

MARCH
2023

News from the field of the premiere DoD Youth STEM education program.

STARBASE Minnesota-St. Paul Takes a Trip to Medtronic

Employees in over 130 countries alerted to global events that could put them in harm's way, lasers welding wires for heart devices in as little as 2.5 milliseconds, 3D printed parts and models used to train the region's top surgeons, and the unveiling of STARBASE 2.0 student CAD-designed and 3D-printed spine — just the perfect alchemy that results when STARBASE 2.0 students of E-STEM Middle School – a St. Paul public school, STEM-industry professionals from Medtronic, 3M, Seagate, MN National Guard, and STARBASE Minnesota-St. Paul join forces at Medtronic's Rice Creek Campus in Fridley, Minnesota for an exciting, once in a lifetime culminating event of the STARBASE 2.0 program.



First stop on this interactive tour was Medtronic's Global Command Center, a stunningly visual room with walls of screens and maps. The students met the dynamic Ruth Soucie, Security Manager, who leads a group of people with backgrounds in criminology and political science who monitor issues and events around the world 24/7/365 to keep Medtronic employees safe. "Three people can manage the whole world?!" The students (and adults) were in awe.

Next, students moved to Medtronic's BATLAB (Build and Technology Lab) where students explored the lab and technologies like electron microscopes, keyence measuring tools, and laser engraving machines. Students were able to learn from STEM professionals like

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"We now accept the fact that learning is a lifelong process of keeping abreast of change. And the most pressing task is to teach people how to learn." -- Peter Drucker

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Wen, who has a PhD in welding, who at the time was welding wires for Medtronic's LINQ device which gets implanted under patients' skin. Students were encouraged to try to break the connection— which they found impossible to do — to show the stress the device needs to endure.

Students then entered into Medtronic's 3D printing lab, seeing, firsthand, the many models and prototypes designed in CAD and printed out on Minnesota-based Stratasys 3D printers with tremendous capabilities. Heather Huna, mentor and Senior Mechanical Design Engineer at Medtronic, along with other Medtronic STEM professionals, surprised the students by revealing their CAD-designed vertebrae that students developed in a prior 2.0 session. Medtronic had 3D-printed the vertebrae, added gelatinous discs in between each piece, and created a pelvis to construct the full model. Students were shocked and proud to see this display – pointing out their individual vertebrae they had designed to contribute to the whole model, realizing perhaps for the very first time, just how much creativity is essential to STEM. They saw themselves working in STEM in the future— a couple specifically at Medtronic because it is a “cool way to make things that help people” and they left wanting more.

To top off the visit, three materials engineers taught students just how cold liquid nitrogen is. They learned how properties of materials can change when they are put in extreme temperatures as they experienced flexible rubber tubing from bike tires being hammered into wood and racquetballs shattering as they went through these temperature changes. Students were able to see oxygen in a balloon turn into a liquid as the temperatures dropped and a liquid nitrogen frozen magnet levitating in place over another magnet before it warmed up. “I could not understand how something could be so extremely cold and still be a liquid!” As a parting gift, students learned their saliva could withstand the energy change enough so they could eat liquid nitrogen-toasted marshmallows without getting burned.

The trip to Medtronic, involving a total of 34 people, was the perfect way to put a ribbon on this year's STARBASE 2.0 program whose focus was on Biomed, fitting for the Twin Cities where Medtronic was founded and pacemakers were born. The 2.0 program engaged students in very relevant activities, such as modeling cells, DNA, engineering and modeling nanorobotics, and using tools like CAD, microscopes, robotics, and even tasting strips. Throughout the program, students and their mentors discussed exciting careers in STEM, with the visit to Medtronic providing a rare opportunity for students and mentors, alike, to get behind the scenes and see a whole new world of research and development.

STARBASE is grateful to the Medtronic team for helping to plan this incredible trip and to all the STEM professionals from Medtronic, 3M, Seagate, and MN Guard who served as mentors throughout the program, enriching the lives and perspectives of the STARBASE 2.0 students and sharing their enthusiasm and passions in STEM.



STARBASE Kelly LIFTs Off with New Mentor Program

During their 2022-23 School Year planning meetings, the staff at STARBASE Kelly chose a theme for the school year: "Stakeholders in Inspiration!" They wanted every second, from the time the students get off the bus until they get back on, to be fueled by inspiration! Out of those brainstorming sessions was born the LIFT Mentoring Program! LIFT (Leaders Influencing the Future through Teaching), is a partnership between STARBASE Kelly and Lackland AFB/Kelly Field.

Originally created as a way to ensure those 30 minutes of lunchtime were also infused with inspiration, LIFT Mentors join the students for a 'lunch date'. Mentors come into the facility, bring their lunch and talk with the students about their career, the path they took to their career and how STEM and leadership are a part of their jobs.

The program, however, has "taken off" and grown into not only the lunch mentors, but also panel speakers, guest co-teachers, C5 Air Crew Guides and rocket launch cheerleaders! Mentors represent different squadrons, career fields, ethnicities, genders and backgrounds. From Chaplains, Pilots, Basic Military Training Instructors and just about everything in between, the LIFT Mentors are representing their base well and are truly proving themselves to be "Stakeholders in Inspiration"!

In December, TSgt Jeremiah Loop, an electrical engineering expert and LIFT Mentor, co-taught the circuitry lesson with Educator and LIFT Program Coordinator Belinda Montoya. The students loved having TSgt Loop in the classroom to 'talk shop' with them, share his expertise and answer questions about all things insulators, conductors, switches and pathways! Even the staff all learned quite a bit from him, as well, and are now able to share those insights with campuses that follow.

Six months into the program, LIFT now has 25 mentors hailing from the 433rd AW, 502nd ABW, and the 16th Air Force and they have served the students of the San Antonio community for almost 50 hours! STARBASE Kelly Director Heather Aguillon anticipates close to 50 total mentors by the end of the school year.



They are slated to host two more panel discussions, another co-teaching session and additional C5 tours with every cycle! The mentors have brought so much more to their programming and they cannot wait to see how this program grows over the next few years!



2023 STARBASE Workshop | Aug 2nd-3rd



This year's in-person workshop will be in Washington DC, and each site will be invited to bring their Director and one instructor. Travel details will be sent out shortly.

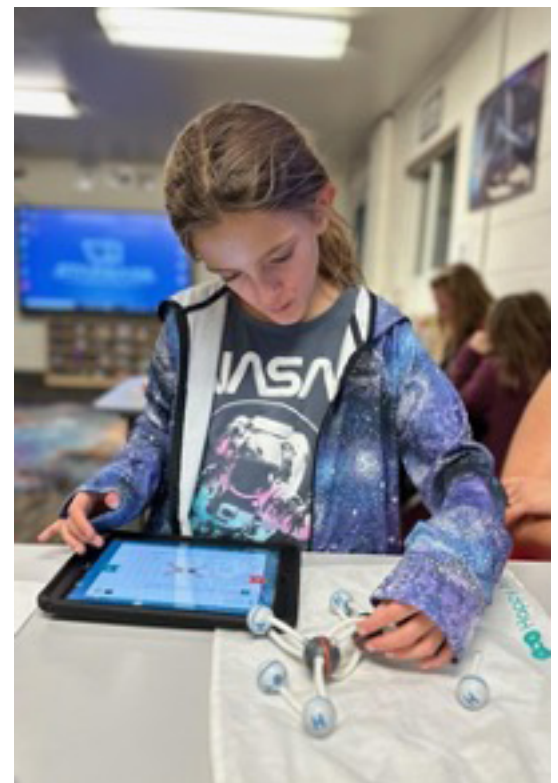
STARBASE Fort Harrison Student Overcomes Adversity with the Help of Technology



STARBASE Fort Harrison recently welcomed Mr. Fairclough's class from Jim Darcy Elementary School. If you were to visit during this time, you would see what you always see at STARBASE; youth actively engaged in hands-on STEM learning, working together in teams, and a lot of conversation around STEM concepts and project planning. The STARBASE motto of "hands-on, minds-on" is obvious to any observer. You would barely notice the microphone system hanging around the necks of STARBASE staff and sitting on the table in front of student Elizabeth Decker.

Elizabeth has been interested in science from a young age. Her favorite books are the Catstronauts series, which entails the adventures of a group of astronaut cats. She really enjoyed her time at STARBASE and loved learning about all kinds of STEM subjects. Her parents, Jon and Andrea, said she updated them every day about her STARBASE lessons. Elizabeth completed two lessons that she particularly enjoyed at STARBASE. The first one involved learning about the states of matter that culminated in a parachute class activity. The second lesson was centered on Newton's Laws of Motion and concluded with students building and launching rockets built from drinking straws.

STARBASE Fort Harrison staff was thrilled to ensure Elizabeth's success at STARBASE by utilizing the microphone system, which transmits wirelessly to Elizabeth's hearing aids she's had since she was nine months old. Since Elizabeth was born without fully developed hearing, the microphone/hearing aid system has helped her fully engage in her classes since Kindergarten. The STARBASE staff was grateful to spend a week with Elizabeth and guide her journey for STEM learning and discovery. The staff was delighted to be part of Elizabeth's passion for STEM and to learn a new technology for student success.



STARBASE Idaho Sponsors FIRST LEGO League Challenge Treasure Valley West Qualifier

STARBASE Idaho sponsored the FIRST LEGO League Challenge Treasure Valley West Qualifier tournament last week at Middleton Middle School. Middleton Middle School and FIRST Idaho Robotics co-sponsored the robot creation, program and design tournament.

Eleven teams of fourth-ninth graders competed in the event, which tested teams' abilities to design and program a robot while also completing interviews about their design process and presenting an innovation project presentation.

During the competition, robots completed a series of tasks on a gameboard to demonstrate the students' ability to program their robots. Each team had 2.5 minutes to complete 15 tasks.

Middleton Middle School's Rebel Alliance, sponsored by STARBASE Idaho's 2.0 program, placed third in the competition and earned the Core Values Award for their embodiment of the Lego Core Values of discovery, innovation, impact, inclusion, teamwork and fun.

The top seven teams qualified to compete in the state tournament in Twin Falls in January.



STARBASE Idaho provides Title I fifth graders from the Treasure Valley with 25-hours of hands-on STEM enrichment. More than 2,400 students from eight school districts participated in the program in 2022. STARBASE 2.0 provides middle school students the opportunity to continue to participate in STEM-based training in a club environment. STARBASE Idaho sponsors four 2.0 programs at three schools in Boise and Middleton.



Have a question about all things LEGO?

The STARBASE representative from LEGO is Lauren Russell. She is available at lauren.russell@lego.com to answer any of your questions!



STARBASE Directors Brown Bag Series

As you may already know, a Directors Launch Training was developed for new STARBASE directors in 2022. After conducting two sessions of this in-person training, it is clear from the feedback that this information would be beneficial for all directors! To reach the widest audience possible, please consider joining us at one or all of the remaining virtual brown bag sessions below. Look for an email with registration information for upcoming sessions!



Thursday, March 23rd @ 1pm ET

All Things Digital: STARBASE-U and more!

Thursday, May 11th @ 1pm ET

Resource Management Part 1: Property

Thursday, May 25th @ 1pm ET

Resource Management Part 2: Fiscal

Thursday, June 22nd @ 1pm ET

Reporting and Data Collection Requirements

REMINDER: Curriculum Abstract Data Call

Just a reminder that abstract for the next round are due no later than **Tuesday, April 18th, 2023** to email@dodstarbase.org.

The SCAG will review your abstract submission and notify you that your idea has been accepted to be developed into an approved lesson plan in late May 2023. Further dates will be provided throughout the process.

STARBASE Guam Visit Cope North Training



STARBASE Guam accompanied the students of Manuel U. Lujan Elementary School Wednesday, February 8, 2023 to Andersen Air Force Base to observe the Cope North military training exercise and interact with service members from around the world to discover the many ways STEM is practiced and how their roles are key in helping communities in times of crisis within the Indo-Pacific region.

Service members were able to share with students why strategic coordination is crucial in collaborating emergency response efforts for countries who have experienced devastating natural disasters, and why developing relationships with others can achieve positive outcomes. The Cope North exercise is a frequent practice that occurs on Guam and neighboring countries that includes military units from the U.S., Japan, France, and Australia.



A Call for Participation

Throughout the year, this newsletter will continue to spotlight the achievements, partnerships, and tips of the participants of the DoD STARBASE program. Please share your achievements, success stories, and helpful tips with us at email@dodstarbase.org.