

Taking STEM on the road in order to foster girls' interest

Enter the STEMobile. Activities in the roving science classroom are meant to inspire young young students about coding, engineering, robots and the weather, and have had especially positive impacts on girls and their interest in STEM.

By: Madelaine K. Boyer



Fort Lauderdale's Museum of Discovery and Science added its STEMobile to bring science and engineering activities to the southern Florida community. Here, the STEMobile visits the Salvation Army Fort Lauderdale on March 12, 2021. (Photo by Madelaine K. Boyer)

The Museum of Discovery and Science's colorful blue-and-yellow STEMobile makes one of its weekly visits to the Salvation Army Fort Lauderdale on a windy Friday afternoon. STEM teachers Matthew Miller and Natalie Hollander greet a class of exuberant first- and second-grade girls from The Madelaine Halmos Academy at Jack and Jill Children's Center.

The girls gather excitedly under a bright royal blue Museum of Discovery and Science (MODS) tent complete with picnic tables draped with tablecloths of the same color, where they will be learning about robotics.

At one table, the girls learn about coding with the Robot Petting Zoo by sending instructions through an iPad app to playful robots, including a cyclops-like eye, which can be seen rolling across the picnic table.

The favorite activity of the day, however, is the modular robotics activity where the girls, in groups of four, work together to connect colored magnetic blocks to create small, self-powered robots. One of the group member's hard work pays off, and their line of blocks is now one moving piece.

"Look, they made it move! We need to do that!" one of the girls at the opposite table shouts with delight.

This is only the STEMobile's second visit to the after-school program but Rachel Scott, head of school for The Madelaine Halmos Academy, shares how quickly it has made an impact.

"We've found that the girls are more excited to do the STEM (science, technology, engineering and math) activities than the boys are. Anything they can get their hands on, they love it," she says.



Museum of Discovery and Science teacher Natalie Hollander works on STEM activities with girls from The Madelaine Halmos Academy at the Jack and Jill Children's Center in Fort Lauderdale, Fla., on March 12, 2021. (Photo by Madelaine K. Boyer)

It's these girls and students like Esther and Camila Duran that the Fort Lauderdale science museum hopes to make an impact on and foster an interest in science and math through their new STEMobile.

Eagle Point Elementary school students Esther, 10, whose favorite subject is math, and her sister Camila, 9, who hopes to rescue animals one day, have been taking part in STEMobile activities for almost a year at the Weston YMCA Family Center.

During one Wednesday afternoon, the girls describe learning about coding by working with Ozobots, which are small programmable robots. Working together, the sisters created a path on paper using black, red and green stickers for the tiny round robots to follow. The robots are

programmed to move forward on the straight black line, go right on green, and left on red. “I liked it because it was more hands on and we got to experience robotics and engineering at the same time,” says Esther, who is currently in fifth grade and aspires to be an engineer someday.

For girls, such as Esther, this could be a challenge, since they are often not encouraged to pursue those career paths. Engineering is one of the many STEM-related fields that significantly is lacking in women and diversity. According to the U.S. Census Bureau in 1970, women made up 38 percent of all U.S. workers and 8 percent of STEM workers. By 2019, the STEM proportion had increased to 27 percent and women made up 48 percent of all workers. Men, however, made up 52 percent of all U.S. workers but 73 percent of all STEM workers.

As of 2019, the gender gaps are particularly high in some of the fastest-growing and highest-paid jobs, like computer science and engineering, where women only make up between 19 percent and 21 percent of those fields. However, as a part of the museum’s \$750,000 initiative to bring educational programs to the community through programs like the STEMobile, MODS works to inspire girls to one day hold careers in these fields.

“We wanted to provide substantive and accessible experiences for kids to get excited about science wherever they are, and a big part of that was our diversity and equity access as well as inclusion,” said Joseph Cox, president and CEO of MODS.

“With the STEMobile, we are able to take the museum directly to children who need it most while also giving groups like young girls the opportunity to see women role models working in the STEM field,” Cox said.



Students at Oakland Park Academy participate in the Robot Petting Zoo activity run by the Fort Lauderdale’s Museum of Discovery and Science in Oakland Park, Fla., on Feb. 9, 2021. (Photo by Missi Weinkoff/Museum of Discovery and Science)

The STEMobile offers six educational free and fee-based programs throughout South Florida for children to learn more about topics like engineering, coding, robotics and other science- and math-related industries. These programs have been especially beneficial for children in low-income areas to learn at places like the Boys & Girls Clubs, YMCAs, homeless shelters, Title I schools, early learning and community centers, social service partners, and other sites.

The “mobile museum” has already reached more than 6,000 new learners with plans to reach as many as 50,000 learners annually.

The Pembroke Pines YMCA Family Center is another location which has experienced first-hand the positive impact the STEMobile has had on the children, and especially on girls.

“We’ve already had 800 kids who have done STEMobile activities,” says Karla Creque, associate executive director at YMCA of South Florida. “And if it wasn’t for this partnership, our kids simply wouldn’t be exposed to learning experiences like this.”

“The best part has been seeing how many girls are excited to learn about science. We’ve even seen girls asking the employees from the museum afterwards, ‘How do I become a scientist?’ “So, it’s all about having these conversations and encouraging girls to know that they can do whatever they put their minds to,” Creque says.