TEACHING TODAY MN™
MINNESOTA'S K–12 EDUCATION CONNECTION
Winter 2025

Embracing Innovation: Lessons from Germany's Apprenticeship Learning Model

North Branch Area Public Schools

In early December, North Branch Area Public Schools (NBAPS) Director of Teaching and Learning David Treichel was selected to participate in a study tour of Germany's Apprenticeship model, traveling to several cities in Germany, including Mainz, Pforzheim, Freidburg, Stuttgart, and Frankfurt. The trip, "Next Level Apprenticeships: Transatlantic Exchange on Training Programs," was funded by the German American Chambers of Commerce.

In Germany, students have the option of entering the country's apprenticeship system in 11th grade. Schools enter into 3.5 year contracts with participating companies to provide students with both theoretical and practical learning. In the first year, students spend about 50% of their time in a classroom setting provided by the company, and 50% of their time working for the company. As the student progresses, more and more time is spent working and learning alongside their co-workers. At the end of the 3.5 years students are tested to see if they are in need of further education or if they are ready to enter the workforce on a permanent basis.

It is estimated that German companies spend approximately $150,000 over the 3.5 years of apprenticeship, but it is considered a worthy investment for the long term and part of the industry's social contract with the nation. Its apprenticeship model is a partnership between the German education system, the student, and the company. In Germany there are 350 federally recognized trades, each with a standardized apprenticeship program. The German apprenticeship training system is considered one of Germany's most successful exports, and American companies can build on this knowledge to successfully implement their own apprenticeship programs.

Continued on Page 20

Montevideo High School Small Engines Program

Kati Birhanzl, Career Coordinator
Montevideo Public Schools

The Small Engines Program at Montevideo High School is a partnership between a nearby agricultural equipment dealer and the Small Engines class taught by MaQuelah Miner. The partners provide curriculum suggestions for industry standard instruction and experiences that prepare students for the workforce or post-secondary training in the mechanics field.

The discussion began when the equipment dealer communicated that there is a workforce shortage for mechanics. One of the goals of the program is to prepare and encourage future mechanics to stay local, therefore creating a grow your own opportunity for our partners by having highly trained professionals from the workforce come alongside our classroom instructor to provide industry standard experiences and guidance to our students in a shop that has been inspected by industry professionals. Curriculum alignment discussions were held with Lake Area Tech instructors for seamless transition to their Diesel Mechanic program.

Students work in small groups with hands-on projects to learn the objectives. Guidance and support of learning is provided by the teacher and visiting employer partner. Students begin this class with varying degrees of understanding of small engines. In small groups, they learn from each other as they problem-solve on a test engine or working on a student-provided project.

Continued on Page 17

OPPORTUNITY FOR ALL

Whether you're looking for a stepping stone to a four-year degree, hands-on training to jump-start your career, or something in between – you'll find it at Northland. We offer fast-paced, real-world training that prepares you to be workforce-ready immediately. This means you will be learning valuable on-the-job experience before some of your peers do!

- ▲ **Aerospace**
- ▲ **Agriculture**
- ▲ **Automotive & Transportation**
- ▲ **Building Trades**
- ▲ **Business, Management & Marketing**
- ▲ **Education**
- ▲ **Health & Human Services**
- ▲ **Information Technology**
- ▲ **Law, Public Safety & Security**
- ▲ **Liberal Arts & Transfer Pathways**
- ▲ **Manufacturing & Industry**

NORTHLAND
COMMUNITY & TECHNICAL COLLEGE

Visit **northlandcollege.edu**, or **scan the QR code** to get started today.

A MEMBER OF MINNESOTA STATE

TEACHING TODAY MN™

PUBLISHER/EDITOR: Renee Feight
EDITOR: Andria Reinke
PAGE COMPOSITION: Andrew Clausen
WEBMASTER: Scott Bayerl
SPECIAL ASSISTANT: Allie Zacharias
Please direct articles, advertising, questions or comments to:

Teaching Today MN™
PO Box 1704
Eau Claire,WI 54702
Phone/Fax 715-839-7074
www.teachingtodaymn.com

Please direct all inquiries to:
renee@teachingtodaymn.com

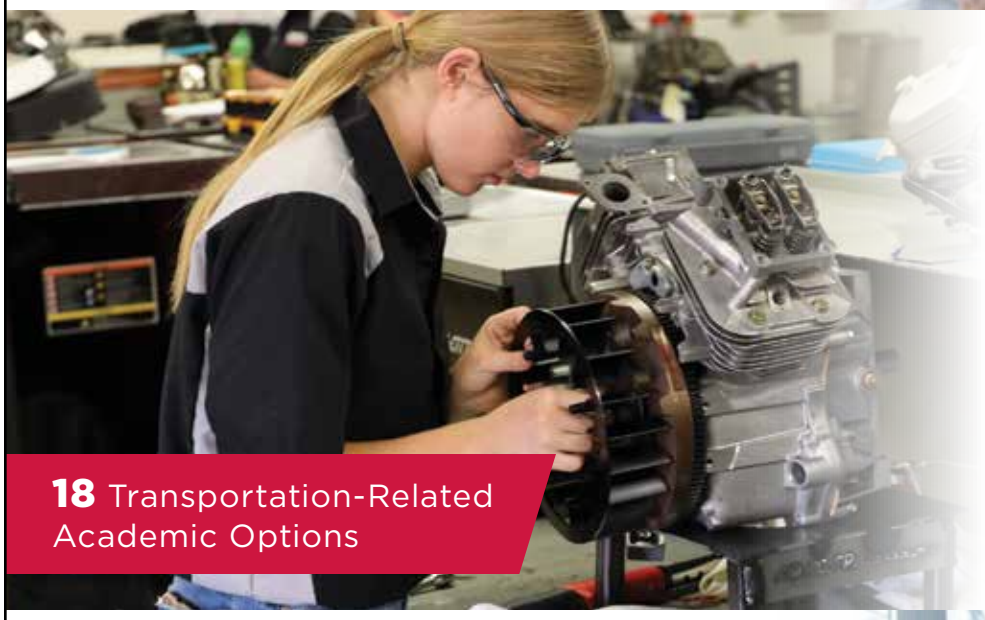
***Teaching Today MN*™ is an independent publication for educators.**

The opinions expressed in *Teaching Today MN*™ are not necessarily the opinions of *Teaching Today MN*™. We reserve the right to edit any and all materials submitted due to grammar, content and space allowances. Articles, photos and artwork submitted to *Teaching Today MN*™ are assumed to be released by the submitter for publication.

***Teaching Today WI*™**
***Teaching Today MN*™**
***Transportation Today WI*™**
***Manufacturing Today WI*™**

In this issue of Teaching Today MN

Explore the
100+ academic options at NDSCS
and go from **college to career** in an
affordable two years.



- **71%** of Minnesota degree-seeking students attend **tuition-free**
- Over **$1.4 million** in available **scholarships**
- Academic programs in **high-demand career fields**

PLUS get the full **student life experience** in Wahpeton with residence halls, athletics, clubs, events and more!

THE *SMARTER* WAY TO COLLEGE

NDSCS™
NORTH DAKOTA STATE COLLEGE OF SCIENCE
WAHPETON | FARGO | ONLINE

LEARN MORE ABOUT NDSCS
at **NDSCS.edu/Become-A-Wildcat**

Information based on 2023 NDSCS data.

Pathways to an Electrical Career

The Electrical Association

Many high schools are getting smart about preparing their students for the future and are focusing on career preparation in addition to college preparation. There are many pathways to success, and not all of them include college.

Enter apprenticeship, it is the model used by the construction trades to provide skills to our next generation of tradesworkers. While this model of education is centuries old, it is not often understood by the younger generation.

Apprenticeship is typically a combination of on-the-job training (often taking four years for most trades) and related technical instruction (RTI). The great part of this is the learning is being paid for the on-the-job training the entire time! The Electrical Association provides electrical apprentice training (RTI) for electricians even if those apprentices are not employed by one of our members. Our school year starts in September and ends in late April, so apprentices have their summers off to focus on work.

Starting wage for an apprentice electrician is typically $18.38–$24.63 per hour. As the electrician shows they can do the work, their wages will quickly escalate. After four years of experience, the apprentice can sit for the licensure test. Licensed electricians often command over $50 per hour.

Electrical contractors are looking for attitude and aptitude and they are willing to train the rest. That said, there is competition for these apprenticeship seats and the industry is limited to two apprentices for any one licensed electrician. Electricians need strong math skills and good reading comprehension. They also need to follow safety protocol for their own and public safety.

While there is plenty of opportunity to step into an electrical career right out of high school, graduates from 2 year construction electrician programs are typically top of the list for hire. Most of these programs have 2 year waitlists, so I recommend applying Junior year if you are interested in attending one of these programs.

Electricians are integral to clean and sustainable energy providing installations in solar, wind, energy efficiency, building automation, and electrical vehicle charging stations. They also work in residential, commercial, highway, industrial and agricultural settings.

The Electrical Association provides support for all stages of an electrician's career from job seeker to master electrician. You can find information regarding careers on our website. We can also arrange for a speaker to discuss electrical pathways in your classroom. www.electricalassociation.com

Wabasso Enables Students to Achieve Future Goals through CTE

Matt Captain, 5–12 Principal
Wabasso Public Schools

Welcome to rural Southwestern Minnesota. Wabasso Public School or ISD 640 is home to about 400 students K–12 and is made up of the communities of Vesta, Wanda, Lucan, Seaforth, and Wabasso. Wabasso Public School students have a plethora of opportunities in the areas of industrial technology, agriculture, and art. Today, we would like to highlight some of our industrial technology classes. Our courses include IT 8, IT 9, Advanced Woods I, Advanced Woods II, Metals, and Welding, and Home Maintenance and Improvement. All of these courses offer hands-on learning opportunities where students can engage in learning about CTE skills and careers associated with CTE.

Advanced woods I and advanced woods II are two courses designed to give students experiences in the industry of woodworking. Students are active in learning about the uses of equipment, building skills, and real-world career paths associated with woodworking. Students have helped to build ticket booths for our football, baseball, and softball games. They have also engaged in creating their own projects.

Students also have the opportunity to work with our laser engraver where they cut wood, aluminum, and engrave wood, plexiglass and metal surfaces. We create a majority of our athletic and activities awards in house as part of our industrial technology classes. Also, we help out our district with making awards. In addition to making awards, we also have helped engrave for businesses with creating signs or logos for them. Students also use the laser technology to enhance their own projects with family farm emblems, creation of 3D designs, and adding names to their work.

The woodworking classes also create projects that are given to school and to one of our fundraisers. Every year we hold a Rabbit Pride Gala, which is an event that entails a silent and live auction with the proceeds supporting our school. Our woodworking students have donated cedar planter boxes, cutting boards, and coffee tables for the silent auction. For the live auction, they donate much larger projects like finishing a garage or roofing a house. This year the students in Advanced woodworking are building an American Flag high top table with benches to be auctioned off at our Gala.

Another industrial technology class offered is home maintenance and improvement. In this class, students learn the skills of home building. Our students have put steel on our press box and suites that allow our spectators to stay warm and dry during football games. They also have helped to build a spectator platform by our football field. Other projects include a morton building and most recently, our students were building a garage for a community member.

Wabasso Public School emphasizes the importance of giving back to our community and one of the ways is our industrial technology classes helping residents with building garages, roofing, and home maintenance.

We truly emphasize the importance of woodworking in these classes and offer experiential learning opportunities. Our students will go to Schult Homes in Redwood, MN and tour how homes are made at their manufacturing facility. Some of our students work there during high school or post high school. We will also take our students to career fairs with an emphasis on industrial technology. One opportunity is the Big Ideas Trailer where students can use technology to experience welding, crane operating, and excavating.

Wabasso Public School does an excellent job equipping our students with CTE skills and career opportunities that will enable them to achieve their future goal!

www.isd640.org

Crafting with Care: EPHS Students Build Furniture for Local Transitional Housing Organization

Eden Prairie Schools

For Eden Prairie High School 12th graders and Advanced Woodcrafting Capstone students Ethan Cayo, Cole Gilligan, Nathan Little and Nick Toftley, a recent group project meant more than just helping each other get a good grade. It meant giving a little extra and showing a community partner that "we care and want to help out," Gilligan said.

When their instructor Sheila Stalberger was looking for a special group project for her fall cohort, she connected with Corey Sentieri, program manager at Onward Eden Prairie – an organization that supports young adults who experience housing insecurity in our community. The two hit it off and embarked on a mission to have Advanced Woodcrafting Capstone students create custom furniture for Onward residents.

"There is something so special about being supported by young people who are so close in age to those we serve," Sentieri said.

Since 2018, Onward has been helping single adults ages 18-24 who don't have children transition to more permanent housing. Onward House, the program's transitional living space, provides up to four residents with private bedrooms, comfortable community space, and resources to help them on the path to secure housing and independence. The program relies on support from community partners like Eden Prairie Schools.

The collaboration between Sentieri and the Advanced Woodcrafting Capstone class started with a meeting at Onward House to discuss the project.

"The young men were so engaged and asked thoughtful questions. I was so impressed with them!," Sentieri exclaimed. "The timing was amazing, as several of the residents had shared their desire to collect specific pieces for use upon move out. Sheila and the class asked that I discuss specifics with residents and the process began!"

"We left that meeting feeling very excited about the partnership we just created," Stalberger said. "Thankfully, Corey is an amazing communicator – because creating custom furniture for customers you never meet can be challenging!"

After the meeting, Stalberger and the four Capstone students created a game plan and got to work. The project included four nightstands, a bookshelf, a vanity, a desk and an end table. Customizations ranged from special engravings, to specific stain colors, to removable legs to make the pieces portable, to ensuring the vanity had enough leg space so its tall recipi-

Continued on Page 10

MAY 1-2, 2025

MINNESOTA CONSTRUCTION TEACHER CONFERENCE

The Minnesota Construction Teacher Conference engages Career and Technical Education (CTE) educators of the construction trades in cutting-edge professional development supported by the industry.

REGISTER TODAY:

- **NETWORKING**
- **PROGRAM SHARING**
- **TRAIN-THE-TRAINER**
- **JOB SITE TOUR**
- **WORK-BASED LEARNING INITIATIVES**

mnconstructionteachers.org

Organized By:
Project Build Minnesota
ABC of Minnesota/North Dakota
Electrical Association

White Bear Students Construct Their Futures

Marisa Vette, APR, Director of Communications and Community Relations
White Bear Lake Area Schools

The White Bear Lake Area Schools Construction Career Pathway uses a series of elective courses designed to help prepare the students for careers in the construction field. These courses include Introduction to Woodworking, Introduction to Construction Trades, Architectural Design, Introduction to Engineering, and Civil Engineering and Architecture.

Benefits to registering for the Construction Career Pathway includes, a structure of courses starting with beginner level and moving towards advanced, the opportunity to earn industry credentials, hands-on experiences, internships, field trips, employer visits and drivers' education training. During the 24/25 school year, more than 250 students are taking Construction Career Pathway Courses.

The pathway courses offer a blend of hands-on work experiences using a variety of traditional power tools/equipment and modern computerized equipment. One component that this construction pathway offers students is an opportunity to shape their welding skills with the use of a welding simulator, Shielded Metal Arc Welding (Arc), and Metal Inert Gas (MIG). Welding is often an overlooked skill that is part of many construction trades.

In the Introduction to Construction Trades course, presenters from a variety of construction trades come and speak about their trade. Some of the presenters have students do hands-on activities related to their trades. Each year students interested in the Construction field can attend the Construct Tomorrow field trip. At this event, students can meet and receive practical, one-on-one advice from experienced trades professionals and current construction apprentices.

Finally, students that are enrolled in the Construction Pathway and are at least 16 years old are eligible to apply for a summer construction internship, Minnesota Trades Academy (MTA). The MTA offers high school students an incredible opportunity for hands-on learning through the form of a paid summer internship. Designed to prepare youth for successful futures, the program focuses on skill development, personal growth, and guiding them towards well-paying jobs with

excellent benefits in the construction industry. MTA aims to provide rich, educational, hands-on experiences, allowing participants to earn while they learn about construction as a potential career path.

The Construction Pathway is one of nine pathways offered in White Bear Lake Area Schools. Students also have options for participation in Automotive, Business, Communication Technology, Education, Engineering & Manufacturing, Family & Consumer Sciences, Health & Wellness and Information Technology Career Pathways.

www.isd624.org

'Spark Experience' at Sky Oaks Gives Students a Glimpse into the World of Engineering and Construction

Burnsville-Eagan-Savage School District 191

In December, as part of their Advanced Learning class, third-grade students had the opportunity to learn about transportation planning, design and construction, and construct bridges with the help of the Minnesota Department of Transportation (MnDOT).

All students in District 191 elementary schools receive Pathways push-in lessons in Advanced Learning classes. Currently, students are exploring inventor-thinking. Classes have been practicing using inventor-thinking to develop new and different ideas. Engineering is a big part of inventor-thinking and ties in with MnDOT's "Bridge UP!" curriculum, which uses bridge design and construction to teach science and math principles.

After learning about MnDOT's role in planning, designing, constructing and maintaining Minnesota's roads, bridges, ports, waterways, sidewalks, trails and more, students broke into groups to build their bridges. Each student was assigned a role — project manager, assistant project manager, builder, safety inspector or parts supplier. Monitored by Sky Oaks staff, students worked cooperatively to assemble their bridges. After a final inspection to ensure the bridge was safe to cross, students crawled across it, feeling accomplished in their engineering work!

"Through the 'Bridge Up' program, offered by MnDOT and facilitated by their ambassadors, our 3rd grade students were able to get hands-on experience in engineering that supports our Pathways program," said Mandi Jensen, Advanced Learning Specialist. "It was so exciting to see students engaged in problem solving and learning, which resulted in them crawling through the bridge that they built with their own hands! Not only did this experience spark wonder, but it grew leaders and planted seeds of what is to come for our students in the future."

www.isd191.org

Minnesota State College Southeast Construction Technology Students Learn More than Carpentry Skills Working on Habitat for Humanity Serving Winona County Homes

By Katryn Conlin

When it comes to working with Habitat for Humanity serving Winona County, Minnesota State College Southeast Construction Technology instructor Scott Herold isn't just training his students how to build houses. He's teaching them to be leaders.

For the second year in a row, his Construction Technology students have been helping build a twin home in Saint Charles, MN. The project is part of a development of five twin homes and a single home being constructed by Habitat Winona County in the rural Minnesota community.

Building homes for Habitat Winona County provides an opportunity for the students to learn all aspects of construction in a real-world setting. And since they're working on twin homes, the students are building two of everything – two driveways, two garages, two sets of kitchen cabinets.

Student Ashley Gordon, from Mabel, MN, said that working on Habitat homes teaches a wide range of skills. "We get all kinds of experience, plus, you're building homes for real people versus building something in the lab and then tearing it down."

"The practical skills the students gain by working hands-on in construction are

valuable in their development as builders, but the meaning and connection to the community they gain working on a Habitat home really transforms them into leaders," said John Corcoran, Habitat's Director of Operations and Construction.

Scott is justifiably proud of the work his students are doing. "I emphasize to the students that we need to do quality work because this is the owner's first house and the first house for their family," he said. "I believe the students understand that our work for Habitat for Humanity is being part of something greater, giving back to the community."

SLP Construction Program Continues to Build Community and Futures

Spring Lake Park Schools

Construction trades, part of Spring Lake Park Schools Career and College Pathways program, is in its third year blending hands-on experience with real-world application for students. As the program continues to build structures, it's also building community and futures.

With a thriving partnership between the program and local industry professionals, students are setting out to complete their largest project yet. In the coming months, they will finalize construction of a one-story, two-bedroom home that will soon become a permanent residence in the community.

Building up to the house

The Construction Trades course, part of the Spring Lake Park Schools Technology, Engineering, and Design Pathway, offers students the chance to dive into real-world projects while earning high school credit. Forty students are currently taking the course and applying the knowledge they've gained in the classroom to real construction projects.

Scott Wicklund, the lead teacher of the program, explained the evolution of the students' work this school year.

"The house we're finishing now was started by last year's group," says Scott. "Starting off this school year, students learned the basics. They built smaller projects including dog houses, sheds, and hunting shacks to practice with their tools and techniques. It helped them grasp essential skills like measurements and safety. Now, with the foundation laid, we're moving into the big project - the house."

Students will work alongside professionals from a range of trades, including plumbers, HVAC technicians, and electricians, to learn and implement the specialized skills needed to complete the home. Next up is insulating, sheetrocking, and finishing all the little things—fixtures, cabinets, and trim.

Building camaraderie with BBQ

Before the students put their hard hats on to finish the house, they gathered for a BBQ in the school's parking lot. They celebrated their progress and prepared for the work ahead.

"Having a meal together is powerful," says Scott. "It's a great way to kick off the next phase of building and put all that learning into action. The students don't feel like they're in a classroom anymore. For them, this feels like a job, and I treat them like employees. They take pride in their work and really soak up everything."

Senior Trevor Kachina, who is serving as a teaching assistant for this year's course, echoed this sentiment. Having helped start the house last year, he's excited to see it through to completion.

"It's really rewarding when I take a step back and see the process," says Trevor. "When you finish a project and realize your work made it possible, it feels amazing."

Trevor is set to join the Army National Guard after graduation, where he will put his construction skills to use helping build lighthouses and maintaining the Mississippi River. Down the road, he is interested in pursuing carpentry or HVAC.

Community support at the core

The success of the program extends beyond the students. It's the partnerships with local professionals and the wider community that have helped the Construction Trades course thrive.

"I know a lot about building houses, but not everything," says Scott. "Having industry experts come in to teach and mentor the students is invaluable. The community has shown up in ways we never could have imagined. These kids are getting an experience that is so much more than just a class - it's real life."

For junior Landon Ludke, the course is a chance to build on a lifetime of experience. Having been introduced to construction at a young age by his grandfather, he already has a deep appreciation for the trades and joined the course to expand his knowledge.

Ludke is particularly excited about learning new skills, such as siding. His family is currently in the process of building a house and is glad he'll be able to lend his expertise to the project. After graduation, he plans to attend trade school or join a construction company.

He also praised the community members who support the program.

"They are incredibly friendly and knowledgeable," he said.

Senior Kylen Huberty, who admitted learning the variety of tools and their uses was initially challenging, now appreciates applying his learning outside of the classroom. He also likes the smaller, focused learning environment of the program.

"I'm not a big fan of crowds, so I like that it's a smaller group here," says Kylen. "Working with likeminded people has been great. I'm not sure what I want to do after graduation yet, but this program is helping me figure that out."

Looking Ahead

Students are finishing the house for Elevate Hope House, a nonprofit organization that provides housing for mothers and children experiencing homelessness. Through this partnership, student could participate in building up to three homes over the coming years. This will provide invaluable experience for students in the course while helping meet critical housing needs in the community.

"This program has grown every year, and I see no signs of it slowing down," says Scott. "Our students are ready to learn, and our community partners are eager to help. We're not just teaching construction skills; we're teaching life skills. That's what makes this so special."

As the BBQ coals cooled and the equipment was prepped for the next phase of construction, the sense of purpose and excitement was palpable. These students are not only shaping the future of their community - they're building it.

springlakeparkschools.org

EPHS Students Build Furniture for Local Transitional Housing Organization

Continued from Page 6

ent could sit comfortably.

"It felt great to be able to make something that fit their needs and requirements more specifically than anything they would be able to find otherwise," Cayo acknowledged.

It was clear the extra effort was worth it when, after two months of working on the project, the students delivered the final products on Thursday, Nov. 7, and saw the reactions on the faces of Onward staff like Sentieri.

"It felt amazing," Little said. "It was definitely fulfilling," Gilligan added. "Corey's reaction was amazing. She was very thankful. It was a great experience."

"When they delivered the pieces, you could see the pride they had in the work they'd done," Sentieri described. "They showed me each piece and talked about the process for making them. It was just so amazing!"

Stalberger loved seeing her students' hard work pay off by paying it forward. "They just come into the shop and have the best work ethic every day," she emphasized. "I am just so proud of them!"

The students were glad to have the opportunity to use their passion for woodcrafting to give back to the community in a meaningful way. "We hope that the furniture we made for the residents lasts a long time and helps them have very fulfilling lives," Toftley said.

Both Sentieri and Stalberger hope to see the partnership continue beyond the fall semester to provide ongoing support to Onward residents. Stalberger already looks forward to her spring Capstone students creating a few more nightstands for Onward, continuing an authentic, hands-on learning experience that makes a real impact.

For now, Sentieri expressed immense gratitude to Stalberger and her students for their work on this project.

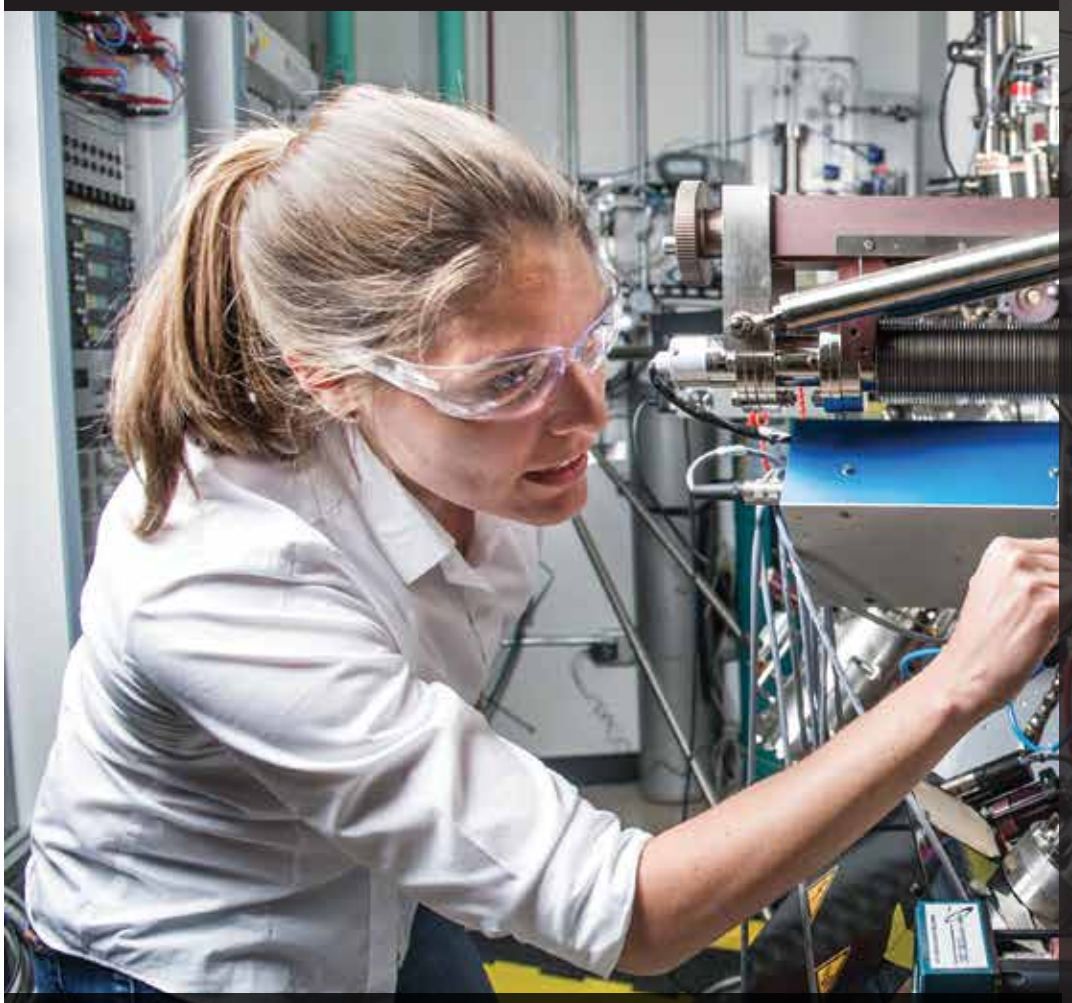
"Not only did they demonstrate their impressive skill set, they shared their hearts with us," Sentieri said. "What they have done for our residents is transformative for their lives and helps improve their quality of life. They will treasure this beautiful furniture for many years."

www.edenpr.org

College of Science and Engineering

St. Cloud State University

UNLEASH*TOMORROW*



Outreach Activities:

Partnering with over 60 schools and businesses to serve over 10,000 K–12 students per year.

- **DEED Grant for Robotics Teams and STEM Internship Programs**
- **Huskies Invent —** *A non-stop weekend "invent-a-thon" for collaboration with businesses and students.*
- **Husky Make It Space —** *Bring ideas to life, from design to the creation of visual models/ functional prototypes.*
- **America's Cutting Edge (ACE) CNC Training**
  - *CNC training to Minnesota for high school students, teachers and industry employees.*
  - *Program includes mobile HAAS mills and Forest Scientific mills.*
  - *Training, equipment and supplies available at no cost.*

Degree Options

Undergraduate Programs

- **Construction Management**
  An applied construction field that provides knowledge and skills to manage construction of residential and commercial properties.
- **Technology Education**
  Learn how to inspire in your own students' understanding of the interconnectivity of science, technology, society and the environment. The program leads to a 5–12 teaching license.
- **Manufacturing Engineering Technology**
  An applied algebra-based engineering field that looks for better ways to manufacture products. This includes reducing cycle times, maintaining quality, increasing safety, and keeping costs reasonable.

(Scan the QR codes to learn more about each program)

Graduate Programs

- **Technology Education Master's Degree**
- **Career and Technical Education (CTE) Graduate Certificate**
- **Work Based Learning (WBL) Graduate Certificate**

Contact: Kurt Helgeson
E-mail: krhelgeson@stcloudstate.edu
Phone: 320-308-3127

Learn more about Environmental and Technological Studies at St. Cloud State University at:

www.stcloudstate.edu/ets

Minnesota State | *St. Cloud State University, A member of Minnesota State*

LYFT Launches CDL Training in two High Schools

LYFT CAREER PATHWAYS

Launch Your Future Today (LYFT) is a rural CTE pathway initiative to rebuild career and technical education (CTE) in southwest and west central MN.

LYFT funding is available to high schools (and their partners) to develop shared CTE courses and programs ... with the goal that every secondary student in the region gains marketable skills through meaningful CTE courses and opportunities that lead to further education and careers that match our region's labor market needs.

CDL Training

Lac Qui Parle Valley and Dawson-Boyd Schools

Partners: Lac qui Parle Valley High School with Dawson-Boyd High School alongside the Madison and Dawson Economic Development Authority, Minnesota West Community and Technical College, industry partners and several local farmers.

Local high school students will have the opportunity to complete the CDL training and be prepared to become licensed shortly after they turn 18 years old. Students will be recruited and supported through the training process to ensure successful completion.

Minnesota West will provide the framework, curriculum, guidance and support for all facets of the program. Their experience in this area will ensure our students' success.

Our schools are rapidly becoming more diverse; we will ensure immigrants and non-traditional students are afforded the ability to participate in this program to include seeking language-specific training where necessary.

We plan to remove barriers for all students in an accessible and inclusive manner, providing financial support, connecting them to business mentors and introducing them to lucrative career choices in our region. Our industry partners are enthusiastic about the opportunity to build their workforce by "growing our own" workforce that will benefit our communities by supporting local families to remain in the area, contribute to the tax base and help attract new businesses to the area.

Madison and Dawson Economic Development Authorities are actively meeting with industry partners to build relationships, identify needs and solicit in-kind financial support of the overall project. EDA staff understand that local businesses depend on CDL drivers to grow and thrive.

Our industry partners have indicated their support for this project. Two partners have pledged a cash contribution to the overall program and many more are developing plans to assist with in-kind support, co-driving and additional cash contributions.

A successful project will ultimately result in industry partners engaged and willing to invest in local training needed to recruit, train, and employ local drivers.

- https://www.lqpv.org
- https://sites.google.com/dwby.k12.mn.us/isd378

For Azella Bartlett, Welding, Automotive Pathway Ignite a Passion for Hands-On Learning

Burnsville-Eagan-Savage School District 191

When Azella Bartlett moved from Arkansas to Burnsville a few months ago, one of the first things she did was check what courses were available at Burnsville High School.

Bartlett was pleased to find out she'd be able to start her sophomore year taking two classes focused on things she's passionate about: Intro to Automotive and Welding.

"That was absolutely one of the first things I looked at before anything else. My number one things I wanted were welding and auto mechanics," she said. "It made me pretty excited and ready for the school year to start, for sure."

Bartlett developed an interest in mechanics and welding through her family. Her dad works on cars and her brother is a welder. She took a welding class at her previous school and realized doing things hands-on suited her learning style.

"I don't have the best attention span for sitting down and working on the same things for hours, so I think being able to work with my hands and my brain and being involved with everything around me is really interesting to me," Bartlett said. "I can pick up on things so much quicker than I do on paper."

At BHS, Bartlett is picking up on things in both classes. With the help of teacher Russ Tesmer, she's learning the basics of how various automotive systems work and sharpening her welding skills.

"I've learned how to work with a lot of tools, which has been nice, and where everything works on the car. I've been able to learn a lot of that. And I learned a different type of welding that I hadn't been introduced to yet, so I'm pretty excited about that. I have the hang of it now," she said. "Mr. Tesmer has been great. He's always there if you need help or have questions, but it's likely once he shows you something, he doesn't have to repeat it because he's pretty good at explaining it and breaking it down thoroughly."

Bartlett is already looking to take more classes in the Design, Engineering and Manufacturing Technology career field. She plans to sign up for Automotive Technology, an eight-credit course that spans four semesters. Through Automotive Technology, students can earn their Automotive Service Excellence (ASE) certification for Maintenance and Light Repair.

After high school, Bartlett plans to attend a trade school and earn a welding certification, as well. With both an ASE and welding certification, Bartlett feels she will have the knowledge and skills she'll need to be successful in a career field she's passionate about.

"It's a really good thing to have that knowledge about automotive, too," Bartlett said. "I think both (career fields) are great and if welding doesn't work out I can go into automotives, or find a career that requires both."

Pathways in District 191

From preschool through graduation, District 191's Pathways model provides all students with age-appropriate experiences through which they explore possibilities, develop the skills and attributes they'll need to succeed, find their passions and prepare for their futures.

Being a Pathways district means we:

- Remove barriers and ensure equitable access for all students,
- Center students as decision makers in their learning journeys,
- Promote a future-focused mindset, ensuring students have a plan for meeting their next challenge,
- Engage in partnerships to maximize resources and opportunities, and
- Provide real-world benefits, including professional certifications and college credits by graduation

Learn more at pathways.isd191.org.

BHS Automotive Program Receives National Accreditation

Burnsville-Eagan-Savage School District 191

The automotive training program at Burnsville High School has received ASE Training Program accreditation in Maintenance and Light Repair by the ASE Education Foundation.

To achieve this coveted recognition, the school's automotive training program underwent rigorous evaluation by the ASE Education Foundation. Nationally accepted standards of excellence in areas such as instruction, facilities and equipment were used.

"This is great news for automotive-minded young people and their parents," said Michael Coley, ASE Education Foundation President. "Because this program increases cooperation between local education and industry leaders, it gives added assurance that Burnsville graduates will be employable entry-level technicians. As a result of the quality education provided by Burnsville High School, the motoring public will benefit since better repair technicians will join the work force."

The automotive program at Burnsville High School (BHS) provides real-world learning experiences for students and helps them easily move into desired careers in the automotive field.

Through various grants, like the Minnesota Department of Labor and Industry's Youth Skills Training grant, generous donations and on-going support from business partnerships, students have access to cutting-edge equipment, job shadowing opportunities, paid work experiences, certifications and early college credit opportunities.

Automotive classes are rigorous and relevant, and curriculum aligns with industry standards and expectations. A student who goes through the program, from engine technology to welding & auto repair to advanced vehicle services, will know how to perform a variety of repairs and services by the time they graduate. Some of the skills students learn are balancing and aligning tires, changing front/rear brakes, replacing struts, welding and diagnostics.

"The automotive program, as well as other trades classes, offers transferable skills," said Russ Tesmer, technology education teacher and automotive instructor. "Not all students in the automotive pathway will end up in the field, but the skills they've learned here will help them in other career fields."

The automotive repair program at Burnsville High School is part of the school's Pathways model, which is designed to help students find their passion and prepare for success after graduation by providing opportunities to earn college credit and industry certifications without having to leave the school campus. Learn more about District 191's PreK-12 Pathways model at pathways.isd191.org.

The ASE Education Foundation is a non-profit, independent organization that evaluates and accredits entry-level technician training programs against standards developed by the automotive industry.

CIM Program = Global Business and a Secure Financial Future

Nathan Andresen
South Dakota State University CIM Student
Future Concrete Industry Management Professional

I have always known that South Dakota State University was the place for me. My dad, a civil engineer who earned his degree at SDSU, inspired my interest in SDSU. I've cheered for the "Jacks" for as long as I can remember, and both the Brookings community and SDSU have so much to offer. My dad's career in building and design sparked my curiosity in an engineering degree, but engineering didn't feel like the right fit for me. I wanted to learn hands-on and experience my field of study along the way. Exploring various paths, nothing captured my interest until the Concrete Industry Management (CIM) program.

As I researched CIM, I was immediately impressed by the level of support and responsiveness I received from the program director, Tim Hostettler. His feedback on the projected concrete industry growth, job diversity, management level opportunities, and advancements in technology further encouraged me to take the leap of faith and enroll. To date, this has proven to be the best decision I have ever made.

The CIM program offers a combination of hands-on learning, classroom education and real-world work experience. The coursework is challenging, but applying what I learn in my labs is fun, rewarding, and also reinforces my classroom learning, with friendly competitions making the learning experience even more engaging. One of the most distinctive aspects of the CIM program is its exceptional support system. Students are frequently given opportunities, locally and by expense paid travel, to meet and interact with industry professionals from across the country. These networking opportunities help build relationships and familiarity with potential employers while exposing us to a variety of organizations. Through these connections, I secured an internship with Knife River in aggregate sales for the summer. This opportunity arose from an event hosted by the CIM program right on campus.

Fieldwork, learning directly from professionals in the industry is what I enjoy. The many field trips we take provide unique opportunities to see the processes behind how various products are made, delivered, and how the business is managed, giving CIM students real-world exposure from the very beginning of the program. The diverse learning environment keeps students engaged and has given me a clearer understanding of what a career in CIM will entail—something I don't hear from friends in other majors.

Many of the organizations we tour also fund scholarships exclusively available to CIM students. I am incredibly grateful for the financial support I receive through these scholarships, which helps significantly offset my tuition cost. Knowing I will graduate with limited debt and set up to embark on a successful career is an amazing feeling.

Another standout feature of the CIM program for me was its encouragement for students to develop additional skill sets. I am pursuing a minor in marketing alongside my CIM major and landed a CIM program marketing internship where I'll be paid and learn marketing hands-on throughout the school year. Personally, this is an exciting component because it allowed me to explore an area of interest I hope to incorporate into my career path. Other CIM students are adding business management, which the program supports as a way to produce more diverse and well-rounded graduates into the global industry of concrete. Truly creating the best of both worlds.

I wish more students understood that the CIM program is not just a "construction" major. The reality is, the CIM program enables us to earn a 4-year degree in a high-demand industry while exploring niche interests by minoring in marketing, sales, management, business, etc. touching on construction project management if we are interested. The CIM program is so much more than just concrete and construction, it's GLOBAL BUSINESS and a SECURE FINANCIAL FUTURE.

I appreciate the real-world exposure, support, and individualized attention I've received in the program. I have no reason not to be optimistic about my opportunities ahead and gratitude for the ability to customize my degree in ways that align with my strengths, interests, and career goals. I am confident the SDSU CIM program is equipping me to add value to my life, my community, and the world.

Got Engine Problems?

New Ulm Public Schools

If your car breaks down, bring it to the CTE center for the cheapest fix in town.

Students bring in their own projects all the time at the CTE center. Follow this first-hand account of one student who brought their car into the CTE center shop and started to get to work:

The student came into the shop thinking he had a bad engine, but shop leader Mr. Dustin said, "I think its your timing chain." They got right to work on trying to fix the timing chain and everything went well until they had to take the chain out. They had to take out more things then they thought they had to.

Once they got the chain out, they realized it was the wrong one, so back to the store they went. After they got the chain on, things seemed fine until they started the car: knock knock knock was all they heard.

They thought they knew what wrong, so they took the oil pan off and to look at the connecting rods. When they were taking off the oil pan they forgot one bolt and broke it. They looked at the 1st piston and saw it had bad rod bearings.

The bad rod bearings could have caused other problems but they decided just to fix the one rod. The one big problem they had was that the crankshaft had worn down by .040 of an inch which is just on the edge of fixable.

They are having problems finding the undersized rod bearings but this is about how far they have got with the car.

"There is still a lot more that we have to do but we will get it done," said Levi Baumgaurd. They hope that the undersized bearings will work because they don't know how much the connecting rod has worn.

The car has been in the shop for about a month now. They need the lifts so they have been pushing the car around the shop to get room for other cars.

By Billy Mount, Contributor for The Eagle, the student news site for journalism class at New Ulm Public High School.

Last year when a white car mysteriously showed up at the CTE center, mechanics teacher Mr. Dustin didn't know what to think of it. As it turns out, it was a donation from a student's family to be used in the school's automotive classes. "Donations are great and can be pivotal in furthering learning opportunities for students," Mr. Dustin said.

By Nolin Saffert, Contributor for *The Eagle*

The Career Technical Education (CTE) Center is located at 208 North Valley Street in New Ulm. This building is used for some High School Courses. The CTE Center is a 30,000 square foot industrial building complex that provides spaces for the following programs: Automotive Repair, Auto Body Repair, Construction Trades, Cabinetry, Eagle Enterprise – Student Business, Manufacturing/Fabrication, Machining/Miller, Mechatronics/ Robotics, Small Gas Engines/ATV Repair, Welding.

This building was donated to New Ulm Public Schools and was renovated in the summer of 2021.

newulm.k12.mn.us/high-school

South Dakota State University
Concrete Industry Management

Scan for a video overview of the CIM program

Undergraduate

CIM Professionals
Know More & *Owe Less* After Graduation!

Scholarship Packages & In-state Tuition: WI, MN, ND, NE, IA, IL, CO, WY, MT, KS & MO.

- Low-to-no debt degree as CIM patron and industry sponsors offer generous scholarships to significantly offset the cost of tuition.
- CIM student life includes all expense paid travel, special events, and connections to work opportunities before and after graduation.
- SDSU is home to one of only five CIM programs in the United States.
- Graduates enjoy nearly 100% job placement with most receiving multiple job offers.
- Prepares CIM graduates to hire into available management roles and start at higher salaries than most engineering graduates.

**Statistic from Middle Tennessee State University*

CIM CONCRETE INDUSTRY MANAGEMENT

The Bachelor of Science in Concrete Industry Management (CIM)

This unique program balances STEM + business curriculum, real-world experience, and concrete technology to prepare experts and innovators for roles that manage operations, HR, marketing, accounting, logistics, environmental, chemical innovation, sales, etc. in the multibillion-dollar, global concrete industry responsible for producing the most used building material in the world.

Business, marketing, communication, and others with generalized majors are competing for jobs, and that competition is driving down wages. Majoring in CIM and minoring in an enjoyable area of study means an affordable, full 4-year college experience and career after graduation.

Grace Jensen at a vendor's bowling themed reception at World of Concrete

World of Concrete – Las Vegas, NV

Create your career path into a multibillion-dollar, global industry — Enroll in CIM today!

CIM CONCRETE INDUSTRY MANAGEMENT

Contact: Jennifer Manatt
CIM Assistant Program Director
Concrete Industry Management Program
Brookings, SD
(319) 721.3931
Jennifer.Manatt@sdstate.edu | www.sdstate.edu

Scan to Apply Now!

Moorhead Career Academy's Transportation Program Honored

Named Exemplary Secondary Program of The Year by the Minnesota State Transportation Center of Excellence

Each year, the Minnesota State Transportation Center of Excellence (TCOE) proudly sponsors awards recognizing the remarkable contributions of educators, advocates, supporters, and industry partners in the field of transportation-related education. Nominated by their peers and selected by a Committee from our Executive Board, these award recipients have demonstrated exceptional dedication and impact in their roles.

Congratulations to the Moorhead Career Academy and instructor Chantz Rud, our 2024 Exemplary Secondary Program of the Year award recipient!

This award showcases secondary level transportation programs that serve as exemplary models of institutional support, instructional leadership, and program-wide excellence.

The MHS Career Academy is changing the way students approach high school. Based on industry and professional standards, the program offers unparalleled experiential learning about careers and self. Partnerships with regional businesses provide students with applied learning experiences that ready them for career and/or college. Students discover their passions, explore their options, work toward industry certifications and gain real work skills. This programming encompasses all Moorhead students in grades 9-12 whether at the high school or career academy.

Two years ago, a 10-year sponsorship commitment was put in place to establish and operate the Distribution, Manufacturing, and Transportation Pathway at the Moorhead High School Career Academy – a critical component to continue to introduce future talent to both the distribution industry and the trades.

"Community and business partnerships help meet our regional workforce needs. This investment yields one of the best returns imaginable—a new generation of creative, capable and collaborative future leaders who are prepared to succeed in the changing workforce," said the community outreach coordinator for the career academy.

"Philanthropic support from the business community extends our reach for forward thinking school programming and aligns future talent pools with business need," said Superintendent Brandon Lunak.

Chantz Rud is the Automotive Instructor at the Moorhead Career Academy. Moorhead Area Public Schools

Chantz's journey into the automotive industry began on the family farm near Mayville, ND, where he spent his early years wrenching. At 15, he acquired his second car, a 1971 Nova, and promptly blew it up, forcing him to learn how to rebuild it. This experience sparked his passion for the automotive field.

Despite struggling with various degrees while in college, Chantz found success working at a local hot rod shop, a job he balanced with farm work for nearly a decade. However, tired of the financial strain, he quit school, the farm, and hot rodding to drive a truck. This phase lasted only a year before his sister persuaded him to consider teaching.

For the next two years, Chantz returned to his roots in hot rodding, schooling, and farming. He reclaimed his job at the hot rod shop, pursued an education degree online, and helped his parents retire from farming.

In the fall of 2017, Chantz began teaching at Moorhead High School, diving headfirst into reforming and growing the automotive program. He moved away from the traditional ASE curriculum, which was delivered in 3-ring binders and had a history of excellence, but no longer suited students with individual Chromebooks and shorter attention spans. Over the past seven years, Chantz has continuously evolved the program, integrating modern standards, concepts, competencies, and practices.

Chantz acknowledges that the program's success is built on the legacy of those who came before him. He attributes its achievements to amazing students, a phenomenal facility, a supportive advisory board, a community that recognizes the need, and a dedicated admin team. Despite having no formal training in mechanics, Chantz is committed to providing as many students as possible with the opportunity to learn and grow in the field.

Youth Skills Training Program Grants Available

YST@DLI Youth Skills Training

The Youth Skills Training (YST) program encourages, promotes and supports the development of local partnerships between schools, employers and community organizations. These local partnerships provide students with related classroom instruction, safety training, industry-recognized credentials and paid work experience in high-growth and high-demand occupations in the industries of advanced manufacturing, agriculture, automotive, health care and information technology. Successful applicants will demonstrate the ability to achieve these objectives through various means including outreach, education, training and supportive services for students.

Round eight grant timeline

- Jan. 8 to Feb. 7, 2025: Grant applications accepted.
- Questions are due no later than 4 p.m. Central Standard Time, Jan. 30, 2025.
- Feb. 21 to March 14, 2025: Grant review period
- April 21, 2025: Grant recipients announced
- July 1, 2025, to June 30, 2027: Grant performance period

YST@DLI Program Approval

YST programs are composed of a minimum of one school partner and one employer partner. They may include multiple schools, employers and community organizations.

School partners do not need to go through a formal approval process, but should meet with YST staff to demonstrate a plan to provide the following:

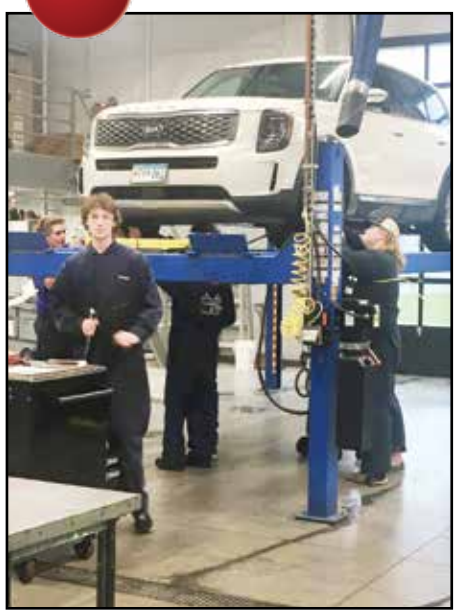
- meaningful industry exposure for diverse students,
- an offering of at least one industry-related course for high school credit,
- a pathway to industry-recognized certification/credentialing, and
- paid work experiences in one or more of the following industries: advanced manufacturing, agriculture, automotive, health care and information technology.

Employers must be approved for YST paid work experiences prior to student learners being placed at employer sites.

Programs are not required to be a YST grant recipient to become an approved YST program.

To apply or for more information go to https://www.dli.mn.gov/yst

RAHS Auto Shop Provides Career Experience and Affordable Services



Roseville Area Schools

RAHS auto shop provides services on cars of Roseville's students and community members, for reduced prices — by having trained students work on them.

Teacher Kenneth Sopcinski teaches students about cars in many different classes at RAHS, some open to only upperclassmen but others open to all grades. He said, "[the RAHS auto mechanics course] is a student-run program, open to juniors and seniors, no experience required, but sophomores need to take small engines to take the auto mechanic class. We need a level of maturity in the classroom, and that's the entire reason I have the auto mechanic classes open to juniors and seniors, but Roseville [Area High School] has one of the best auto shops in the country, which is great for the students."

To learn about cars, RAHS students can take Know Your Car, Small Engines, and Auto Mechanic, which can go up to Auto Mechanics Five.

There is a process for training students before they start working on customer's cars. Sopcinski said, "My auto mechanics one class is primarily training for the trimester, and [student mechanics] aren't going to go into the shop until the last few weeks of the trimester." After students train, they can jump back into working on cars after a review of safety procedures.

The RAHS Auto Shop offers light to medium maintenance and repairs on automobiles. These services, as Sopcinski said include: oil changes, brakes and suspensions, coolant changes, and tire services, or any light that pops on the dashboard.

Although these services are relatively cheap, Sopcinski acknowledged a potential downside is the time it takes to repair the car. He said, "Our motto is we are cheap, but we are slow. It is expensive to fix a car regardless, but for example our front brake job, a pretty standard service, comes out to be $240-280, but you bring it to a professional, it's going to come out to $480, but we will need the car for two days. Like I said, we are cheap but slow, but it is ⅓ cheaper as a whole."

Business for the auto shop ranges, as Sopcinski sees how many cars his students can handle. He said, "I try and get just enough, I mean if Channel 4 news wanted to do a story here, that would be great but I know my phone would be ringing off the hook, and we can't service that many cars, so I keep it to community members, and people in the ISD 623 area."

The benefits of taking these classes range from being educated in car knowledge to finding a career in this area. Sopcinski said, "It depends on what their goals are. I have had students who take this and realize they really didn't know what they wanted to do in life, and they did this and they loved it and wanted to do it."

Sopcinski finds it hard promoting his classes to female-identifying students. He said, "We really like to get more girls in our classes, but we are trying to do what they do in woodshop classes and try to run a girls' only class, if girls sign up. If you look at my roster, it will be all boys and maybe one or two girls, and I don't blame them."

RAHS auto shop has a Facebook, called Raider Auto Shop, where they post updates and pictures, check them out here: https://www.facebook.com/raiderauto

This article was written by Naima Sheikh-Mohamed, Editor-in-Chief for The Ville (Roseville High School Student Newspaper)

www.isd623.org

Montevideo High School Small Engines Program

Continued from Page 1

Our business partner has assisted by providing quality equipment to update our current small engines shop. They have provided guidance on curriculum and were present in the classroom, hands-on to assist students with technical questions.

Finding an employer who is interested in developing their future workforce is key. The relationship with the school and employers must have consistent and open communication. What makes this project successful is that all parties are open to doing this differently if it produces the best outcome for the students. For example, mechanics from the dealer coming into the classroom to troubleshoot with students and the teacher being open to changing their curriculum and trusting the employer partner. It's also important to find an employer who has resources and people they are willing to allocate to a project like this. Our partner recognizes the importance of this beginning career pathway in order to feed their workforce needs and was willing to come alongside us and make an investment.

Our growing district of more than 1,400 students in grades PreK-12th are served in five locations; The Hawks Nest Early Childhood Center, Ramsey and Sanford Elementaries, Montevideo Middle School and Montevideo High School. These buildings are home to more than 300 extraordinary educators whose purpose for coming to work each day is to help students achieve their dreams.

montevideoschools.org

"Soaring to New Heights"

Aerospace Engineering at Mountain Iron-Buhl High School

Shay Busch
Mountain Iron-Buhl High School

Mountain Iron-Buhl High School offers a variety of elective courses designed for students to experience different career paths before graduating. One standout class is Aerospace Engineering, a course for 10th-12th grade students which explores the fundamentals of air and space flight, as well as orbital mechanics. The course is taught by Jeremy Jesch, the school's STEM instructor, and it provides hands-on experiences in a high-tech learning environment.

The main topics covered in Aerospace Engineering include aircraft components, airfoil design, flight dynamics, air traffic control, flight controls, flight simulation, rocket design, and rocket simulation. Students gain experience in these topics with advanced technologies such as Aery (airfoil, fuselage design, and simulation), Fusion 360 (for CAD design), Open Rocket (for rocket design and simulation), XPlane (a flight simulator), and Vernier (for data collection).

In addition to using these innovative tools, students create a variety of projects such as Balsa Gliders, rockets, and paper airplanes. These projects allow students to experiment with airfoil design and learn valuable life skills like teamwork, working within constraints, responsibility, accountability, and critical thinking, which are important no matter what their future careers are.

When asked what excites him the most about teaching Aerospace Engineering, Mr. Jesch stated, "What excites me about Aerospace Engineering is that the students get to explore careers they would not usually be exposed to." Some students who have taken this course have even gone on to enroll in aviation programs, demonstrating the impact of this course.

Current students in the class are enthusiastic about the opportunities it provides. Magan Carlson, a sophomore, thinks it is a fantastic way for students to see if they are interested in a career in aviation or engineering. Fellow sophomore Shalen Mogensen says that she enjoys the hands-on projects in the class, particularly building airplanes. Finally, sophomore Izaiah Alto says, "This class helped me get interested in aviation, and I plan to pursue a career in the field after high school." The experiences of these students reflect the real impact of Aerospace Engineering.

In conclusion, the Aerospace Engineering course at Mountain Iron-Buhl High School offers students the opportunity to explore careers in aviation and engineering. Additionally, with the use of hands-on projects, students gain skills that go beyond the classroom. The excitement from both Mr. Jesch and students in the class shows the course's ability to inspire future careers, as seen by students going on to higher education in aviation. By providing this opportunity for students to explore careers in high school, MIB is giving its students the skills they need to be successful in their future endeavors.

www.mib.k12.mn.us

Eloisa's Journey from BHS robotics to Electrical Engineering

2021 Graduate Brings NASA Experience Back to BHS as a Robotics Mentor

Burnsville-Eagan-Savage School District 191

Eloisa Carrasco was a seventh-grader in the fall of 2015 when, at the encouragement of her parents, she attended an information session about the District 191 robotics program.

She decided to join the team and, nearly 10 years later, she's still a part of Burnsville FIRST Tech Challenge (FTC) robotics. As a mentor, she supports the next generation of students in the program that helped set her on her academic and career path. Eloisa will graduate from the University of Minnesota in the spring with an Electrical Engineering degree and has already gained valuable work experience through two internships at NASA's Langley Research Center in Virginia.

"The reason I wanted to come back as soon as I graduated is because it's a really good program and it provided me with experiences that still help me today, and the volunteers we have and the people that mentor are the reason were able to do anything, so I wanted to help give back to that," Carrasco said. "The whole goal of teaching the next generation of students is so they become smarter than you and that's really proven true. My students have picked up on a lot and made it to state even earlier than we did."

Carrasco's BHS teams won plenty of awards and made multiple trips to state, but her high school robotics experience wasn't just about programming, design and engineering. She led the team's documentation and outreach work and also learned valuable skills related to teamwork and communicating she still uses every day.

"Robotics really encompasses everything," she said. "Within that one Pathway, you're using communication skills, learning how to talk about your robot, thinking through the process, engineering, talking through a lot of problem-solving and learning how to talk about what you're doing. Those things come up pretty often."

As a leader in the robotics lab, Carrasco considers herself to be fairly hands-off, preferring to let students work through problems themselves for a while before stepping in to assist. As a mentor, however, she takes a proactive approach, actively connecting students with valuable opportunities in the engineering field, fostering their growth and inspiring them to future careers in STEM. She does similar work at the U of M where she's president of the student chapter of the Institute of Electrical and Electronics Engineers.

"Some of the students who are on my team are juniors now and they're getting into prep for college already and they're interested in STEM-related careers. Another student went into the same program I'm in now because we were able to have that conversation about how this experience translates into opportunities available on campus," she said. "Robotics helped them figure that out."

Robotics helped Carrasco figure herself out, as well, sending her down a path that led to an interest in the STEM field and ultimately a degree in electrical engineering. Experiences in that program refined her interest even more toward biomedical engineering, specifically improving prosthetic devices, and developing new transportation technologies in the aerospace industry.

"Pathways kind of helped me narrow down what niche of a field I wanted to get into," she said. "My emphasis has pretty much always been in hands-on experiences, in getting to actually do things. That's what I've found most helpful at each step. Each step has helped prepare me and move me forward to the next one."

Learn more at pathways.isd191.org.

www.isd191.org

The Role of Tech Inside the Classroom

A fifth grader teaches kindergarteners about Bee-Bots at Brooklyn Center Elementary.

Brooklyn Center Community Schools

Technology has found its way into just about every corner of our lives, becoming an inevitable tool to learn how to navigate. Brooklyn Center Community Schools remains committed to preparing our students for the ever-changing world ahead, introducing them to various types of technology and using tech as a tool for learning in the classroom.

This technology introduction begins at Brooklyn Center Elementary as students use iPads as a classroom tool, discover 3D printers, and learn how to code. The youngest learners spend time exploring different materials like legos and blocks and discovering Bee-Bots, introductory programmable robots. This year, first graders will discover a new Project Lead the Way (PLTW) module on the sun, moon, and stars, observing patterns and building a foundation of understanding of space. By the time they're in fourth grade, students use the TinkerCAD application to get creative designing their own objects, then see them come to life through 3D printing, advancing their design skills as they get more comfortable with the technology.

PLTW/STEAM Teacher Camille Primoli expressed her excitement for these learning opportunities, including what's in store for fifth graders. "We do a water unit in fifth grade where they build a water filter and research different ways to filter water, gaining a deep understanding of the water cycle," Primoli shared. One of the biggest sources of excitement for fifth graders, however, is their Battle Bots unit. While Bee-Bots lay the groundwork for kindergarteners, fifth graders will program Sphero robots and code them to connect to remote controls. They'll learn how to make their robot's name scroll across a screen, design an arena, and take their robots to battle. Primoli emphasized the importance of teachers having what they need to be able to use the technology and keeping these resources up-to-date and available for licensed staff to guide students and provide technology literacy.

BCS PLTW Gateway Teacher D. Carlos Seehusen echoed this sentiment. "We have so many opportunities for students to explore things in the classroom as long as we can provide the materials," he said. "This sets them up for a lot of success in the future, but it's entirely dependent on us having the funding to provide these classes." Seehusen shared about the Automation and Robotics class for sixth graders where they build and program robots fit for their grade level, and the Computer Science for Innovators and Makers class for seventh graders where they learn to program microprocessors. "Right now we don't have enough microprocessors for every student to get one, so we're having to run simulations that they then test out. It's less hands-on, and they don't necessarily get the full experience," Seehusen said.

The essential need for up-to-date technology lies not just in robotics and computer science, but in access to basic devices like those in BCS Career Exploration and Work Teacher Rachel Jorgensen's classroom. Her students rely on technology to conduct college and career research, engage with virtual guest speakers, and prepare for their futures. Jorgensen also hosts classroom time for a new certified nursing program offered by Brooklyn Center High School this year in partnership with a local technical college. The program has a hybrid model, and seventeen BCHS students attend class virtually for a part of the week, then attend on site at the technical college.

"If the technology isn't up to par, we leave our students behind because they aren't able to access the most relevant resources and learn the tech skills that make them competitive and viable," said Jorgensen.

"There are tons of tech-related careers available just waiting for our students, and a high demand in these industries, but unless our kids know about them and get introduced to them, they will never know what is out there," said Seehusen. "Unless we have the technology available for them to explore, they'll never know about it or have the opportunity to try it out."

www.bccs286.org

BCHS students begin their on site classes for the certified nursing program.

Minnesota Finalists Chosen for Presidential Awards for Excellence in Mathematics and Science Teaching

The Minnesota Department of Education (MDE) is pleased to announce that six Minnesota teachers have been selected as 2024 finalists for the Presidential Awards for Excellence in Mathematics and Science Teaching (PAEMST).

The Minnesota finalists are:

Mathematics

Kristin Cayo, Eden Prairie Schools, Forest Hills Elementary School

Sarah Donovan, Anoka-Hennepin Schools, Hamilton Elementary School

Mark Nechanicky, Albert Lea Area Schools, Lakeview Elementary School

Science

Krista Wyvell-Fink, Anoka-Hennepin Schools, Rum River Elementary School

Kelly Gibson, Saint Paul Public Schools, Battle Creek Elementary School

Deanne Trottier, Pequot Lakes Schools, Eagle View Elementary School

The PAEMST are the highest honors bestowed by the U.S. government specifically for K-12 science, technology, engineering, and mathematics teaching. The awards were established by Congress in 1983 and the President recognizes around 100 exemplary teachers each year.

The award recognizes teachers who have deep content knowledge of the subjects they teach and the ability to motivate and enable students to succeed in those areas. The award is administered by the National Science Foundation on behalf of the White House Office of Science and Technology Policy.

The finalists represent the most outstanding teachers Minnesota has to offer, and they serve as both a model and an inspiration to fellow teachers. 2024 Minnesota finalists will be recognized informally during STEM day at the Minnesota State Fair, and formally during the Minnesota Council of Teachers of Mathematics conference and the Minnesota Science Teachers Association conference.

Teachers who are selected as PAEMST awardees receive a trip to Washington, D.C., where they attend a series of recognition events and professional development opportunities. They also receive a $10,000 award from NSF, a Presidential certificate and join an elite cohort of award-winning teachers who can influence STEM teaching in Minnesota and nationwide.

For more information about PAEMST, visit https://paemst.nsf.gov.

Celebrating John Short, a Teacher Who Transforms Science Education

Science Teacher, Waubun-Ogema-White Earth Public Schools

North Central Zone MREA 2024 Educator of Excellence

In the realm of education, where passion meets practice, few individuals embody the true spirit of teaching like Mr. Short. With 27 years of dedicated service, beginning in 1996, Mr. Short has become a cornerstone of the academic and personal growth of countless students. His teaching philosophy is simple yet profound: learning should be an experience, not just an obligation.

Mr. Short's style is experiential, bringing science to life in a way that engages students beyond the textbook. Whether it's demonstrating the mechanics of the digestive system by drinking water upside down so students can hear its journey through the body or leading explorations in the school forest, Mr. Short transforms science into an immersive adventure. These hands-on activities aren't just about understanding concepts; they're about sparking a lifelong curiosity and building confidence in students.

One of Mr. Short's greatest strengths is his unwavering commitment to his students. As one student reflects, "He made me want to learn and he made this learning fun. And I knew that I wanted to help people." This impact extends far beyond the classroom, inspiring students to pursue fields they might never have considered. For instance, the student who shared their plans to study nursing credits Mr. Short's enthusiasm and support as the catalyst for their ambition.

Colleagues and students alike speak of Mr. Short's genuine care. Waubun-Ogema-White Earth School Superintendent Jordan Spaeth noted, "Students don't care how much you know until they know how much you care. And I think for Mr. Short, that becomes obvious to kids in a quick hurry. He is himself at all times." This authenticity fuels a unique classroom atmosphere where students feel empowered to explore, ask questions, and take ownership of their learning. Mr. Short's ability to make science accessible and fun while maintaining high educational standards is a testament to his dedication.

The school's forest, once an underutilized asset, has become an extension of Mr. Short's classroom thanks to his vision. By collaborating with the community, he helped establish trails and turned the forest into a vibrant learning environment. Students now venture into the woods to dig for bugs, analyze soil layers, and discover various organisms. It's a scene Mr. Short treasures, often stepping back to observe with joy as students learn through exploration and teamwork.

One student summed up the essence of Mr. Short's teaching: "He lets us make it our own. He gives us the backbone and makes us more confident. It's something you want to participate in." These words highlight the way Mr. Short pushes his students not only to learn but to thrive, building a classroom culture where every student feels seen, heard, and motivated to achieve.

At the heart of Mr. Short's approach is the belief that education is more than a curriculum—it's an opportunity. He often shares that he wants each student to feel prepared for whatever path they choose. "They get one shot at this, and it's my job to make that shot as good as it can be," he says. It's this sense of purpose that has shaped hundreds of young minds and set many on paths they might never have dreamed possible.

Mr. Short's legacy is one of inspiration, dedication, and boundless enthusiasm. As his former students move on to various fields, many with a newfound passion for science, his influence remains a guiding light. We celebrate Mr. Short not just a teacher, but a mentor and an innovator whose love for learning has left an indelible mark on his school and beyond.

For Mr. Short, teaching is more than a job—it's a calling. And for his students, he's more than a teacher—he's a reason to dream big.

Congratulations Mr. Short on being named a 2024 MREA Educator of Excellence in the North Central Zone. Mr. Short was honored and celebrated in November at the MREA Greater Education Summit at Cragun's Resort in Brainerd.

Recommended watch! See a video about Mr. Short at https://www.mreavoice.org/john-short

Article and photo courtesy of the Minnesota Rural Education Association — https://www.mreavoice.org

www.waubun.k12.mn.us

Embracing Innovation: Lessons from Germany's Apprenticeship Learning Model

Continued from Page 1

Treichel spent a week talking with educators, business leaders, and students about the German apprenticeship model and hopes to share key insights as apprenticeship continues to grow in popularity. Over the course of the week Treichel visited several companies, including SCHOTT, Witzenmann, Endress + Hauser, Kleeman, and Wittenstein. He also met with third party training provider Industrie und Lehrwekstatt, and visited Hinterkopf, a German vocational school.

NBAPS Superintendent Sara Paul traveled to Germany last Fall as a Fulbright Fellow and emphasized the importance of shared learning, stating, "David's trip to Germany affirms the importance for us to think creatively about how partnerships can transform education and workforce preparation. By building bridges between education and industry, we can create opportunities for our students and teachers that are relevant, meaningful, and sustainable."

NBAPS has expanded career-connected learning through Viking Bridge, a program designed to build connections between local employers and high school students. Viking Bridge offers a continuum of work exposure, from career exploration to hands-on internships, creating a win-win for both students and businesses. By aligning education with workforce needs, this initiative ensures students gain valuable experience while helping employers develop a pipeline of skilled future employees. Together, these programs position NBAPS as a leader in bridging the gap between education and industry, reinforcing the district's commitment to preparing students for meaningful careers.

The German Apprenticeship model is grounded in system collaboration, something that left a lasting impression on Treichel. Germany's partnerships and collaborations between federal and state resources, higher education, K–12 education, and private industry that produce mutually beneficial curriculum, learning spaces on-site at private companies, and funding to support the model. "Collaboration opens doors," said Treichel. "The system alignment is producing great outcomes and is designed to be a long-term solution."

With a strong foundation of innovative programs already in place for students, NBAPS is also one of the first Minnesota districts to implement a Registered Teacher Apprenticeship program, leading the way in hands-on workforce development. The district's teacher apprenticeship program pairs experienced teachers with support staff who aspire to become educators, providing structured, real-world training that addresses the teacher shortage. This forward-thinking approach was featured on KARE 11 as a creative solution to workforce challenges and was recently spotlighted in the Star Tribune.

As NBAPS continues to explore innovative ways to bridge education and workforce development, the insights gained from Germany's apprenticeship model provide valuable direction for shaping the future of student learning. Treichel's experience highlights the power of long-term investment in skill-building and the importance of strong partnerships between education, industry, and government. While implementing a similar model in Minnesota will require significant collaboration and a shift in mindset, NBAPS is already leading the way with its Registered Teacher Apprenticeship program, demonstrating a commitment to hands-on learning and career preparation. By embracing these global best practices and tailoring them to meet local needs, the district is positioning students for success in an evolving workforce.

www.isd138.org

Celebrating Ashley Wolf, A Champion of Education & Student Empowerment

Math Teacher, Plainview-Elgin-Millville Public Schools
2024 South Zone MREA Educator of Excellence

In the world of teaching, there are educators who impart knowledge, and then there are those who inspire transformation. Ashley Wolf, a math teacher at Plainview-Elgin-Millville (PEM) Public Schools exemplifies the latter. A cornerstone of her school community and a leader in the math department, Mrs. Wolf's impact extends far beyond equations and test scores—she fosters a sense of belonging, resilience, and lifelong skills in each of her students.

From the very first day of school, Mrs. Wolf makes it her mission to know her students, not just as learners but as individuals. She begins the year with a thoughtful questionnaire, seeking to understand their interests, aspirations, and activities. This is more than a simple icebreaker; it's the foundation of her teaching approach. By tailoring her lessons and conversations to what resonates with her students, Mrs. Wolf demonstrates that she sees them and values their voices. "I love just interacting with the kids," she says. "I think that's probably one of my favorite parts. I love being able to make a difference in their lives."

Her students feel this dedication deeply. One student shared, "Mrs. Wolf makes me feel like we matter in her classroom and that we all have a place. She makes you feel just very uplifted." Another highlighted her tireless commitment: "She will work with you until you get it 110%." It's no wonder her classroom is filled with positive energy; Mrs. Wolf greets every student with a warm welcome, ensuring that each one feels seen and supported from the moment they walk through the door.

Beyond her engaging classroom, Mrs. Wolf dedicates time to creating an inclusive and accessible environment. She sets aside time before and after school and even sacrifices her own preparation periods to help students who need extra support. "The more supportive you are with them, the more positive learning environment you're creating for those kids," she notes. This philosophy not only strengthens their academic abilities but nurtures their confidence and well-being, fostering an atmosphere where learning and personal growth thrive.

Mrs. Wolf's influence isn't confined to her math classes. She teaches a range of subjects, including Algebra II, Geometry, and Introduction to Statistics, and serves as an integral part of the student council. Her leadership not only enriches these programs but also cultivates student leadership, encouraging them to step out of their comfort zones and work collaboratively. One student described her as "an inspiration to get out of your comfort zone and work with people who you don't even know."

Colleagues are quick to praise Mrs. Wolf's dedication, calling her a beacon of what makes rural education in Minnesota exceptional. Her passion for teaching, deep understanding of her subject, and empathetic approach make her a role model for students and peers alike. "She cares about her students. She understands the value in education and math education specifically," PEM High School Principal Mike Walton shares.

Mrs. Wolf's teaching goes beyond formulas and theories. She instills critical thinking, problem-solving skills, and the simple yet profound principles of kindness and respect. "Obviously, you're not going use the Pythagorean Theorem every day," she admits, "but it's more about critical thinking, problem-solving, and basic human kindness—opening the door for somebody, saying please and thank you." These are the lessons that extend beyond school walls, shaping students into thoughtful, capable individuals.

Today, we honor Ashley Wolf for her tireless dedication, compassion, and transformative teaching. She is not only a teacher but an inspiration—proving that the greatest educators do more than teach; they empower.

Congratulations Mrs. Wolf on being named a 2024 MREA Educator of Excellence in the South Zone. Mrs. Wolf was honored and celebrated in November at the MREA Greater Education Summit at Cragun's Resort in Brainerd.

www.pem.k12.mn.us

Recommended watch! See a video about Mrs. Wolf at https://www.mreavoice.org/ashley-wolf/

Article and photo courtesy of the Minnesota Rural Education Association — https://www.mreavoice.org

Big Lake SCHOOLS Independence Earns Prestigious STEM Award for 3rd Straight Year

Big Lake Schools

Independence Elementary STEM was once again named a STEM School of Excellence by the International Technology and Engineering Educators Association (ITEEA), making it the third straight year that the school's exemplary STEM programming is being recognized on a global level.

The ITEEA STEM School of Excellence designation recognizes "schools that have demonstrated a commitment to providing a robust Integrative STEM education program," according to the ITEEA press release. This prestigious award not only celebrates schools and staff who work hard to develop and provide these experiences for their students, but by showcasing exemplary STEM initiatives, also aims to provide other schools with ideas and inspiration to expand their own programs.

This year, ITEEA named 30 K-12 schools, spanning all across the United States, Paraguay, and China, as recipients of its STEM School of Excellence Recognition. Independence Elementary STEM was the only Minnesota school honored.

Independence Elementary STEM became an official STEM school in September 2019, and has been growing its STEM programming ever since. Since the beginning, the school has been committed to making learning more engaging through STEM-driven instruction.

In addition to specific STEM-focused classes, STEM practices are integrated within all content areas across all classes. Students regularly engage in learning that follows the Engineering Design Process and utilizes the 4Cs: Collaboration, Communication, Creativity, and Critical Thinking.

The school will be acknowledged at the ITEEA national conference taking place in April, and after which will be sent a certificate and banner to display.

To learn more about Independence's STEM-driven curriculum, visit indy.biglakeschools.org/academics/stem.

Indy Students Shine at Engineering Machine Design Contest

Last spring, a group of Independence Elementary STEM fifth graders recently had an impressive showing at a regional Engineering Machine Design Contest (EMDC), where they placed third out of 12 teams as the youngest group in attendance.

"They were young scientists in their yellow STEM shirts at this engineering competition," said Karla Johnson, the school's STEM integrationist who served as the team coach. "It was so fun to see, I was so proud of them."

The contest challenged teams to build a chain reaction simple machine made out of everyday objects. The finished product had to include ten to 15 steps and reflect the contest theme: the human body.

Composed of 12 fifth graders who were selected through an application process, the Indy EMDC team spent about a month during their BEE time preparing and building their machine. Their innovative creation featured everything from a "leg" that literally kicked off the chain reaction to a winding marble run "digestive track." They even incorporated an "epiglottis," the flap in the back of the throat that prevents food from going down the wrong tube, to address the challenge of moving the marble to a higher point of the machine.

During the event itself, students showcased their machine and delivered a collaborative oral presentation to judges who evaluated them based on their machine design and operation, verbal presentation, and team journal. The top five teams advanced to the finals, one being the team from Independence.

This was the first time that Big Lake students participated in the EMDC, and their 3rd-place performance in the finals was especially impressive considering the ages of their competition. In a division of fifth through eighth graders, they were the only all fifth-grade team.

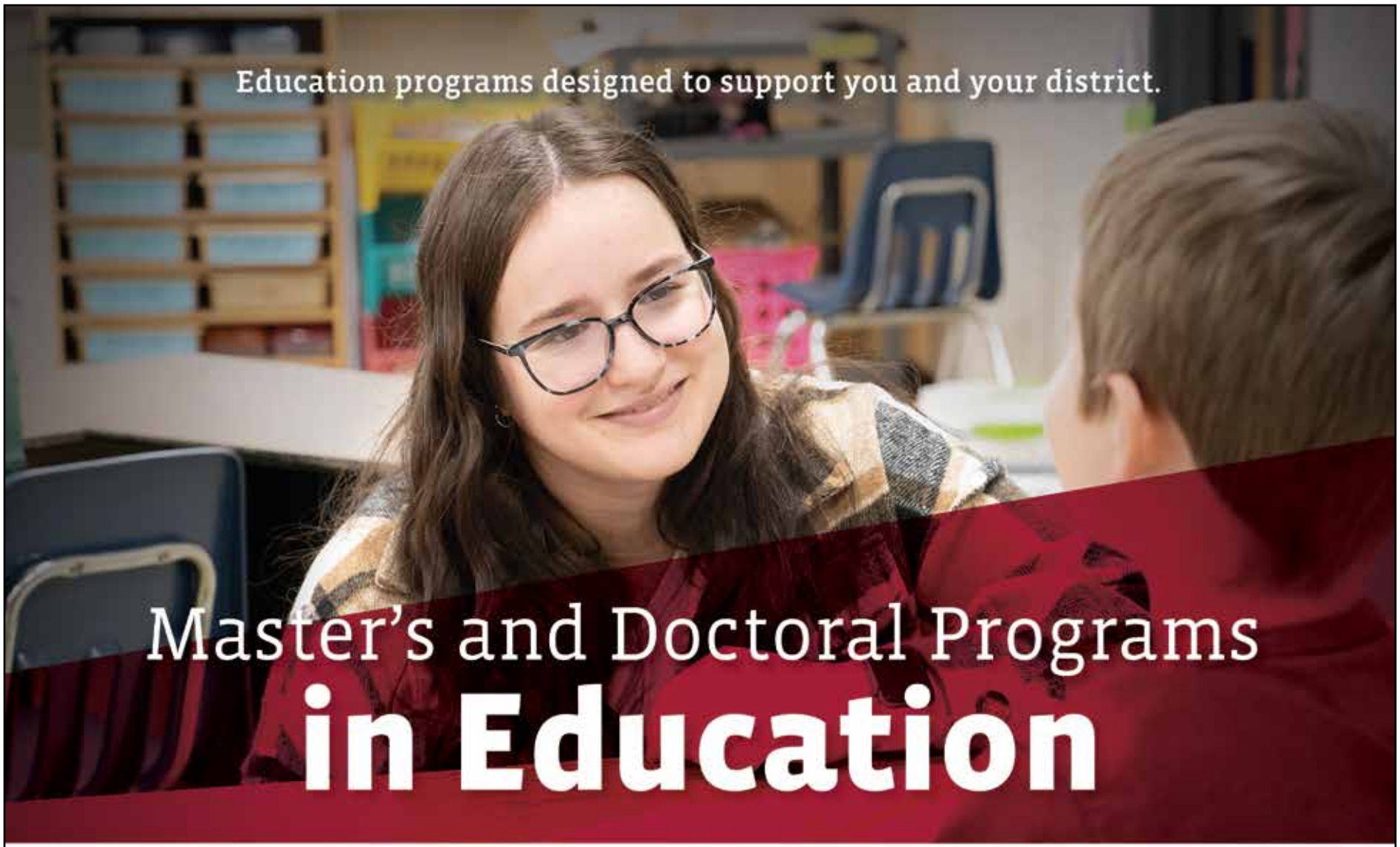
"I don't think the kids were going in and expecting to rank as high as they did, they were just hoping that their machine worked and were excited to see what other teams came up with," Johnson said. "They were so excited when they found out that they made the finals."

Johnson emphasized that the impact of the school's robust integrated STEM curriculum was very evident throughout the entire process.

We teach the 4C's [communication, collaboration, critical thinking, and creativity], and I was so impressed by the teamwork and effort put in by all of the students," Johnson said. While the older groups' may have had more sophisticated machines, she believes that our students' presentation rivaled that even of some of the high school teams competing in the senior division.

"Our students were one of the best at articulating their learning," Johnson said. "It really shows that what we are doing at Indy is different."

biglakeschools.org



Master's and Doctoral Programs in Education

At Viterbo University, connect with fellow educators and advance your career through high-quality **online** programs in the following areas:

Master of Arts in Education
Professional growth for educators and administrators

Master of Arts in Teaching
Post Baccalaureate Initial Teacher Licensure paths

EdD in Ethical Leadership
Ideal for current or aspiring Superintendents (online/blended)

ALSO AVAILABLE!
Bachelor of Arts in Elementary Education
Fully online bachelor completion program

VITERBO UNIVERSITY

For more information or to apply, visit www.viterbo.edu/graduate


NORTH DAKOTA STATE UNIVERSITY
BUILD YOUR CAREER
WITH A DEGREE FROM NDSU
BACHELOR OF SCIENCE (B.S.) IN:
• CIVIL ENGINEERING
• CONSTRUCTION ENGINEERING
• CONSTRUCTION MANAGEMENT
• ENVIRONMENTAL ENGINEERING
› Nearly 100% job placement
› Student focused programs
› Reduced tuition rate for Minnesota students
› Scholarships available, including guaranteed awards
NDSU CIVIL, CONSTRUCTION AND ENVIRONMENTAL ENGINEERING
Begin your experience and plan a visit at ndsu.edu/ccee.