

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

Education Researchers Study How Middle School Students Develop a STEM Identity with STARBASE Robins

Mercer University researchers are exploring how students develop a STEM identity — that is, how they come to see themselves as people who understand and use science, technology, engineering and math. This summer, researchers in the Tift College of Education partnered with DoD STARBASE Robins to study how middle school students' participation in a summer STEM camp impacted their learning and development of a STEM identity.

"We would hope that camps like this support student agency by providing a collaborative space for figuring out the real world problems," said Dr. Sharma, assistant professor of science education. "Formal classroom environments can be restrictive; however, an informal learning environment has potential to provide opportunities for students to show their agency as knowledge creators. Conversations and discussions among students and facilitators can look like brainstorming ideas for design and problem solving. Student engagement of such nature can possibly lead to positive attitudes toward STEM.

"With a research point of view, examining agency and students' interests within the context of an informal summer camp helps us to see if and how students begin developing a STEM identity — in simple words, begin seeing themselves, get recognized by others and develop a sense of belonging that they can do STEM."

Dr. Thurmond, assistant professor of clinical practice, and Dr. Sharma observed 42 middle school students in DoD STARBASE Robins' STEMpowered Girls and Super STEM Boys academies, which took place at the Museum of Aviation in Warner Robins. They also gave camp participants online surveys and interviewed them about their experiences. During the two-week camp, students engaged in STEM activities related to robotics, coding, space, conservation, cybersecurity and agriculture. This included building a simple robot and coding it and participating in online gaming related to cybersecurity. Students also worked on a week long project in which they solved real-world problems. For example, one problem involved figuring out how to mitigate the effects of high temperatures on playground equipment.

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"Don't be afraid of hard work. Nothing worthwhile comes easily. Don't let others discourage you or tell you that you can't do it. In my day I was told women didn't go into chemistry. I saw no reason why we couldn't."

--Gertrude B. Elion

A Summer Camp Success with STARBASE Peterson

This summer we offered our first Teens Summer Rocketry Camp July 12-15 & 23, and it was a huge success! The teens worked in subteams to each design a portion of the final build and then the teams came together to fit their components together for a complete rocket. They used Open Rocket and Onshape to design their components and used 3D printing as well as cardboard and foam to manufacture the various pieces.

The subteams worked like individual contractors, each with a portion of the project, so they had to work together across the teams while having their own individual projects. It was amazingly successful. The teens built a rocket that was launched under the guidance of our instructor Christopher Texler, who has a Level 2 HPR certification, at the SCORE (Southern Colorado Rocketeers) launch site in Pueblo, Colorado on July 23rd.

The rocket reached over 2,000 feet in altitude before successfully deploying its parachute and safely landing back near the launch pad. Rocket Built was a L1 HPR Class Rocket Flying on an H115 DM motor to a max height of 2100ft carrying a payload of various 3D printed trinkets that students were able to take home afterwards.



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.

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At camp, students learned the advantages of pursuing STEM careers, but exposure to STEM is important even for students who don't plan to go into those fields. "STEM is all around them, and they're going to be using it, so what we try to do is make sure they're STEM literate," DoD STARBASE Warner Robins director, Wesley Fondal Jr. said. "Even if you're just a consumer, you need to know how STEM works."



The researchers chose to study students in middle school because that's when young people often lose interest in STEM, Dr. Sharma said. "That's when they fall out of the interest pipeline," she said. "That's when they start saying, 'I'm not a science person,' or 'I'm not a math person.' They don't see themselves as someone who can do STEM.

The researchers have not compiled their findings yet, but hope they can inform the future of STEM education.

[Source: <https://tinyurl.com/3wnft68z>]

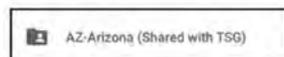
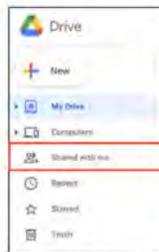


Show Us Your Classroom!

SPECTRUM needs one more photo submission from sites for the one-page site highlights in the FY22 Annual Report. Along with highlighting the outside of your facility, we would love to showcase what sites have done with the inside of their STARBASE Classrooms. We know there are a ton of cool things happening out there and it is time to share! Please upload a photo that captures the essence of your space to Google Drive no later than November 4th, and let Sandy Anderson or Mikelle Cronk from The Spectrum Group know if you have any questions! We would be happy to help!

Uploading Photos to Your Shared Folder:

- » Make sure that the photos meet the minimum requirement of 2-3 MB.
- » Save your photo as ST_SiteName_ClassroomPhoto# (You can share more than one if you would like) Example AZ_Arizona_ClassroomPhoto1
- » Go to your Google drive and be sure you are logged-in with your @DoDStarbase.org account.
- » Click on "Shared with Me."
- » Find the folder the has your State and Site name and says "Shared with TSG," and double-click.
- » Double-click on the folder named FY22.
- » Drag and drop your classroom photo into the FY22 folder, within your shared with TSG site folder.



Curriculum
Check-In

An updated Standards, Objectives, and Approved Activities (SOA) has been provided in the STARBASE Approved Curriculum course on STARBASE-U.

Remember that pictures that are loaded outside the shared folder cannot be accessed by TSG staff. Everything you want TSG to see needs to go in the shared folder!

In Support of STARBASE Henderson

The STARBASE STEM program is a magnificent experience for all students and a moral imperative for students from less advantaged backgrounds. Our lower socio-economic students cannot close the achievement gap until we close the opportunity gap. STARBASE provides students with real world, authentic STEM experiences that provides them with rich and impactful opportunities that they urgently need to provide them with an equitable education and give them the tools they need for a bright and optimistic future.

I have never seen my students work so hard and be as authentically engaged in instruction as I have seen them work on their STEM challenges and problem solving quests. This remarkable experience serves as a beacon to light the way education needs to go to prepare our students for the real world and become successful and productive citizens. STARBASE opens up new horizons and great possibilities for their future careers with rigorous and relevant tasks that build grit and persistence mirroring engineering design. My students felt like engineers and scientists. They understood clearly the 'why' and purpose of a STEM-focused education. In all my years as an educator, I have never witnessed such a powerful program to generate motivation and accelerate learning.

STARBASE has to expand. The value of the program has far-reaching implications. This the crown jewel of our education system and has incredible potential to level the playing field for our most needy students. It is an impressive program to observe, and I urge you to look for ways to cast the net of STARBASE's influence further. Not only are our students receiving a world class education, but the instructors model best educational practices to expose our teachers to hands-on integrated instruction. STARBASE serves as a model for our education system as a whole and is the way of the future. Our kids are depending on you!

Pauline Mills, EdD
(Recently retired principal)



2023 Teacher
Survey

The 2023 Teacher Survey is available now in STARBASE-U in the *SB Program Directors Course* under the Academy Management section. Please contact email@dodstarbase.org with questions.

Students Explore STEM Education at Fort Drum's STARBASE Academy

Class was in session for the first time Sept. 12 at the Department of Defense STARBASE Academy at Fort Drum, as more than 40 students from the Watertown School District were immersed in STEM (Science, Technology, Engineering and Mathematics) education.

The students' first assignment – as an icebreaker and a nod to the military – was to choose their own call signs for their STARBASE badges. Some went with career-oriented tags such as "Astronomer" and "Biologist" while others, like "Sour Cream," were somewhat inexplicable.

Joanne Witt, Fort Drum STARBASE Academy director, said this three-minute task to start the day helped settle students and teachers into the new learning environment.

"Even the teachers came up with their own call signs," she said. "This is a completely new experience for all of us, so doing something fun like this gets everyone comfortable."

"All of our lessons are aligned with New York state science and math standards, and so we start with the fundamentals, then gradually expand on that knowledge," Witt said. "Students will be learning things like elements of matter, measurements, energy exploration and introduction to engineering design and robotics."

Within the lab, Witt said students will have the capability to experience basic 3-D printing, chromatography, and fingerprint analysis, among other subjects.

"When the kids are in here, they are making connections with the learning because it's literally in their hands," she said. "They are understanding why they need to know geometry and what a right angle is if they are to build something. Then they are able to achieve at a higher level."

Witt previously served as principal of the Bohlen Technical Center in Watertown, director of the Career and Technical Education (CTE) of the Jefferson-Lewis BOCES, and she also taught at Watertown High School.

"I think what we are going to find here, as I have previously found in CTE, is that the students become so excited and engrossed in the curriculum because they are learning at a higher level," Witt said. "They are not bored or disengaged, and it gives them confidence in their abilities."

Witt said that more than 10 North Country school districts have committed to participating in the STARBASE Academy, and that 68 classes have been scheduled.

A ribbon-cutting ceremony was conducted on September 16, 2022 to officially mark the opening of the new facility located in Bldg. 1029 on Lewis Avenue.

[Source: <https://tinyurl.com/yxsu2hyp>]

