DoD STARBASE
A Department of Defense Youth Program

CIRCUIT

SEPTEMBER
2023

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

Sharing Summer at STARBASE!

STARBASE Salina held several summer camps in 2023 with two different themes: Young Engineers, where students built and tested many prototypes along with CAD design using Onshape, and Rockets and Robots where students worked with Spike Prime and Sphero Bolt robots to perform many "space" themed challenges.

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"Today, we are saying unequivocally to all students and educators that they belong in STEM and that they deserve to have rigorous and relevant educational experiences that inspire and empower them to reach their full potential as productive, contributing members of our nation's workforce." --U.S. Deputy Secretary of Education, Cindy Marten

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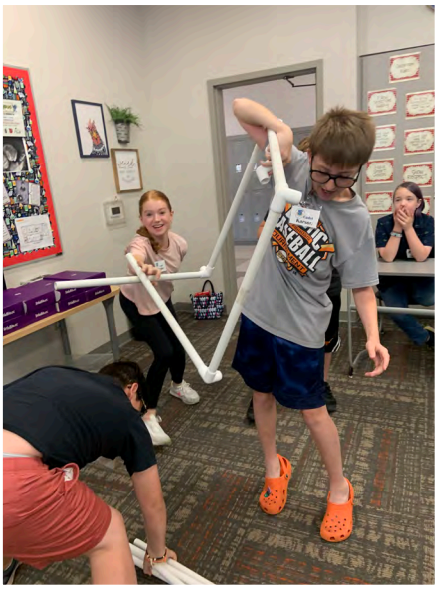
STARBASE Burns Flat held two summer camps that included activities such as The Cube, Nuclear Reactor, Pop Goes the Fizz, Sphero Mars Base Coding, Geodesic Domes, and Little Bits Circuits.

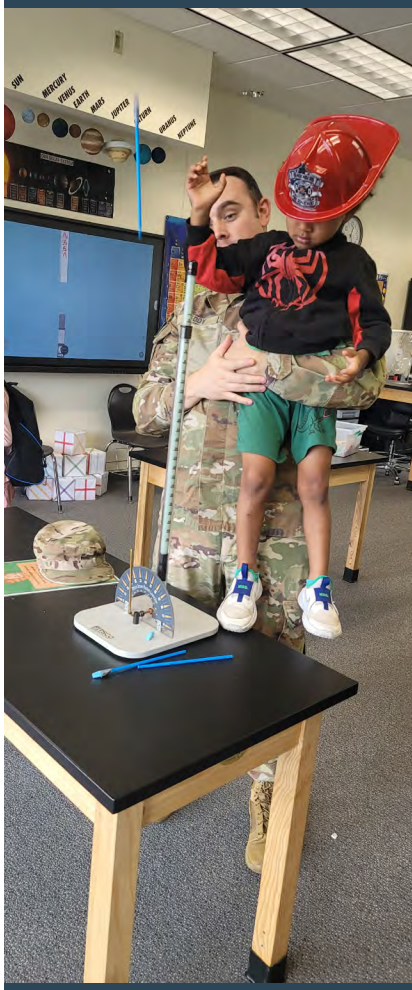


The **Wyoming STARBASE Academy** had an out-of-this-world experience with the Boys and Girls Club of the Eastern Shoshone Tribe in Fort Washakie, Wyoming! Over three action-packed days, campers explored the wonders of rocketry, solar systems, robotics, and more! Site staff were lucky to have been able to travel to the reservation and partner up with this fantastic program, and the kids loved every bit of it!

Full STEAM Ahead with STARBASE Vandenberg and EFMP

The 13th annual Salute to Youth event at Vandenberg Space Force Base (VSFB) was a remarkable educational spectacle that went beyond providing school supplies. Working in collaboration with the VSFB Youth Center and Exceptional Family Members Program (EFMP) it was an event that provided essential support and opened doors of opportunity for military families seeking quality education.

Salute to Youth is an event that had its beginnings 13 years ago. It was designed for all families on base, but because of its connections to EFMP, places emphasis on those that have a family member with special needs or families with school aged children. This event aims to alleviate the stress that always comes as summer winds down and preparations for back to school begin. This is done by gathering resources from both on and off the installation which include helping agencies and local school representatives who can meet with families and address questions or concerns right there on the spot. "It also provides a fun and non-formal setting for families to participate and encourages them to ask questions where they do not feel the pressure of an office visit," says EFMP Family Support Coordinator Joseph Muller.



STARBASE Vandenberg took center stage during the event, captivating audiences with their impressive water bottle rocket launches every half hour. These demonstrations not only showcased fundamental principles in physics and engineering but also left young minds filled with inspiration and a newfound passion for aerospace exploration.

Another one of the highlights of the event was the mesmerizing chromatography station, where students plunged into the fascinating realm of science. Through hands-on experimentation, they explored vibrant colors and chemical reactions while creating beautiful masterpieces. Such interactive experiences made a lasting impact on impressionable minds, emphasizing the importance of engaging STEM

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education. Equally captivating was the technology station featuring a robot soccer arena that allowed parents and students to immerse themselves in robotics firsthand. By interacting directly with robots, participants ignited their curiosity about emerging technologies—an experience sure to inspire future innovation.

Spartronics—a renowned Orcutt Academy Robotics Program—added even more awe-inspiring moments to this already incredible lineup by showcasing their impressive skills. This demonstration reinforced dreaming big and pursuing passions within STEM fields—a message that resonated strongly among attendees.

STARBASE Vandenberg's contributions extended beyond these immersive learning encounters; incoming fifth graders received exclusive invitations offering them a sneak peek into what awaits them at STARBASE Academy—the cosmic adventures awaiting them during their academic journey—guided by STARBASE Vandenberg Director Rosalva Razo.

The event's theme changes every year with emphasis being on STEAM for 2023, however, events in the past have used carnival, super heroes, star wars, wild west and other misc. themes. For 2023 there were 1500 individuals in attendance with over 40+ on and off base agencies. This event is completely funded by donations and only succeeds with volunteers and community support.

This year's Salute to Youth charged on as a Full STEAM Ahead extravaganza complete with live music performances, engaging games suitable for all ages, free lunch and family-friendly activities galore! STARBASE Vandenberg was instrumental in fostering joyous camaraderie amongst attendees while reinforcing that learning can be an exhilarating adventure.

Salute to Youth at Vandenberg Space Force Base and STARBASE Vandenberg exemplified STEM education's transformative potential. Here's to a future where stars cease being mere limits but instead become launching pads for young minds eager to explore the endless universe of knowledge and innovation.

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.

Winchester STARBASE Academy Exciting Summer 2023 Activities

The summer of 2023 was an exciting, busy time for the Winchester STARBASE Academy. They began a partnership with the Winchester Campaign for Grade-Level Reading initiative. In conjunction with The Kids Clubs of the Northern Shenandoah Valley, which is an enrichment summer and after school program for low-socioeconomic children, the Winchester STARBASE Academy embarked on weekly visits to The Kids Clubs to engage students in STEM related activities while incorporating literature into the lessons.

Each week a group of middle school students first collaborated on a team-building activity. This led to a group reading session where a STARBASE instructor or one of the students would read a book that would introduce the students to a STEM concept followed by an inquiry-based experiment. Some notable activities included building marble roller coasters fully equipped with loops and turns powered only by gravity, building a structure out of popsicle sticks for three little pigs that could withstand the rage of the big bad wolf, and launching foam rockets.

In addition to the group-focused activities, each STARBASE instructor was paired with a younger student as a reading buddy for focused time on improving decoding and comprehension skills. Each week an instructor and their reading buddy would choose a book of an appropriate reading level and take time reading to one another and talking about the stories.

In between the Kids Clubs activities, we also held summer camps on site. Fifth grade students from Frederick County Public Schools Apple Pie Ridge, Gainesboro, and Middletown Elementary schools attended weeklong camps since they did not get the opportunity to participate during the regular school year. Students were engaged in activities such as chemistry experiments, CAD and 3D printing, and programming robots. Camp always ended with an exciting day of building and launching water rockets! Students also had the opportunity to engage with some of our fantastic active duty guardsmen and a local STEM professional. Classes either learned about law enforcement with Sgt. O'Connor and K9 Riggs or about the science of flight with Carley Walker, the director of STEM Flights.

July was a busy month as we were finishing up our summer camps and getting ready to travel for our remaining programs. Winchester STARBASE collaborated with other STARBASE programs from West Virginia, Kansas, Vermont, and California, and successfully planned, organized, and executed the third annual STARBASE 3.0 robotics program. The STARBASE Advanced 3.0 program was held in conjunction with the Marine Corp

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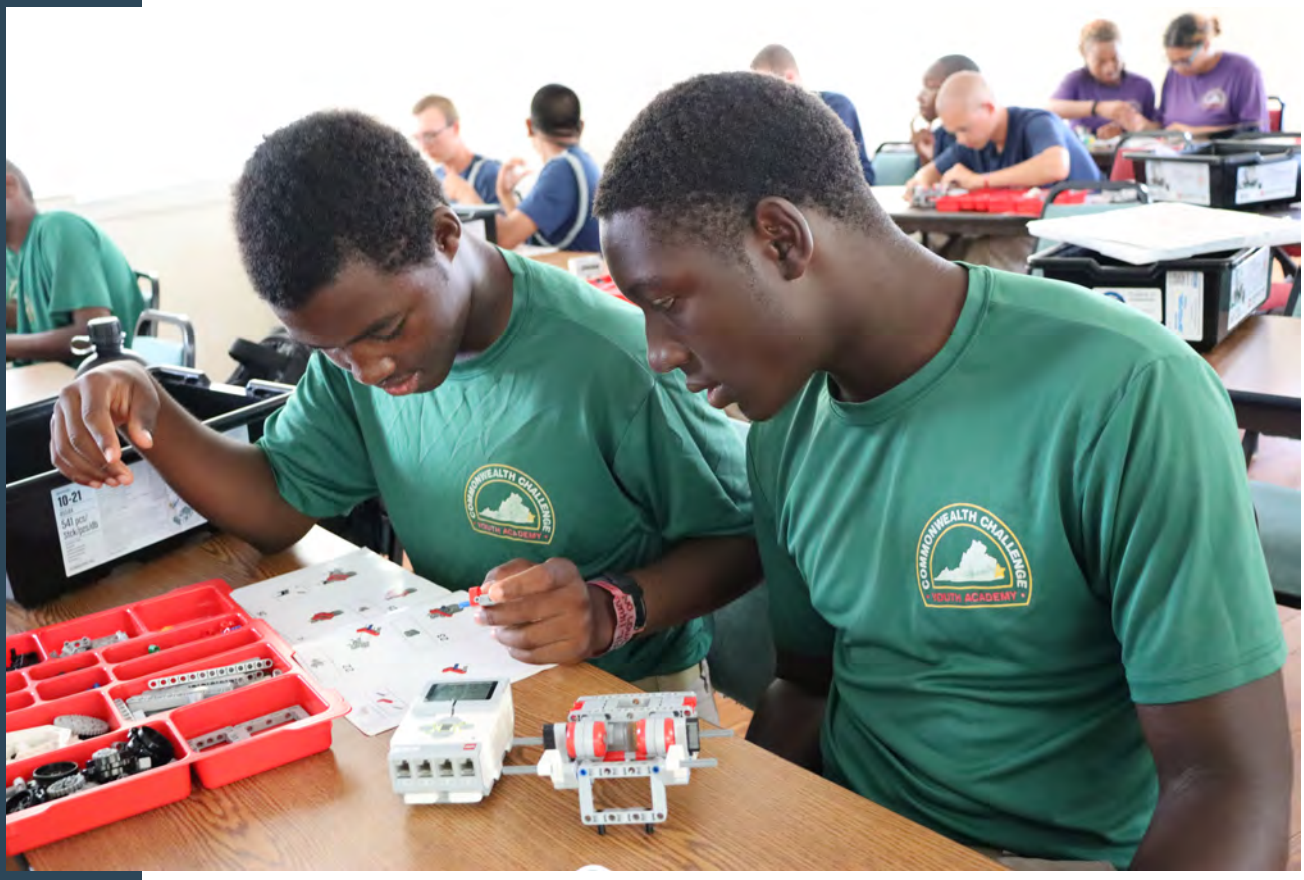
JROTC summer camps at Fork Union Military Academy organized by First Sergeant (ret) Paul Jornet. STARBASE staff worked with 202 cadets on building BOE Shield robots, programming Arduino Uno using the C++ program, and configuring the breadboards. The camp was amazing for both STARBASE instructors and the JROTC cadets. One cadet reflected, "This was so much fun! This is something I wish you all can try. Being able to build this robot myself feels like an amazing accomplishment. Would love to do this again."

While the Advanced 3.0 program was being held, the remainder of the STARBASE staff went to the annual Virginia National Guard Youth Camp and the Commonwealth ChalleNGe Youth Academy. Here we led the National Guard campers in team building activities and constructing fun stomp rockets. The campers were very imaginative as they used stickers and markers to produce some amazing artwork on the rockets they created.

On the second day they were so excited to launch their rockets. They participated in launches that tested for accuracy and distance. The favorite was definitely distance, with some rockets going almost 100 feet. You would not believe how high the campers could jump and land on the bottle that would propel the rocket! The cadets from ChalleNGe started off with a thought-provoking puzzle to encourage problem solving before building and programming robots. When it came to building the Lego robot, some of the cadets showed great enthusiasm as they went above and beyond the build creating an intricate and unique robot. Cadets worked with a partner in order to encourage teamwork as they designed their own mazes and programmed their robots to navigate these imaginative designs.

The Winchester STARBASE Academy had an amazing summer and we are super excited to start a new school year where we can continue to engage and inspire students about STEM for their future.



STARBASE Peterson's First Grade STE(A)M Day with Madison Elementary

STARBASE Peterson welcomed Mrs. Black's first grade class from James Madison Elementary School to our facility on Peterson SFB, Colorado in April. STARBASE staff planned and implemented a full day of on-level hands-on STEM enrichment. Lessons presented were aligned with the Colorado Department of Education first grade standards to support learning that was occurring in the classroom, while also introducing students to some content areas, such as chemistry, that are not taught until higher grades. STARBASE Peterson's goal was to get students excited about chemistry at this early age to inspire more confidence and interest in chemistry throughout their elementary years. Students got hands-on with modified Magic Balloon and Chemistry in a Bag experiments from the STARBASE curriculum.

The visiting first graders also learned that although we can see the stars, moons, and planets with our naked eye, telescopes allow us to view these objects in greater detail. Students had the opportunity to view images of the planets in our solar system, as well as images taken from the James Webb Space Telescope, at different magnifications. While viewing the planets in our solar system in detail, the students learned about what makes a planet rocky versus gaseous. Then they got creative with STEAM and crafted their own model planets out of Styrofoam and clay!

Introduction to buoyancy was another fun part of their day. STARBASE's Fluid Mechanics lesson was modified for the first-grade level and students used observation to predict whether classroom objects would float or sink before testing their predictions themselves.

A highlight of the day was a visit to the Peterson Space Force Base Fire Department. There, students were able to meet with firefighters who gave them a tour of the station. They were given an introduction to fire safety, saw the firemen (and their teacher!) dress in firefighting gear, and sat in a variety of fire trucks. The trip culminated with each student having the opportunity to spray water from a real fire hose! STARBASE Peterson is incredibly grateful for the Peterson Space Force Base Fire Department's support in providing this experience and for inspiring these young students.

The STARBASE staff had a blast with the first graders and is looking forward to more outreach opportunities with young STEM explorers in the future.

DoD STARBASE Pensacola STEM University a Great Success

The Director of STARBASE Pensacola, Rita Miller, was contacted by Mr. Eddie Thompson, AT&T Military and Legislative Affairs in Pensacola, Florida, asking if the program would be interested in doing a STEM program for Out of School Time (OST) and After School Time (AST) for local Escambia County School Children. The grant was written to provide 30 hours of OST and AST combined from March 2023 (Spring Break) and continuing to meet 4 hours after school every other week until graduation on 16 May 2023.

After the dates and times were set, the STARBASE Pensacola team developed the STEM curriculum and homework schedule for the AST. The selection for the students who would attend was made by their 5th grade classroom teachers and their principals of the five selected schools in the county for a total of 30 selected attendees. For the venue, the program partnered with the local downtown Pensacola Library who graciously scheduled a room on the designated days when the attendees would meet. Each attendee was issued a Lab Coat to be worn when attending class and a Lanyard identifying them by their Call Sign.

During the 30 hours, the "University enrollees" were engaged in teamwork, teambuilding, collaboration, and leadership. Using those skills, 5 teams completed their required "subject areas" in Science, Technology, Engineering and Math.

Graduation was a wonderful success with 21 graduates, 7 recognized with perfect attendance for all 30 hours. Seventy-one excited parents/teachers/ grandparents attended and supported their SBPS University graduate! Parents were so proud of what the program had offered their child and wanted to know if we were going to do it again next year because their child had not stopped talking about it. That is what we like to hear!!!! The graduates also received a Summer Survival Bag (pencils, ruler, a SBPSU Tumbler, their very own book "Awesome Engineering Activities for Kids – 50+ Exciting STEAM Projects to Design and Build", notebook (to record their ideas as they think of them) and a reusable bag!

SB PENSACOLA STEM UNIVERSITY CURRICULUM

- Zoology 101 --Creating an Exercise Loop for Nano bugs
- Chemistry 101 – Crime Scene -Chromatography and Fingerprints Who Did It?
- Technology & Design 101--Designing a Sphero Chariot
- Technology 101 --Coding using DASH
- Architectural Engineering 101 --Designing a School
- Coding and Architectural Drawing 101 – DASH Sketch Code Breaker
- Electrical Engineering 101 – Circuits
- Environmental Engineering 101 – BP Oil Spill Cleanup and environmental protection
- Swimming 101 – Spheros Swim Meet
- Aeronautical Engineering 101 – Powerup Paper Airplane Conversion Kit
- Chemical Engineering 101 – Chemical reactions (elephant toothpaste)- required reading of *Ada Twist, Scientist*.
- Physics 101 – Newton's Laws Demo
- Engineering Design 101 – Engineering Challenges
- Physics 102 – Gravity Rover Cars
- Chemistry 101 – The Creation of Boo Bubbles