balance between big-school offerings and small-school feel, school district offers diverse opportunities typically offered by larger institutions, and small-school climate and culture.

Our agricultural education program currently consists of 3 full-time instructors: Peter Hendrickx, Kaylee Pratt, and Joe Ramstad. We are a very young team of teachers who are new to the profession. With all of the successes our program has achieved in recent years, we pride ourselves on being the youngest multi-pride department in the state of Minnesota. However, we use our young energy to our advantage, creating curriculum that is engaging and relevant to our students.

Boasting multiple facilities including a newly-renovated agricultural mechanics shop, classroom, office, greenhouse, school forest and high tunnel; offering a cycle of nearly 30 rigorous courses to prepare 5-12 grade students for careers, the Staples Motley Agricultural Education Program has a rich history of engagement and service on a local, state and national level.

Our courses are inquiry-based and student-centered. This lends itself perfectly to teaching courses that are science-based.

In 2020, we capitalized on an opportunity to develop an agricultural chemistry curriculum due to a resignation in the science

department. Joe Ramstad was able to launch this program in Fall 2020 which has significantly contributed to the spike in enrollment and opportunities available to the students and stakeholders engaged in our program while building a strong, collaborative and meaningful partnership with our school's K-12 science and STEM departments. Students who would typically struggle in a chemistry or physics course are able to shine in our agricultural chemistry courses as they receive access to these concepts in a more tangible and applicable venue.

When looking at the program framework

“By getting to know our students, their interests and educational needs, we challenge them at an appropriate level and expose them to skills and knowledge that will help them throughout their lives.”

as a whole, our students and colleagues have described our agricultural education curriculum as hands-on, organized, career-oriented and rigorous. We find value in building our curriculum using the AFNR

content standards while infusing literacy strategies, STEM skills, state standards in the areas of science, art, math and language arts to foster a connection between other content areas and the AFNR industry.

In 2021 alone, we impacted over 300 K-12 students through AFNR summer programming. The number of community members and public audiences we reach is incredibly high, reaching over 1500 consumers annually. We provide programming at public events and utilize these platforms to promote our program and the agriculture industry. We are fortunate to have supportive administrators, an engaged FFA Alumni and advisory board, along with many generous community members and organizations to make our students' goals and visions a reality.

In 2019-2020, Joe Ramstad served as the school's Work-Based Learning (WBL) Coord-

inator. While serving in this role, he created an employability bootcamp to provide students with hands-on training regarding workplace safety, resume and cover letter development, interviewing skills, goal setting and more. This curriculum has been shared widely across the state and even nation for other teachers to utilize in their WBL or agribusiness courses.

During their time teaching the course, both Joe and Peter conducted worksite visits and met with students and their employers to solicit feedback, document learning and reflect on opportunities for each student's growth. Students finish the course by completing a reflective portfolio and an exit interview. Many students in the WBL program work in production agriculture settings such as swine, poultry, beef and dairy farms as well as in mechanical settings such as working in automotive and small engine repair shops and in construction.

Teaching Highlights

By getting to know our students, their interests and educational needs, we challenge them at an appropriate level and expose them to skills and knowledge that will help them throughout their lives. Because each of us teach such a wide range of classes and employ different teaching methods and strategies when teaching our courses, we each have different things we are most proud of in our curriculum.

that I had. This has made me realize how closely my PLTW Robotics class ties into my Small Gas Engines, Welding and Advanced Agricultural Mechanics classes when discussing mechanisms, torque and gear ratios. My PLTW Robotics students also engage in learning about current and future robots, several construction projects, such as a windmill, pull toy and a choice between four options referring to constructing a mechanism in a survival scenario, creating a test bed for programming and then ending in 10 different builds that involve programming as well. These topics have also been strategically aligned with standards in the areas of math and science as we discuss ratios and how robots are influenced in their use and design to help support these learners in their common core courses. When the year had begun, these were some of the aspects of class that students enjoyed learning about and getting to work on and from learning this, I made sure to inform my students of my Small Gas Engines, Welding and Advanced Ag Mechanics classes to help students recognize continued opportunities to further their knowledge and build upon their interest relating to these topics. Seeing the ties into these higher-level classes has made my PLTW Robotics class popular among middle school students and will lead to more students continuing to gain knowledge and skills in the other mechanics courses offered within our agricultural education department.



Mr. Peter Hendrickx: *A class that I have grown to enjoy has been my PLTW Robotics class for 7th and 8th grade students. This was my first time teaching a robotics class, so to learn more about what I would be teaching and how to use our VEX Robotics kits I talked with the teacher who previously taught the class, other agriculture teachers, referenced NAAE Communities of Practice and other online resources. I then spent some time reviewing my curriculum and practicing with the VEX equipment*

Mrs. Kaylee Pratt: *The course I have enjoyed teaching the most has been my fifth-grade animal science class. When receiving this class, I became very excited not only because animal science is my favorite subject, but also because I would be teaching it to fifth graders. Having a class for fifth graders is almost unheard of in the agricultural education world. In teaching this class, I have gained a whole new perspective on how to*

Continued on Page 27

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The Academy for Sciences & Agriculture



Stephanie Forliti
Marketing and Communications

Whether students are working on their science fair project, planting in the greenhouse or heading out to help the community for Farm and Community Service Day, agriculture is everywhere and it is the heart of

AFSA K–12. It has been over 20 years since AFSA opened our doors to bring agricultural education to urban and suburban students. The journey begins in the younger grades, agriculture studies focuses on local agriculture, environmental stewardship, agriculture consumerism, and human impact. Many lessons are taught in conjunction with Minnesota Ag in the Classroom. The 7–12 grade curriculum includes developing leadership skills and learning about career opportunities in five areas of AgriScience, including: Engineering; Animal Science; Plant Science; Environmental Science; and Food Science. AFSA K–12 staff are all responsible for growing students' agricultural literacy by integrating agriculture topics into all classes and experiences.

Student's opportunities are continuously growing and evolving and don't stop at the classroom door. All grade levels are exposed to a wide variety of content areas and unique experiences within hands-on and practical learning applications that go above and beyond a typical classroom setting. With our own buses available to us, students K–12 have ample field trip opportunities which extend classroom learning. This may be to a park to explore the woods or to a coffee company to learn about fair trade. The high school's rooftop garden boasts raised bed planters built by AFSA's construction

classes. The high school greenhouse is in the process of being converted to a one of a kind hydroponic classroom. The school's landscaping is done by the Landscaping class, and our Floriculture class makes the boutonnieres and centerpieces for special events. AFSA students take ownership of their school and design new clubs, activities, and propose school-wide changes.

Community is a big part of the AFSA K–12 culture. The school emphasizes family involvement, community support, and partnerships with agribusiness and educational organizations.

Each school year we hold two major fundraisers, our annual fruit sales and our spring plant sale. Plants for the sale are grown by our students in our greenhouse. Along with the plant sale comes the planting of the school's annual giving garden. Produce from the garden is donated to local food shelves. Thanks to a donation from Kemps Giving Cow Foundation the school's garden will be expanded in 2023.

Over the summer months the school participates in many local events. These events are a great way to help us bring science and agriculture to the community, AFSA style. Our Science and Ag on the Go activities are highlighted at a variety of events in our surrounding communities throughout the summer. AFSA's FFA officer team and

student volunteers share their appreciation and knowledge of science and ag with the young families attending the events.

Twice a year the student body goes out into the community to volunteer and help local agriculture related businesses with a variety of projects. Our Farm and Community Service Days not only give our students service experience but hands-on agricultural experience as well. Students help maintain city parks and rain gardens, prepare blueberry fields for the winter/summer, plant, harvest, and package fresh produce. Through Farm and Community Service Days, partnerships have grown with All Good Organics and the Maplewood Area Historical Society. These partnerships have given students more opportunities and continue to build the family environment AFSA is known for.

Agriculture opportunities for students continue with AFSA's FFA affiliation. All students in grades 7–12 are members of the local, state, and national FFA Organization making AFSA one of the largest FFA Chapters in Minnesota. The partnership with the FFA allows the school to provide additional opportunities such as CDE's (Career Development Events), SAE's (Supervised Agricultural Experiences), and

Continued on Page 27

Becky Cronk, Outstanding Early Career Teacher, MAAE Congratulations Becky!



The Minnesota Association of Agricultural Educators has named Becky Cronk from St. James High School as their 2022 Outstanding Early Career Teacher.

In 2020 she was named Minnesota's Teacher Turn the Key participant. "The Teachers Turn the Key professional development

program focuses on providing early-career ag teachers with the tools and support they need to grow and flourish in the profession" (NAAE). She is the secretary of the Minnesota Association for Agriculture Educators as of 2022.

Becky is in her 5th year at St James Public Schools. She teaches Small Animal, Small Engines, Animal Science, Careers 9, Floriculture, Fish and Wildlife, Food Science, Spring Horticulture, Landscaping, Adulting, Ag Leadership, Crop Science, and multiple Junior High Ag classes. She also coaches

many Career and Leadership Development Events, and advise everyone's SAE projects in FFA as well as growing the FFA chapter from around 30 members to about 70.

Becky's classes do a Work Based Learning Project which requires 10 hours of

hands-on learning outside of the classroom. Students get to choose what their experience is going look like based on what jobs they have, resources available to them, and flexibility in their schedule.

"I am a firm believer that the best learning for lifelong success happens outside of the classroom, and so I make sure that happens. My 8th graders do an agriscience project to dive into the scientific method in a more hands on and flexible manor. I try to make my classes as hands on as possible. Some examples of this is doing around 5 arrangements a trimester in floriculture, doing mock interviews in ag leadership, running the greenhouse business in the spring during horticulture, going off site into the community to do landscaping, tearing apart and putting together a small engine, and so much more," said Becky.

There is a quarter acre garden behind the school. This garden supplies produce for the school's lunch program in the summer. Becky supervises two students over the summer as they work there and get paid by the school which is a great SAE project for them. There are also 20 raised garden beds for the Kids Garden Club in the summer. Each student gets a raised bed to take care of and take the produce from. Lastly, there is a greenhouse

attached to a head house. The greenhouse is where the yearly Plant Sale takes place in the spring. The head house is a shed attached that is used for storage, but there are hopes to make it into a hydroponics and aquaculture center in the future.

Becky was instrumental in starting a FFA Alumni and Supporters chapter in St James. This organization helps by providing mentors and financial support. The Saint James Ag Program helps them fundraise and do community service projects. They also work with area producers for the use of their animals for their baby animal day and our FFA barnyard at the fair.

Becky said her favorite special project was the summer Kids Garden Club. "We had students in shop build the raised beds and my horticulture class preps the beds each year. The 3-5th graders in the club are so much fun to work with. They get so excited to play in the soil, see their gardens grow, and harvest their first produce. They have so much energy that is contagious through the summer."



Staples Motley Agricultural Education Program Continued from Page 24



teach students. I have implemented new ways of exploring livestock and companion animals that I would not have been able to do with high school aged students. In our class, we have spent time learning about common breeds of each species (cattle, sheep, goats, swine, equine, dogs and cats), animal products and by-products and briefly touched on nutrition through hands-on labs and experiences. Being this course is an elementary-level course, I reviewed the AFNR Frameworks to determine where the students will need to be when they reach high school level animal science courses and started with the basics. My goal for this course is to encourage and prepare students for future animal science and other agricultural education courses as they progress through their middle and high school careers as well as inform students about animal agriculture and how they can make a difference in the promotion of animal agriculture.

Mr. Joe Ramstad: *One of the curriculums I am most proud of developing is my*

TACO 101 course, a food science course that meets part of students' chemistry requirements. By getting to know my students throughout my first year of teaching, I found that one common connection I had with many of them was an enthusiasm for Taco Bell. So, I designed a course with a Taco Bell theme, and although I was initially a little nervous about teaching the course since I had never taken or taught food science before, it was a major success. To prepare my curriculum, I first carefully reviewed the AFNR Framework and MN Chemistry Standards. Then, I earned grants to obtain equipment, utilized resources from other agriculture teachers and our science department, the Food Science CDE reference materials and NAAE Communities of Practice. The students and I worked through a variety of interactive lab activities, such as extracting the dyes out of Baja Blast, conducting calorimetry analysis of Taco Bell menu items and making our own Box Combos. It has become a popular course and I look forward to building and improving it even more for future years!



I am blessed to have been the beneficiary of many different ideas and resources from colleagues and am always happy to share my curriculum with anyone, as I feel that we should be utilizing one another's content strengths while working together as an agricultural education family for the collective betterment of our students. I have collaborated with other educators to develop a statewide agricultural economics curriculum as part of a project with the Minnesota Department of Education. I have also shared lessons in our MAAE Exchange of Ideas competition, where I received the overall winning idea in 2021 which was a mini-unit about soil formation, properties and color through a virtual field trip and "edible lab" activity and had the opportunity to present this as an Ideas Unlimited Winner the 2021 NAAE National Convention. At the end of the day, I believe that capitalizing on the opportunity to collaborate with and share ideas with colleagues is rewarding and ultimately, it has a direct impact on our instructional quality and our students' achievement.

We are constantly getting phone calls from community members requesting FFA or agriculture students to assist with events and always hear positive discussion in the community about our students and what they are doing.

Each year, we connect with the City of Staples' Parks and Recreation Department to determine their goals for "beautifying" the community during the spring each year. They provide us with a generous donation of plants and growing media for our spring plant sale, and in exchange, our plant science and landscaping courses have assisted in the installation and maintenance of landscapes around the community. This partnership has allowed us to leverage opportunities for students in gaining hands-on landscaping experiences while providing an opportunity for students to give back to the community and say "I did that!" when they drive past a landscaping project they assisted with.

At the end of the day, however, what is most important to our program is not the accolades that our students earn, but rather, that they have grown as people. It has been a distinct privilege to watch our students transform themselves and positively influence those around them. It is so rewarding to watch the growth of each of our students and be a part of their journey.

www.isd2170.k12.mn.us



The Academy for Sciences & Agriculture Continued from Page 26

the AgriScience fair. AFSA's FFA Alumni coordinates the Annual Potato Hug each fall providing students the opportunity to sell wares that they have produced during their SAE. Students have a chance to truly experience being an entrepreneur. Join us for our 10th Annual Potato Hug October, 7 2023.

Agriculture is the foundation of everything AFSA. From the youngest grades to our graduates AFSA K-12 is bringing agriculture to urban and suburban communities. We are always looking for volunteers to be Science Fair Judges and Career Day Speakers as well as locations for our Farm and Community Service Day. Check out our website for more information about AFSA K-12 www.afsak12.com or contact our Executive Director, Becky Meyer at bmeyer@afsak12.com.

The Academy for Sciences & Agriculture (AFSA) engages learners in academically rigorous, student-centered learning experiences and leadership opportunities within a science and agricultural context. AFSA brings agricultural literacy to urban and suburban populations. This K-12 public charter school was founded by the Minnesota Agricultural Education Lead-

ership Council (MAELC) in 2001. AFSA began as a 9th-12th grade high school with 41 students. Currently over 425 students are enrolled and the school will grow to about 600 students over the next three years. AFSA's locations, in Vadnais Heights and Little Canada, allow inclusion of students from all north/east Twin Cities areas. Currently students from 19 different school districts attend AFSA. AFSA K-12 prepares students to be wise consumers, savvy decision makers, and successful, career-oriented lifelong learners. The unique curriculum with hands-on and experiential learning drives the success of the students through high school and beyond.

afsahighschool.com



Teaching Agriculture, Food, and Natural Resource Education: Perhaps the Best Kept Secret?

Agricultural, Food, and Natural Resources (AFNR) education has been taught in Minnesota schools for more than 100 years and currently serves over 35,000 students in grades 7–12. While the value of AFNR education is extensive, and its impact profound, unless someone has enrolled in school-based AFNR courses, participated in 4H or FFA youth organizations, or had familial connections to agriculture or food production, the concept of taking (or teaching) such courses in a middle or high school may seem foreign. Those in the profession often tout it as the best career, yet others may wonder if it really is a viable choice for career-seeking youth and adults — and, if so, what that may entail.

What is agriculture, food, and natural resources education?

AFNR education prepares students for successful careers and a lifetime of informed choices through three inseparable and interdependent program components: Classroom Instruction, social-emotional skill development/FFA leadership, and work-based learning/Supervised Agricultural Experience. This integration means that AFNR is not “just a class”, but rather a program which offers countless leadership and career development opportunities.

What does AFNR education look like in Minnesota?

There is a severe shortage of AFNR teachers, largely due to increased demand for AFNR programming. As such, career opportunities in AFNR education are abundant. With approximately 325 AFNR teachers employed at roughly 220 school districts across Minnesota, nearly 40% of programs had staffing changes immediately prior to the 2022–2023 school year. At present, some vacancies still remain.

These AFNR programs offer coursework and experiences within seven career pathways: agribusiness systems; animal systems; food products and processing systems; environmental service systems; natural resources systems; plant systems; and power, structural, and technical systems. There are nearly 100 different approved courses ranging from *Woods, Water and Wildlife to Moo to You: Dairy Science*, and from *Life on Your Own: Ag Careers and Resource Management to DNA, Droids and Drones: Ag Technology*.

For whom might this be a good career?

If you love working with and mentoring young people, and have an interest in or affinity for the outdoors, animals, plants, or food,

this may be the perfect fit! You do not need to have production agriculture experience, a desire to “be a farmer”, or live in a rural area. St. Paul, Minneapolis, Rochester, and Mankato — all larger, more urban Minnesota communities — already offer school-based AFNR programs and more programs are being established each year.

If this sounds intriguing, what should I do?

If AFNR education sounds interesting to you personally, or prompts you to think of someone else (a student, colleague, family member) who may be interested, reach out to explore undergraduate, graduate, or additional licensure programs at the University of Minnesota — Twin Cities (email: aecm@umn.edu). Agricultural Education, Communication and Marketing program (<https://ag-ed.cfans.umn.edu/>) faculty and staff are committed to student success and development. The St. Paul campus offers a safe, comfortable community of engaged learners and is an ideal location for immediate access to rural, suburban, and urban school-based AFNR programs. Agriculture, food, and natural resource content, pedagogy, and agricultural education specific courses comprise program requirements, packaged as a high-quality, intentionally developed cur-



riculum that meets licensure standards in both 5–12 Agricultural Education and 9–12 Teacher Coordinator of Work-based Learning licensure. A dedicated learning laboratory and shop facilities help pre-service teachers learn content and teaching skills in realistic teaching spaces.

Help share our best kept secret! AFNR educational opportunities, at all levels, can be transformational, challenging, and rewarding. There has never been a better time to get involved personally, or encourage someone you know. Reach out for more information!

Amy Smith

Associate Professor, Agricultural Education,
612-624-6590

Laura Rice

Assistant Teaching Professor, Agricultural
Education, 612-625-7274

Tiffany Kobbermann is MAITC's 2022 Outstanding Teacher Continued from Page 1



future on campus, and a student learning garden that will be planted in the fall of 2023. There are also plans in place to plant fruit trees, strawberries and raspberries to be used as part of school learning.

All of Tiffany's foods' classes are agriculturally based, starting from planting to harvesting and the path it took to get to a person's kitchen table. Tiffany believes that it is important to know that the food item does not just come from a grocery store, it involves skilled workers, animals, plants and technology from all over the world.

Projects to note:

- Tiffany grew sunflowers at her farm and brought them into her class in the fall. Students helped to dry and cure the heads and then weighed and measured them before seeding them. Students compared 2 types of sunflowers, one grown for oil, and one grown for seed eating. Students shelled the sunflower seeds and made sunflower butter while also studying consumer trends with using sun butter, sunflower oil, and sunflower seeds in food products.

- Where does sugar come from is an import theme discussed in foods class that is highly unrecognized by many teens. Living in the center of one of the largest belts for growing sugar beets, Tiffany thought it was crucial that her students recognize that the sugar in their lemonade and cake were from the plants growing in the fields lining the roads by students' homes and growing within a mile of the school building. Students learning how sugar beets are grown in shares, harvested, piled, and processed. Students learned about the chemists, lab techs and scientists involved in checking sugar percentage while having a conversation with Steve Dom from the Southwest Sugar Cooperative. Thanks to some friends, Tiffany was able to take live video of harvest and from a semi to show her students while they had real sugar beets in their hands watching. Students participated in a STEM lab with the sugar beets, weighing, measuring, using a microscope and taking samples. Using the information from these activities, students then compared sugar cane and sugar beets and found out that both plants are molecularly identical. Lastly, students studied artificial sweeteners and compared them to real sugar and did a blind taste test. Students had cooking labs utilizing all 3 types of sugars. Sugar.

org is a fantastic website that pairs the sugar beet and sugar industries together to promote all things sugar.

- While studying potatoes Tiffany invited the local Lutheran Church ladies to join her class and help teach her students how to make lefsa in a 2-day STEM lab experience. It was a fun cross generational project that resulted in new friends and lots of laughs. Students also planted potatoes in the classroom in November and later harvested them in late April and enjoyed them as part of a meal.

Tiffany was recently selected to be one of the 23 teachers from around the world to be a member of the World Food Prize Foundation Global Guides Program. This is a 9-month professional development program focused on connecting teachers to issues and ideas surrounding the themes of the World Food Prize. Tiffany was able to attend the World Food Prize Convention over MEA break and attend the Laurette ceremony at the Des Moines Capital Building. During the ceremony, the winner, Mrs. Rosenzweig acknowledged the work of the 23 teachers in attendance. This was the first time in history any teacher was acknowledged at the ceremony.





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 - Extension Educators
 - Youth Outreach Coordinators
 - Sales Representatives
 - Conservation Technicians

TEACHING CAREER OPPORTUNITIES:

- Minnesota has over 320 teaching positions in agriculture, food, and natural resources (AFNR) and demand continues to grow!
- Average starting salary for new AFNR teachers in MN in 2021-22 was \$45,034
- Scholarships and state/federal student loan forgiveness available



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Onamia Educator is 2022 Minnesota Teacher of the Year

Congratulations Sarah!



Sarah Lancaster, a first-grade teacher at Onamia Elementary School in the Onamia district, is the 2022 Minnesota Teacher of the Year.

Lancaster is the 58th recipient of the prestigious award, the first from the Onamia district and the first teacher of Asian Pacific Islander descent to be named Minnesota Teacher of the Year. An independent selection committee representing Minnesota leaders in education, business and government chooses the Teacher of the Year from individuals who are nominated and who then choose to become a candidate. She was chosen out of an initial list of 77 candidates from around the state.

Lancaster's first and only teaching job has

been in her hometown, working with third- and first-grade students in Onamia Public Schools over the last nine years. She says it is important to live in the town where she teaches so her students can see and identify her, the only BIPOC teacher in her district, as a community leader. "I want to give back to the community that once helped to set me up for success," she said.

She's showing everyone that you don't need to leave small towns to accomplish big things. Onamia is the smallest Minnesota town to claim a Teacher of the Year in nearly 40 years.

"We have 859 people in the community of Onamia and now I have a bigger platform to speak for them," she said.

Lancaster believes in the power of relationships and helping her students establish an identity for themselves. "As a teacher, I get to show my students that they can reach beyond whatever barriers they encounter," she said in a video submitted to the Teacher of the Year selection panel. "I get to show them that beyond these barriers is an amazing person, a scholar, an athlete, someone looking to connect with their culture and find their true identity. I can supply and awaken the language, strategies, enthusiasm and joy that very well may have been inside them all along."

"If you find me on any given day I'm coaching, directing a musical, I'm at a meeting

at city hall, I'm at the school teaching," Lancaster said. "So my students see me in all different capacities and that's how I want them to see themselves."

"No matter the age of the students she is working with, Sarah displays an unrivaled amount of passion for student education and improvement," said Cynthia Martin, a fellow first-grade teacher at Onamia Elementary, in a letter of recommendation for Lancaster. "Sarah is forever willing and open to acquiring new knowledge to help students in need of intervention or enrichment. Her breadth of knowledge in teaching methods is vast, and she is able to connect with students in so many effective ways."

"As a first-grade teacher, it's been rewarding to see how students learn from each other. We practice conflict resolution, and many have gone from not knowing how to communicate—sometimes called screaming—to advocating for themselves. It's great to see their academic as well as personal growth," said Sarah.

Lancaster has coached more than 20 seasons of both athletics and arts programs in Onamia, directing three of the annual high school musicals and volunteering with local youth groups as well as through her church.

Information courtesy of Education Minnesota



2022 Minnesota Teacher of the Year Sarah Lancaster threw out the first pitch at the St. Paul Saints game July 12!

www.onamia.k12.mn.us



Nominations for 2023 Minnesota Teacher of the Year are now open!

The Minnesota Teacher of the Year program, now in its 59th year, is the oldest and most prestigious recognition program in Minnesota to honor excellence in education.

The program chooses one teacher to represent Minnesota's thousands of excellent educators.

Selection Process

A selection panel representing Minnesota leaders in education, business and government chooses the Minnesota Teacher of the Year from individuals who are nominated and who then choose to become a candidate. Panelists review candidate portfolios, review video submissions of semifinalists and interview finalists in person.

The Minnesota Teacher of the Year represents the profession as an advocate for education and spokesperson for teachers. The Minnesota Teacher of the Year makes presentations, meets with policymakers and attends frequent meetings.

Peers, school personnel, parents, community members and students may nominate teachers. Many nominees come from school district-level Teacher of the Year programs throughout the state.

Eligibility

Eligible nominees must meet these criteria:

- Teach in a public or nonpublic Pre-K through 12th-grade school or ECFE or Adult Basic Education program, working at least 50 percent of the time directly with students.
- Hold a bachelor's degree and a Minnesota teaching license.
- Have completed five years of teaching by the nomination deadline.
- Intend to teach for the full following school year after being named.

Once nominated, teachers will receive a packet in the mail containing instructions for moving forward in this process. Learn more about how to become a candidate for Minnesota teacher of the year. Note: Nominees only can accept nominations in any two consecutive years.

For more information, call Ashley Behrens at 651-292-4862 or 800-652-9073.

Information courtesy of Education Minnesota

educationminnesota.org/news/awards-and-honors/teacher-of-the-year

Churchill Elementary is a 2022 National Blue Ribbon School

The National Blue Ribbon Schools Program recognizes outstanding public and non-public schools.

Churchill Elementary School, ISD 94, Cloquet, MN

Churchill School is one of two elementary schools in Cloquet, Minnesota, a rural part of Northeast Minnesota. The Cloquet community abuts the Fon du Lac Band of Lake Superior Chippewa Reservation and the port of Lake Superior in Duluth, Minnesota.

Teamwork is the name of the game at Churchill. All staff enthusiastically supports the Response to Intervention process. An intervention block schedule along with consistent school data retreats have been integral to supporting student academic success. Dedicated classroom intervention and special education staff review all student data which empowers them to identify individual student academic needs and determine appropriate intervention or enrichment group placement. Student intervention groups are monitored bi-weekly to track academic growth and adjustments to instruction when needed.

Churchill's high-quality core instruction in the classroom and intervention groups are credited with helping close the achievement



gap. With an intentional focus on individual student needs, regular monitoring, and high-quality instruction, students make progress towards their learning goals leading to a shrinking achievement gap.

Churchill's staff see the substantial value of establishing relationships with students and families, which are crucial to supporting student achievement. Through teamwork, data review, and strong relationships Churchill staff does an outstanding job of supporting all students and families.

isd94.org/domain/15



K Ariana Wright, Kasson-Mantorville Schools, Named Minnesota's 2022 NAESP National Distinguished Principal



Ariana Wright, principal of Kasson-Mantorville Elementary in the Kasson-Mantorville Schools District, and a member of the Minnesota Elementary School Principals' Association (MESPA) is Minnesota's 2022 NAESP National Distinguished Principal (NDP). MESPA and the National Association of Elementary School Principals (NAESP) present the prestigious award.

"I am humbled and honored to represent the hundreds of passionate, dedicated and student-centered elementary principals from around the state as the 2022 National Distinguished Principal of Minnesota," said Wright, "Serving

students, families, staff, and the communities of Kasson and Mantorville is my passion and being recognized for doing what I love is something I will treasure as a highlight of my career! I am genuinely grateful to the Minnesota Elementary School Principals' Association for providing a strong foundation of support and leadership development opportunities."

Wright began her career in education in 2001 as a music teacher at the St. Michael Catholic School in St. Michael, Minnesota. In 2003 she moved to the Belle Plaine Public Schools District, where she continued to teach music until she was hired as a principal at Menahga Elementary School in 2011. Then in 2015 Wright made the move to her current position as principal of Kasson-Mantorville Elementary.

Among her greatest accomplishments as a principal, Wright is proud of building a strengths-based leadership culture at Kasson-Mantorville Elementary. "Over the past four years we have developed this culture in our school community through learning about strengths and embedding a strengths-based approach into our systems," Wright said in her application, "Teacher and student agency has been a positive result of this effort." Wright emphasized that staff, not just administrators, must be part of the framework for this system to work, "To ensure positive learning conditions for students, work needs to be done to

ensure positive working conditions for all staff."

When asked how she supports learners who are struggling, challenges learners who are excelling, and maintains high standards for all, Wright stated, "One of my core beliefs as a leader is that everyone deserves excellence. All students, staff, parents, and our community deserve an excellent education for our children. At Kasson-Mantorville Elementary I set high expectations and do not settle for less." She explained that she focuses on actionable feedback and instructional coaching with her staff, and emphasizes compassion in her leadership, "I see the best in others and call them into their limitless potential. Seeing the best in staff and providing feedback to help them grow ensures success for all students."

Alecia Meline, a First Grade Teacher at Kasson-Mantorville Elementary, recommended Wright highly for the honor, "Mrs. Wright has many admirable leadership qualities, but most foundationally, she leads by example. She does not ask her staff to do something she would not do herself. She reaches out to families with strategies and solutions she has used with success. She knows that the mark of a good leader is building a community of good leaders. This has been built in our school by paying attention to the voices around her, sharing responsibility, recognizing compatible strengths, making a safe space for differing opinions without judgment, delegating

when necessary and appropriate, being creative, being persistent, and being inexhaustibly positive with a great sense of humor. For that, she is admired."

"MESPA is very excited to have Principal Ariana Wright from Kasson-Mantorville Elementary School to be selected by her peers as the 2022 MESPA National Distinguished Principal," said MESPA Executive Director, Jon Millerhagen, "Principal Wright's energy in helping other principals is infectious. She is a true leader and has led principals at the division level in Northern and Southeastern Minnesota, in fact, she received the Southeast Division Leadership Achievement Award in 2018. Ms. Wright's leadership during the COVID-19 pandemic benefitted several schools throughout Southeast Minnesota when she shared her COVID Learning plans for in-person and virtual learning. Congratulations Principal Wright on receiving the 2022 NAESP National Distinguished Principal Award from Minnesota."

Courtesy of Minnesota Elementary School Principals' Association (MESPA)

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CSTA Teaching Excellence Award – Congratulations Melanie Olson!

A First for Minnesota Educators!



Buffalo-Hanover-Montrose School District's Melanie Olson is one of ten national recipients of the 2022 Computer Science Teachers Association (CSTA) / Infosys Foundation USA CS Teaching Excellence Award. She is the first Minnesota educator to receive this award. Melanie received a full scholarship to the CSTA 2022 Annual Conference in Chicago

and a \$7,500 stipend in recognition of her outstanding work.

The CS Teaching Excellence Awards are designed to recognize outstanding teaching by K–12 computer science teachers. Winners excel in inspiring students to explore the computer science field, engaging students in learning rigorous standards-aligned computer science content, and broadening the participation of underrepresented students in computing.

Melanie Olson resides in Monticello and has taught for the Buffalo-Hanover-Montrose School District in Minnesota for 17 years, with the last 11 being in the Quest Program which is a school-within-a school for gifted and talented students. She has a B.S. in Elementary Education and an M.S. in Special Education from St. Cloud State University. She holds teaching certificates in Technology Education, Gifted Education, and Environmental Education from Hamline University.

Melanie teaches a multi-age class of grades 2-4. She began integrating com-

puter science(CS) in 2013. Continuously seeking opportunities for her students she has integrated Micro Bits, Spheros, Dash and Dot Robots, LEGO Mindstorm sets, Makey Makey kits and a variety of CS curriculum. Students learn Python language using Firia Labs Jumpstart and CodeBot curriculum. Melanie says, "My ultimate goal is to instill a passion for CS and give students the tools and resources they need to continue learning beyond the walls of my classroom."

Melanie provides professional development throughout Minnesota and nationally by presenting at conferences and working with school districts. She serves on the Minnesota Department of Education's Gifted and Talented Education Committee. She is Vice President of the Minnesota Educators of the Gifted and Talented. She serves as an advisor to the State of Minnesota's Javits project, Universal Plus. This project identifies second- and third-grade students showing increased interest in and positive attitudes toward their learning in

general, and CS. The goal of the grant is to identify a greater number of students as gifted, particularly in CS, who are limited English proficient, 2E, or are from a traditionally underrepresented racial/ethnic group.

Melanie has been honored as a TIES Exceptional Teacher for technology integration, a regional WEM Award recipient, a State WEM Award recipient and was featured on the show Hands-On-Science airing on Twin Cities Public Television.

www.bhmschools.org



11 were finalists for 2022 Minnesota Teacher of the Year

2022 Minnesota TEACHER of the YEAR 58th Anniversary

The 2022 Minnesota Teacher of the Year was chosen from a group of 11 teachers from across the state who were named finalists in the program. An independent selection panel of 22 leaders in the areas of education, business, government and nonprofits selected the finalists from a group of 25 semifinalists. There were 77 candidates for this program year.

The selection panel met to conduct individual interviews with each of the finalists and to cast votes for the 2022 Minnesota Teacher of the Year. For a look at how the selection process works, go to <https://www.educationminnesota.org/news/awards-and-honors/teacher-of-the-year>

The 2022 Minnesota Teacher of the Year finalists (listed alphabetically, with school, district, subject and grade[s] taught) were:

- Edward T. Barlow, Anwatin Middle School, Minneapolis Public Schools, music, grades 6-8.

- Younna Eiden-Giel, Park High School, South Washington County Schools, social studies, grades 11 & 12.
- Jon Fila, Northern Star Online, Intermediate District 287, English, grades 9-12.
- Kendall Gonzalez, Matoska International School, White Bear Lake Area Schools, elementary education, Kindergarten.
- Paul Houck, Southwest Metro High School, Southwest Metro Intermediate District 288, English and math, grades 9-12.
- Bradley Hubred, Moose Lake Community Schools, Moose Lake Community Schools, science, grades 5& 6.
- Erin Karlgaard, Lowell Elementary School, Brainerd Public Schools, elementary education, grade 3.
- Sarah Lancaster, Onamia Elementary School, Onamia Public Schools, elementary education, grade 1.



Left to Right: Kendall Gonzalez, Eric Zuccola, Andrea Welvaert, Edward T. Barlow, Sarah Lancaster, Paul Houck, Younna Eiden-Giel, Jon Fila, Erin Karlgaard, Bradley Hubred, Rachel Volkmann

- Rachel Volkmann, Gatewood Elementary, Hopkins Public Schools, all subjects/literacy, grade 5.
- Andrea Welvaert, Cottage Grove Middle School, South Washington County Schools, ASD/SPED, grades 6-8.
- Eric Zuccola, Robbinsdale Cooper High School, Robbinsdale Area Public Schools, English, grades 9-12.

Source - Education Minnesota



Dr. Heidi Miller, Anoka-Hennepin Schools, Selected NAESP Outstanding Assistant Principal™ from Minnesota



Dr. Heidi Miller, assistant principal of Rum River Elementary School in the Anoka-Hennepin Schools District and a member of the Minnesota Elementary School Principals' Association (MESPA), is Minnesota's 2022 NAESP National Outstanding Assistant Principal. MESPA and the National Association of Elementary School Principals (NAESP) present this prestigious award.

The National Outstanding Assistant Principal™ program was established in 2011 to honor assistant principals who are

doing a superb job in their roles. NAESP is committed to preparing assistant principals to step into the principal role. This program promotes educational excellence for pre-kindergarten through eighth grade (PreK-8) schooling and calls attention to the fundamental importance of the assistant principal. NAESP will share their successes and best practices in a practical document for other principals to utilize.

Lynn Shereé Lesmeister, a kindergarten teacher at Rum River Elementary, singled out Dr. Miller's dedication and attitude as some of her greatest strengths. Lesmeister said, "I have been an educator for over 30 years and I have never experienced someone in her position with such a combination of professionalism, drive, and warmth. She radiates positivity."

Dr. Miller considers collaboration to be one of her best practices as an educator. She explained that staff groups meet weekly to analyze student data and have open conversations about what is working, what needs to change, and create an action plan.

She said, "Establishing vulnerable and supportive teams throughout our school sets the tone of our school's positive culture and happy staff morale." Dr. Miller attributes

improvements in academic achievement, staff morale, and decreases in undesirable behaviors at Rum River to this collaborative practice.

When the COVID-19 pandemic hit, Dr. Miller recognized the major shift taking place in her school and took the opportunity to build practices that would support the entire school community. She explained, "I worked with my teachers to ensure that their needs were met, that they felt supported and cared about and that we were able to successfully move forward as a united team." She considers shifting the educational practices at Rum River while protecting their vibrant school atmosphere to be one of her greatest accomplishments.

"Dr. Miller has a clear vision of excellence in teaching and learning and is able to convey this vision to staff members, students, and parents in a positive and collaborative manner," said Jeffrey Clusiau, principal at Rum River Elementary school. He praised her balanced leadership and holistic approach to the Assistant Principalship saying, "She provides consistent and fair leadership to staff members while supporting the mission of the school and school district by taking on a wide range of duties

and responsibilities within the school."

Dr. Miller has been working in the field of education for more than 10 years, serving as a classroom teacher, literacy specialist, and administrative intern before becoming Assistant Principal of Rum River Elementary in 2019.

"I am honored and humbled to be the recipient of this award," said Dr. Miller. "This recognition would not be possible without my school's dedication, determination, and grit. Together, we are all committed to educating our students and meeting their needs."

Courtesy of Minnesota Elementary School Principals' Association (MESPA)

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Kimberly Lane Elementary is a 2022 National Blue Ribbon School

The National Blue Ribbon Schools Program recognizes outstanding public and non-public schools.

**Kimberly Lane Elementary School,
Wayzata Public School District
Plymouth, MN**

The foundation of Kimberly Lane Elementary School's success lies on decades of consistent hard work and high expectations from our school community. Former and current teachers, students, caregivers, paraprofessionals, social workers, and volunteers all share in this celebration.

Due to two school boundary changes over the last five years, the school has seen changes to their student population. However, through it all we have continued to lean into a key commitment: literacy. Each year staff partner with Kimberly Lane's Parent Teacher Association (PTA) to support students' literacy and belonging. For instance, one year the PTA raised enough money so every classroom library received \$800 in new books. Prior to the purchases, staff audited individual classroom libraries, and then set purchasing parameters that focused on non-fiction texts, Indian-American authors to promote the



windows and mirrors of literature, and student choice. Once the books started to arrive, the energy in the building crackled. One Indian-American girl hugged a book, pointing out that the girl on the book cover looked just like her. One teacher even wrapped all of the new book purchases. She videotaped the high-energy book opening party and sent it to the PTA as a thank you. This encouragement to each and every reader is one example of a difference maker at Kimberly Lane Elementary. An additional bonus? That school year the school's standardized scores increased, too.

[wayzataschools.org/
kimberlylane](http://wayzataschools.org/kimberlylane)



Presidential Awards for Excellence in Mathematics and Science Teaching (PAEMST)



On February 8, 2022, 102 STEM teachers were announced as recipients of the prestigious Presidential Award for Excellence in Mathematics and Science Teaching.

The Presidential Awards for Excellence in Mathematics and Science Teaching (PAEMST) are the highest honors bestowed by the United States government specifically for K–12 science, technology, engineering, and mathematics teaching. The Awards were established by Congress in 1983. The Presi-

dent may recognize up to 108 exemplary teachers each year.

Awards are given to science, technology, engineering, and mathematics teachers from each of the 50 states, the District of Columbia, the Commonwealth of Puerto Rico, the Department of Defense Education Activity schools, or the U.S. territories as a group (American Samoa, Guam, the Commonwealth of the Northern Mariana Islands, and U.S. Virgin Islands).

The award recognizes those teachers have both deep content knowledge of the subjects they teach and the ability to motivate and enable students to be successful in those areas. Since the program's inception, more than 5,200 teachers have been recognized for their contributions in the classroom and to their profession.



Brian Hare,
E-STEM Middle School
Saint Paul Public Schools
K–6, Science, 2020

“The Presidential Award signifies that I am striving to teach my students at the highest level. Students of our nation deserve to be taught by teachers that create meaningful content that challenges them to become competent citizen-scientists. All students deserve this no matter where they are in the nation, who teaches them, or what school they attend. Receiving this award with all the other deserving nominees reassures me that students are receiving a great education in our nation.”

The official biography below was current at the time of the award.

Brian Hare has taught sixth grade physical science at E-STEM Middle School for the past two years. He spent the previous six years of his eight-year teaching tenure teaching sixth grade physical science, eighth grade earth science, and Makerspace at Capitol Hill Magnet School.

Brian creates curriculum that is inquiry-based and allows students to experience science at their own level. He continually incorporates real-world experiences that bring students closer to how science “is done” in the field. Brian balances having fun in the classroom with challenging students to push themselves further to become physical science content experts.

Brian has received multiple grants to help students use engineering to advance their study of science content. While at Capitol Hill, he wrote, received, and imple-

mented grant-based curriculum where students built catapults to study simple machines and Newtonian physics. At E-STEM, Brian wrote and received a grant to have students build a Rube Goldberg device with reusable materials in order to study Newtonian physics.

Brian has served as a mentor teacher leading professional development for science teachers at individual, group, and district levels. He is a certified professional development leader of Science Teachers Learning from Lesson Analysis that was developed by the Biological Sciences Curriculum Study.

As the Site Leader for the Saint Paul Public Schools STEM Camp, Brian developed 11 engineering design activities and three STEM rotations that enable teachers to deliver STEM curriculum at the camp.

Brian earned a B.S. in engineering and an M.Ed.. He is certified as a sixth through eighth grade science teacher and as a 9-12 chemistry teacher.

www.spps.org/estem



Abram Schwartz,
Bemidji Middle School
Bemidji Area Schools
K-6, Mathematics, 2020

“This award celebrates continuous learning, growth, and pursuit of excellence in teaching mathematics. My journey began

with self-reflection and a desire to build more meaningful mathematics experiences for my students, which have had a tremendous impact on classroom dynamics and student achievement. The support and expertise of my mentors and colleagues have been instrumental in achieving this goal. I look forward to continuing this journey and creating a lasting impact on mathematics education.”

The official biography below was current at the time of the award.

Abram (Abe) Schwartz is entering his 11th year of teaching sixth grade mathematics at the Bemidji Middle School. He spent the previous seven years of his 18-year tenure teaching in the kindergarten through fifth grade setting at Lincoln Elementary School.

Abe has been awarded several STEM-related grants that provided outstanding professional development opportunities, ranging from NASA Space Camp to the Summer Math Institute at the local university. These opportunities helped create a rich STEM program with diverse learning experiences for the Bemidji Middle School students.

Inspiring a love of mathematics and fostering rich mathematical discourse are staples in Abe's classroom. He uses real-world examples and active learning to keep students excited and interested in mathematics.

Abe has a longstanding relationship with the Mathematics Education Department at the local university and has provided countless hours of classroom experience for the future educators in this program. He has also presented sessions on mathematics education at local and state conferences and has teamed with his mentors and colleagues to present at the NCTM Annual Meeting.

Abe has a B.S.Ed. in elementary education and a Master of Mathematics Education degree. He is certified in communication arts and literature, kindergarten through eighth grade; mathematics, kindergarten through eighth grade; and has a Math Specialist degree.

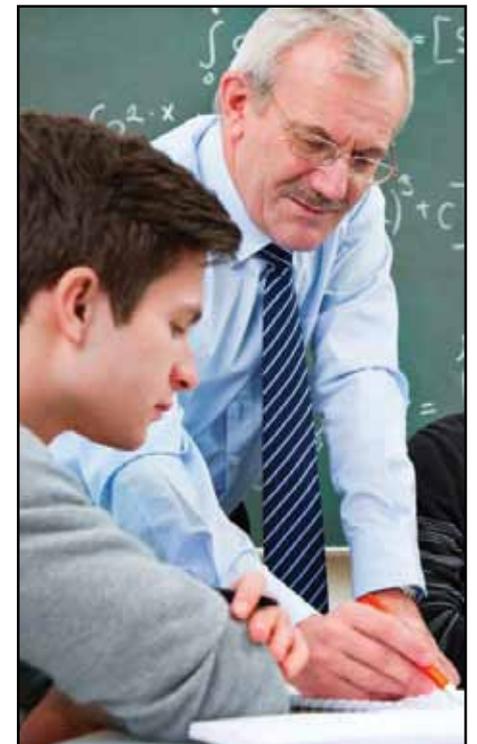
www.bemidji.k12.mn.us



Nomination

Anyone—principals, teachers, parents, students, or members of the general public—may nominate exceptional individuals who teach science, technology, engineering, and mathematics in grades 7-12 for this award year. To submit a nomination, the following information is required:

- Teacher's name
- Email address
- School contact information



Nominations may be submitted for more than one teacher. Teachers may also initiate the application process themselves at www.paemst.org.

Once a teacher is nominated or initiates the application process, the teacher will receive an email invitation to continue the application process. The invitation will include login information for accessing the online application system.

Contact info@paemst.org if you have any questions regarding the PAEMST nomination process.

<https://www.paemst.org/nomination/nominate>



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**- Jen Sahr, Multi-Tiered System of Supports (MTSS)
Coordinator, Fargo Public Schools (North Dakota)**

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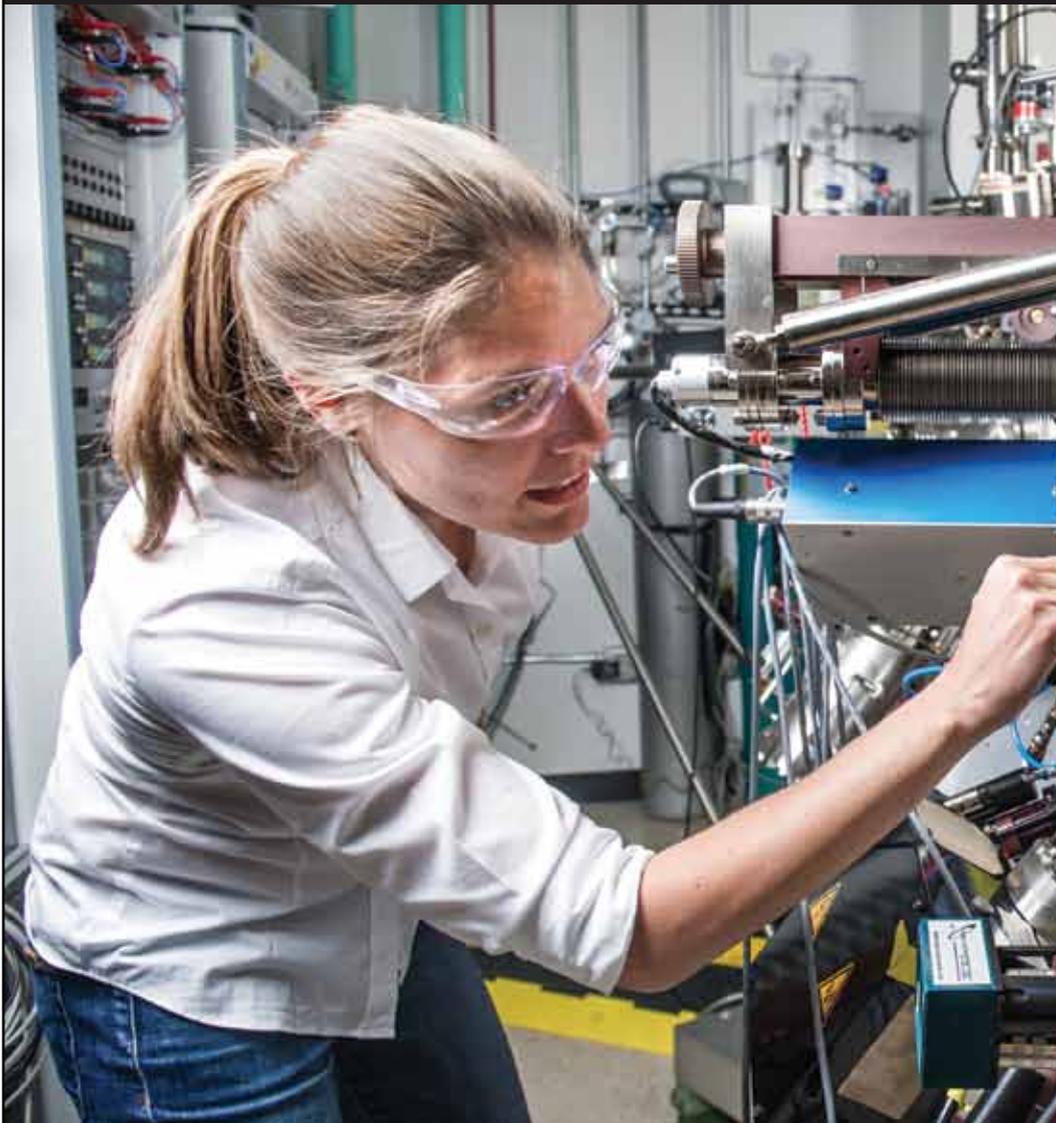
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Contact: Kurt Helgeson — Department Chair
E-mail: krhelgeson@stcloudstate.edu
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