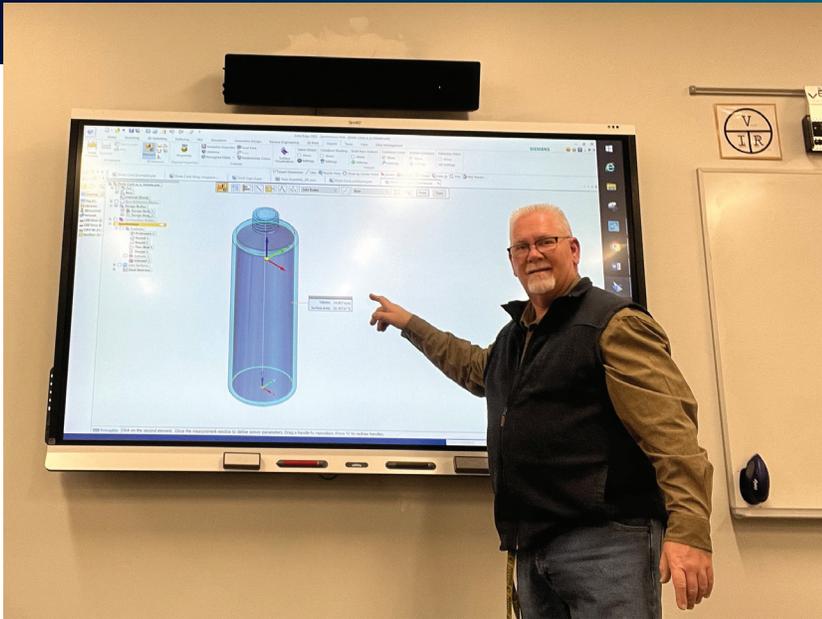**DIGITAL INDUSTRIES SOFTWARE**

Teaching students to think and learn using a real-world curriculum

Waseca High School uses Siemens curriculum to inspire students

Kuschel's passion is electrifying. Aside from his official job – inspiring students as an industrial technology educator – he has also inspired his two sons to take on science, technology, engineering and mathematics (STEM) professions: one as a civil engineer and the other as a field engineer. Coincidentally, his sons took classes in the old auto shop that their father was teaching at Waseca High School. Now, a computer numerical control (CNC) machine, lasers and 3D printers, plus a large window to spark curiosity about the lab for other students, occupy the space. Kuschel proudly boasts that the lab is akin to what one would find on a university campus.

However, the school's focus on engineering was not a forgone conclusion. Due to a variety of staffing and curriculum concerns, the existing program at the school had become stagnant. "Schools our size, I think, get lost in the shuffle," explains Kuschel. So, when Kuschel heard about the Siemens curriculum from people he met at a local robotics competition, he became interested. "As we talked to these guys from Minnesota State's Engineering Center of Excellence, I was like, 'Siemens will train me, provide curriculum and supply free software, and the content looks solid? Why not? Let's go.'"

The Siemens Engineering Design curriculum focuses on real-life situations and encourages problem solving. After the students learn the program's basics, they are tasked with problems to put their skills into action. "I like the approach that it's this 'just-in-time' mentality, and, you know, it's not a new philosophy," says Kuschel. "That's been our industry for many, many years, but now we can plug it into education."

Projects simulate real-life relationships that they might find in the STEM industry, from students working together in a client/designer relationship to making 3D-printed sports drink containers to final assignments that focus less on individual evaluation and more on collaborative

"When am I going to use that in real life?" That is the question many high school students ask themselves as they make shoebox dioramas and memorize dates and facts. Parents also ask this question, hoping that what their children learn in class will provide them with skills for landing a good job and a fruitful career. At Waseca High School in Minnesota, a teacher named Bill Kuschel is making sure that his students and their parents never wonder why they are in his class.

"I don't want to be the teacher that just becomes old and crusty and does the same thing year after year after year," says Kuschel. "I don't want to be boring. If it's boring for me, it's boring for them."

Kuschel credits Siemens Digital Industries Software as a catalyst to his teaching methods and what his students learn. He claims that leveraging Siemens Engineering Pathway for High School Engineering Design curriculum and Solid Edge® software, which are part of the Siemens Xcelerator platform of software, hardware and services, made all the difference. "This is something new and exciting," says Kuschel. "We're on the edge of something cutting-edge for the educational world. I just can't imagine more teachers aren't going to hear about this and want to jump into it."

"think tank" discussions and project presentations. While the number of registrants for the class is higher than ever before, one of the best barometers of success has been student behavior. "You know that if they don't mind coming in early or staying late to work on things and they enjoy what they're doing, that's a good sign of what's happening," explains Kuschel.

Notably, students are also exhibiting fewer behavior problems than in the past, which can be attributed to their renewed focus on Kuschel's class. "That's the beauty of hands-on project-based learning," says Kuschel. "You're automatically into it. Then the kids say, 'How come this hour goes by so quickly; we're done already?' I get that comment a lot."

Waseca's superintendent and local media, which have published articles featuring the school's new program and produced local news segments, have embraced the Siemens curriculum. "The feedback has been amazing," says Kuschel. "They love what we're trying to do here. And when I get support from the top all the way down, I'm in a good place." Last year, Kuschel presented his experience with the Siemens Engineering Design curriculum at the annual International Technology and Engineering Educators Association (ITEEA) conference held in Minneapolis. When he told his school board about the conference, board members were almost as excited about the conference as he was. "They're excited. They said, 'We're kind of this lighthouse school in Minnesota that's doing something different.' To be able to share that with the rest of the technology world and with technology educators is great."

However, this is bigger than simply getting his administration and local media excited. It is about the curriculum. It allows high school students to continue pursuing STEM by offering college credits for STEM classes. Students can then use their experience at companies just down the road from Waseca High School. In fact, the synergy with local STEM industries is vibrant. Companies support Waseca High School, and many high school graduates stay in town to support the local industry.

For example, when Kuschel visited KAMP Automation, a local automation equipment company for leading manufacturers in the Midwest, he discovered that five of their 30 employees were previous students. "That was pretty exciting to see. That's a good percentage of my students right there." The region has other employers in the manufacturing and automation areas that support the high school, like Itron, which focuses on driving digital transformation for the utilities industry. Kuschel is excited to work with Siemens and incorporate additional courses from the Siemens Engineering Pathway for High School that address manufacturing, automation, mechatronics and the internet of things (IoT).

While Kuschel may prefer that all his students become engineers, he said that regardless of what they pursue in life, the learning skills they get from the Siemens curriculum in his class will empower them to take on a wide range of professions. "If we can teach them some worldly skills that help them become productive citizens, whether it be engineering or not, it's okay.

We're teaching them how to think. If they've learned that, I think we've won."

Bill Kuschel
Teacher
Waseca High School