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MSOE UNIVERSITY

WE ENERGIES STEM CENTER AT MSOE

ANNUAL REPORT
FISCAL YEAR 2024–25

Nearly 150 middle school students learned about fluid power and then competed with devices they designed and built in the NFPA Fluid Power Challenge. This event has run annually since 2008 in partnership with MSOE's Fluid Power Institute

This year marked a few milestones that feel like they snuck up on us. The STEM Center served its 25,000th student since opening in 2020. It also marks our five-year anniversary of operations. We hope you'll keep an eye out for an opportunity to join us this fall to celebrate that milestone.

Over the last five years, the STEM Center has grown and changed significantly. We worked with just over 2,000 students in our opening year, with many of them being served through virtual programs or heavily modified in-person programming. At that time, it was hard to imagine what the center might look like and whether the interest and need for STEM programs would persist post-pandemic.

Thanks to the generosity of donors' support, the STEM Center continues to flourish, providing a multitude of STEM opportunities that students, schools and families are searching for. This year, 89% of teachers reported that our STEM on Site program was their students' only out-of-school STEM experience. Nearly 3,000 students this year will receive a STEM experience at MSOE that was made possible by philanthropic support. All of this is made possible by donors who enable us to put funding where it is most needed by our community.

While I can extol the impact of our programs and people endlessly, I believe participant feedback resonates more deeply than anything I might share. This year I felt it fitting to end this letter with my favorite piece of feedback from a middle school student:

"I like the opportunity for us to be able to come here. Not everyone gets the chance to be taught how to be an engineer and design things by real engineers. It gives everyone a great chance and can help people figure out what they want to pursue in the future."

Thank you all for your continued support and making one-of-a-kind STEM experiences accessible for all students!

With gratitude,

Liz Taylor
Director of MSOE STEM

We Energies STEM Center at MSOE grand opening celebration in 2021.

GUIDING TOMORROW'S INNOVATORS TODAY

On any given day, you can find Tina Gleason and her students just about anywhere STEM events are happening in Milwaukee. One of their favorite spots: the We Energies STEM Center at MSOE. For decades, the community STEM leader, teacher and coach has taken on a variety of roles that drive her passion for problem-based learning and provide her students with opportunities to excel.

"Working on STEM projects provides me with activities that encourage my students to think outside the box," said Gleason. "It is so exciting to teach them modern technology and engineering principles and how to then apply those skills to solve problems that exist in their world."

For the last 13 years, Gleason has served as the Project Lead The Way and STEM teacher at Golda Meir School for grades 3–8. In addition, she coaches the middle school's STEM and Robotics Clubs and the high school's Robotics Club.

Gleason was first introduced to MSOE through a summer program in 2016. That experience led to her receiving training to become a Project Lead The Way instructor. Over the years her partnership with MSOE has continued to grow and truly blossomed when the We Energies STEM Center opened in 2020.

Amid a pandemic, Gleason's students became the first participants at the STEM Center. "My students were starving for time to be with their peers and work on projects together. The center opening was a miracle because it gave them a place to go and a purpose and ability to focus their attention on various challenges."

Since then, Gleason's students have been involved in a variety of STEM competitions. She also uses MSOE FIRST Ambassadors to support her robotics teams. "MSOE's ongoing support has added to the growth

of these teams by providing grants, physical space and mentorship to my students. Our partnership has been invaluable to sustaining STEM opportunities at Golda Meir," she said.

Michael Meilicke, a former STEM Center team member who worked with Gleason for nearly a decade, says it has been inspiring to watch the impact she has made on her students.

"Tina's unwavering commitment has given students the tools they need to succeed in the future," said Meilicke. "The programs she brings to her students not only build technical skills, but also the soft skills that set up students for success."

Last fall, Gleason's all girls team, Golda Girls 2.0, competed and won the Make48 competition held at the STEM Center. Make48 is a nationwide invention-competition docuseries that gives teams 48 hours to create a prototype, promotional video and present their idea to a panel of judges. The Golda Girls 2.0 attended the national event in Kansas City, Missouri in November.

"We were so proud to represent Milwaukee, MSOE and Golda Meir in the national spotlight," said Gleason. "The girls were awesome, walking away with two out of the four awards and becoming role models representing both female and Latina engineers. I grew up in a time and place where girls were not encouraged to go into science and math, and a career in engineering was never discussed. I am thankful that today there are schools like MSOE who understand the importance of supporting students from underrepresented backgrounds in STEM education."

Gleason has been recognized for her work numerous times, including a Stemmy for her individual contributions to Milwaukee's STEM ecosystem and a Stemmy for Golda Meir. She also received the 2018 Excellence in Teaching Economics and Personal Finance Award by the Wisconsin Department of Financial Institutions and Economics.

"I love what I do. I love being a teacher and a coach," she said. "MSOE has helped me grow as a teacher and a community member by providing direction and support for the STEM program at Golda. My whole purpose is to expose my students to the STEM experience and continue to support teachers and students throughout the metro Milwaukee area and beyond."

Thank you to our volunteers!

Over 150 volunteers contributed nearly 1,100 hours of volunteer time with STEM Center programs this year. 282 of those hours were through the Make48 event. You can see those volunteers in action on the episodes posted on the Make48 YouTube channel at *youtube.com/make48*.

Interested in volunteering with MSOE's STEM Center programs? Contact stem@msoe.edu

STEM ON SITE PUTS LEARNING INTO ACTION

In 2017, MSOE made a strategic investment to expand its K-8 community engagement. Out of this initiative, the STEM on Site program was born. Designed to bring hands-on STEM activities to K-12 classrooms, STEM on Site has grown to serve more than 4,000 students annually.

It is one of the most impactful programs that the STEM Center runs—with 89% of teachers indicating this program is their students' only out of school STEM experience. Philanthropic support to the STEM Center has enabled thousands of students to attend this program free of charge along with transportation reimbursement. Many schools have been participating in STEM on Site annually and the program continues to rapidly expand.

STEM on Site began as a traveling program that brought engineering design activities to local schools and organizations. STEM Center staff members would bring bins of materials to schools to run programs, or groups of students would come to MSOE for programs if an open classroom was available.

Thanks to philanthropic support from donors, the center sustains a unique STEM experience that isn't replicable in the classrooms of participating schools. Students in STEM on Site programs can be seen designing and programming robotic golf clubs to get a hole-in-one on their own engineered course, or training a machine learning model to control a robotic hand.

"With donor support, we have been able to increase the rigor and quality of our STEM on Site programs by combining engineering and technology," shared Sarah Stelsel, assistant director of the STEM Center. "Students explore the engineering design process and learn basic

code to create a prototype that moves and functions using small motors and lights."

In recent years, the program has also expanded to include cross-campus collaborations with departments like MSOE's School of Nursing. Dr. Amy Ketchum, assistant professor in the School of Nursing, and her students in the Foundations of Safe, Person-Centered Care course collaborate with STEM on Site to apply classroom knowledge into a real-world activity.

"Our partnership with the K-12 STEM on Site program allows nursing students to apply classroom knowledge such as client teaching, health promotion and care for pediatric populations," said Ketchum. "In alignment with the role of a professional nurse, they learn how to be flexible to meet the individual needs of clients and how to partner with surrounding agencies to help meet the needs of the community."

While outreach initiatives continue evolving to meet the needs of the K-12 community, the STEM on Site program is continually providing meaningful opportunities for the students served.

Kate Sommerfeld, third grade teacher at St. John XXIII in Port Washington, Wisconsin, said having her students participate in the program and exposing them to the engineering process was incredibly helpful and motivating for them.

"Our students learned the value of patience, problem solving, cooperation, responsibility and respect," said Sommerfeld. "We are blessed to have had this opportunity and look forward to more opportunities in the future!"

STEM Center Corporate Partnership Highlights

We're lucky to have an abundance of corporate partners who support special events and programming within the STEM Center each year. Here are a few highlights from the past year:

Make48

The STEM Center hosted Make48, a 48-hour event that challenged high school teams to develop a prototype to address a challenge around scalable sustainability. Dozens of volunteers from Milwaukee and beyond made this event possible. Teams were sponsored and mentored by American Transmission Company, Generac, Harley-Davidson, Husco, JP Cullen, Milwaukee Tool, Northwestern Mutual and Rockwell Automation. Watch the episode at *youtube.com/make48*.

Xylem Earth Day

Volunteers from Xylem came to the STEM Center to support the annual Earth Day: Beach Catastrophe! program for elementary students led by Dr. Anne-Marie Nickel, MSOE professor. Xylem's support of this event enabled 40 third-grade students from Marvin Pratt Elementary to have a full day of STEM programming at MSOE. Students learned about oil spills, densities of liquids and how to use the engineering design process to solve a real-world problem. They then practiced their engineering design knowledge by designing earthquake resistant structures and testing them on a shake table.

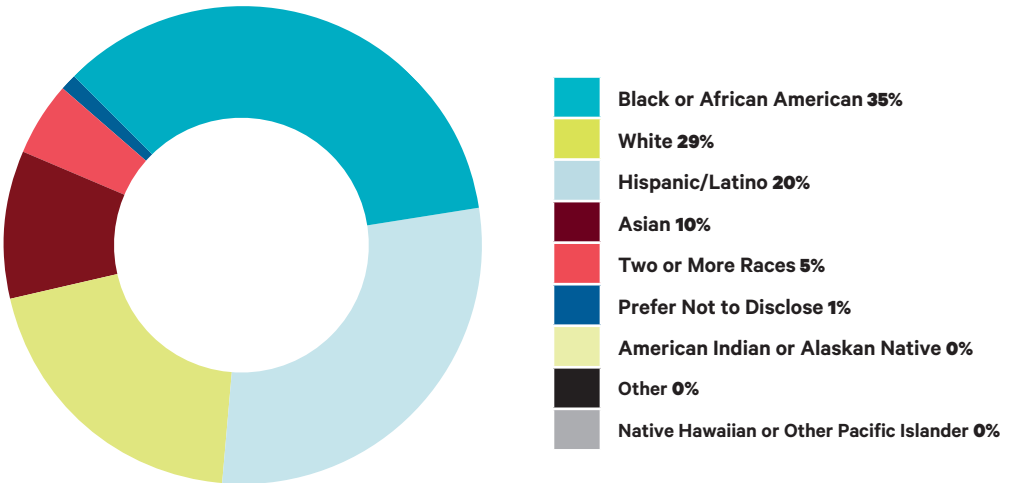
Our Students by the Numbers

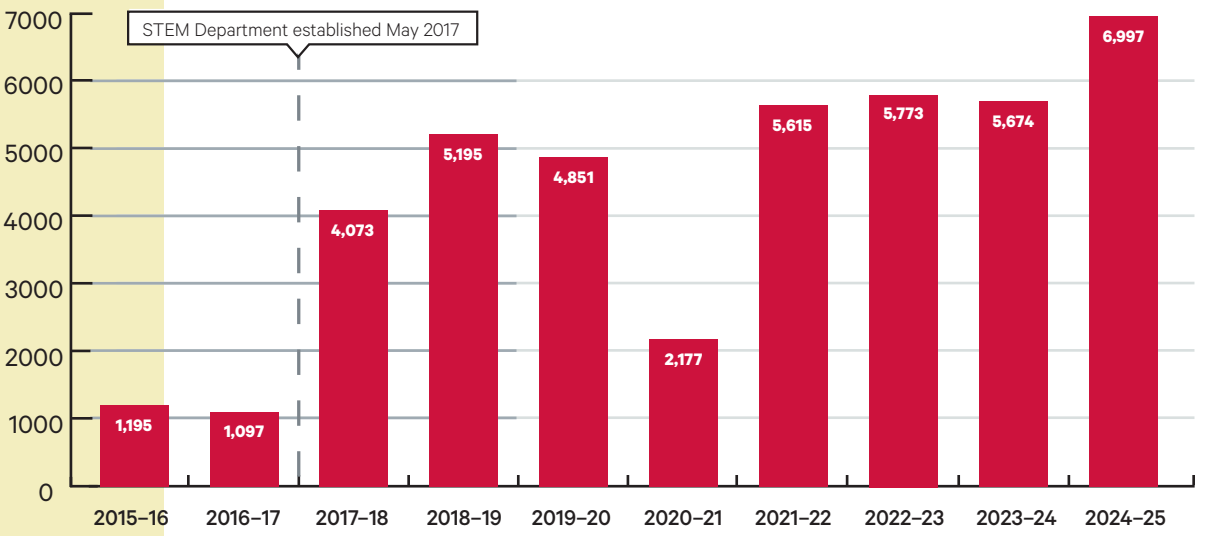
6,997
students served in the 2024–25 programming year.

Of those, **4,398** participated in programs that provided demographic data, showcased in the chart (below).

163
program sessions and events in the STEM Center in 2024–25.

200+
schools across Wisconsin represented by attendees including public, private, charter, and homeschool.





INSPIRING THE NEXT GENERATION OF WOMEN

What started as a class geared toward helping Girl Scout juniors and cadettes in 4th-9th grades earn their STEM Career Exploration Badge has expanded into an annual pathway for exposing and connecting students from across Southeastern Wisconsin to careers in STEM and mentors working in those fields.

Each spring, the Girls in STEM Careers Day equips participants with an expo sheet to collect information on a variety of STEM career options from organizations attending the event. The girls then use their notes to set future goals and aspirations. During the event they also participate in hands-on STEM activities that include learning coding basics to create an autonomous car and exploring the engineering design process to solve a problem related to crash testing.

Each year, volunteers from over seven corporations enjoy providing demonstrations, meeting attendees and sharing information about what they do in the field.

"This event felt like a mini career fair where we showcased our company's work, the impact we have on the world and inspired the next generation of women," said Megan Cochrane '11, DES mechanical designer at EUA. "I left the event with a renewed perspective and was reenergized by the possibilities."

For participants like 4th grader Autumn, the event was not only informative, but an opportunity to try new things. "I really enjoyed using the hammer drill."

Sarah Stelsel, assistant director of the STEM Center, said seeing the impact this event has on participants as well as supporting community and corporate partnerships makes it a win-win for MSOE.

"This event has been a great way for us to engage with different companies who share our passion to inspire the next generation in STEM," said Stelsel.

The event has also increased exposure to the STEM Center and helped increase the diversity of participants in its annual summer programs.

"In past years, we noticed our summer programs had many of the same students from year to year, but thanks to this event, those classrooms are now filled with new students exploring their interests in STEM."

To learn more about how to get involved with the Girls in STEM event, contact stelsel@msoe.edu.

4th grade students Autumn and June work as engineers designing a prototype with safety features to keep a passenger egg safe while simulating crash testing.

BERNARD A. COHEN FACULTY STEM FELLOWSHIP

Thanks to the generosity of alumnus and MSOE Regent Dr. Bernie Cohen '71, a new educational research role was added during the 2024-25 academic year. The Bernard A. Cohen Faculty STEM Fellowship provides the STEM Center team with the ability to more deeply measure the impact of programs and disseminate its learnings.

After completing his first year of the Bernard A. Cohen Faculty STEM Fellowship, Dr. Ron Gerrits '94, MSOE professor and program director, shared some insight on his experience.

Q. What drew you to this role and the opportunity to work with the STEM Center?

For the past four years, I have been a co-PI on a National Science Foundation grant aimed at assessing the impacts of professional development on community college science faculty. Working with the STEM Center expands this professional growth in a manner that is more MSOE-centric, requires investigation of a different set of literature, and impacts youth who are earlier in their career decision-making than those involved in the NSF project.

Q. What aspect of your work do you find most rewarding in this new role?

Working with the STEM Center staff. They all exude a desire to make an impact on the youth that participate in their programs, and they appreciate the feedback that we have been collecting.

Q. What are some surprising lessons you've learned about the STEM Center's programs?

How much K-12 students and teachers appreciate STEM Center programming. Students find the programming engaging. The teachers appreciate that students have access to activities/technology that they do not have at their own schools.

Q. What do you think makes a STEM program truly effective for young learners, especially those who may not initially see themselves in STEM careers?

Activities need to be engaging, active, authentic and at an appropriate level. The programming needs to provide context for the opportunities across the STEM spectrum, be hands-on, and be delivered at a level that isn't overwhelming.

Q. Are there any emerging trends or approaches that excite you?

There is a current understanding that activities shouldn't just "identify" students with specific STEM talents but provide them with an opportunity to contribute to STEM-based activities in a variety of ways.

Q. Anything else you'd like to add?

A heartfelt thank you to all the donors to STEM and Dr. Bernie Cohen '71 for supporting this important work and allowing us to explore our programming at a deeper level.

We are grateful to the following donors who have generously supported the We Energies STEM Center at MSOE.

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To learn more about opportunities to support MSOE STEM, contact Greg Casey, interim vice president of university advancement, at (414) 277-4510 or casey@msoe.edu.

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