



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

Embracing Culture at STARBASE Edwards

On 29 May 2021, STARBASE Edwards participated in the “Embracing the Culture” event at Sol Plaza Boutique Mall in Palmdale, CA. While there, STARBASE Edwards spoke with members of the community about the importance of STEM and discussed future STARBASE opportunities for students in the Palmdale and Lancaster area. It was refreshing to witness students and community members’ excitement over STEM career opportunities, future community engagement events, and understanding the phenomena behind STEM. By exposing students to experiential and inquiry-based learning opportunities outside of the classroom to pique students’ interest in STEM, it fosters scientific curiosity in the early years of an academic path.

During the outreach event, students from the community utilized Sphero robots and Oculus Virtual Reality headsets at the STARBASE Edwards booth. STARBASE also had a raffle giveaway for a Sphero SPRK+ robot (prize provided by STARBASE Edwards, Inc.) Auxi Grimes, a STARBASE Edwards instructor, had a great experience at Sol Plaza. “We hope that our outreach inspires students to learn more about STEM and increases awareness of the many STEM career opportunities that are out there,” Grimes said. The STARBASE Edwards team believes in cultivating both scientific literacy and curiosity in our youth, which is vital for the development of better judgement and decision making in our citizens of tomorrow.



“We look at science as something very elite, which only a few people can learn. That’s just not true. You just have to start early and give kids a foundation. Kids live up, or down, to expectations.” -- Mae Jemison



FY22 BUDGET SUBMISSION

- » Budgets for DoD STARBASE programs sponsored by the Active and Reserve components are due to OASD M&RA no later than 1 July 2021.
- » Budgets for DoD STARBASE programs sponsored by the National Guard are due to NGB J1-Y no later than 1 July 2021.

Playing in the AR Sandbox

In the April edition of The Circuit newsletter, you may have noticed a photograph on page two featuring an exciting addition to STARBASE Martinsburg's classroom. This highly engaging learning tool, which at first glance simply appears to be a sand table, is called an Augmented Reality (AR) Sandbox. This hands-on exhibit combines the playfulness of a child's sandbox with advanced technology to bring geographic, geologic, and hydrologic concepts to life. More specifically, this system helps demonstrate concepts such as how to read topography maps, understand contour lines, watersheds, levees, and much more.

As stated on the University of California, Davis (UC Davis) website, "[The] AR Sandbox uses a computer projector and a motion-sensing input device (a Kinect 3D camera) mounted above a box of sand. The visitor interacts with the exhibit by shaping special 'kinetic' sand in a basin. The Kinect detects the distance to the sand below, and a visualization of an elevation model with contour lines and a color map assigned by elevation is cast from an overhead projector onto the surface of the sand. As visitors move the sand, the Kinect perceives changes in the distance to the sand surface, and the projected colors and contour lines change accordingly" (Yahata).

The initial concept was derived from a project developed by Dr. Oliver Kreylos, an associate researcher at UC Davis. Dr. Kreylos has since allowed his creation to be used for educational purposes, free of cost, by providing blueprints, facilitation guides, informational graphics, and the needed downloadable software. This material can be accessed at <https://arsandbox.ucdavis.edu/>.

Thanks to Governor Justice's (WV) 2016 STEM Initiative Grant, STARBASE Martinsburg was able to purchase all the needed materials to construct and implement the AR Sandbox as an extension to their standard curriculum. Martinsburg instructors collaborated with 167th Airlift Wing Guardsmen to build the AR Sandbox, and it has since played a pivotal role in helping to further spark students' interest in STEM.

For half a decade now, STARBASE Martinsburg has been utilizing the AR Sandbox as a supplemental tool to help students better comprehend mapping and topography concepts that otherwise can be challenging to grasp using standard 2-dimensional maps. This site looks forward to the continued use of their AR Sandbox as an exciting, hands-on, curriculum extension to induce self-discovery with future students.



An RFID Solution

Can you relate to crawling around on the floor looking at the bottom of tables and chairs for barcodes, or searching tirelessly for an iPad that you took to an off-site summer camp or STARBASE 2.0 program, finding it a month later in one of the activity bins right where you had placed it? Spot inventory, wall-to-wall inventory, and overall asset management are integral parts of running a successful STARBASE program. The STARBASE Montana sites developed a Microsoft Access database to track our inventory and over the years have spent countless hours managing the data and taking a very manual approach to asset management. Over the past year after researching inventory systems, they found a very user-friendly cloud-based radio frequency identification (RFID) inventory system to manage their assets, and their wall-to-wall inventory has gone from a full day project to an 11-minute breeze.

Working alongside Invisi-tag, a Michigan based company, STARBASE Montana has created an inventory solution that meets the needs of their program, eliminates human error, automates the inventory process, and provides real-time information and reporting.

How does the system work? Each piece of equipment in our inventory is labeled with an RFID tag and entered into the Invisi-tag cloud-based system. There is even an Invisi-tag app! The system tracks the unique RFID tag, item category, item serial number, location, in-service date, equipment cost, and notes among other things. When you are ready to do inventory, all items on the inventory show up in red on the app, and as you walk around with the RFID scanner, it automatically picks up the radio frequency from the tags, and as the items are located, they turn to green on the app. If an item shows up in yellow, it means it is present but in the incorrect location, and if the item remains red, it has not been located.

There are upfront costs when purchasing the scanner and RFID tags and a monthly fee for the cloud-based system. Having the cloud-based system allows for automated tracking of who is performing the inventory, the date, time and result. In Montana, they share the scanner and cloud-based data between the Great Falls and Fort Harrison sites. Great Falls is set as one location in the app, and Fort Harrison is set as one location. When they do off-site outreach to Native American communities, the inventory they take with them is moved from their site locations to a location they created called Government Truck. Everything they load into the vehicle is scanned and transfers to the Government Truck location via the app. The transfer is date and time stamped making inventory management quick and clean.

Initially, they spent time developing an internal inventory procedure, and it took some time to get everything tagged and into the Invisi-tag system; however, the current time-saved, automation, and accuracy of the system have made the transition game changing. If you have any questions, you can contact Michael Vannatta at (406) 324-3727 or SB.FortHarrison@dodstarbase.org.

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.

TASK REMINDER

Updates to the COVID Operational Status Tracker spreadsheet are due no later than June 30th (last day of the month).

These updates are provided to OSD/M&RA as a report monthly.

The link to the spreadsheet is available in STARBASE-U. If you are having trouble accessing the tracker, please contact email@dodstarbase.org for assistance.

The Evolution of STARBASE Maxwell

STARBASE Maxwell opened its doors in 2004 as one of the few programs on an active Air Force Base. With the support of the 42 ABW at Maxwell AFB, STARBASE Maxwell has successfully educated well over 10,000 students in the Alabama River Region. As the years have gone by, the program has seen change. Changes come in the form of new lessons, new technology, and one of the most important changes is growth. The STARBASE Maxwell program began its STEM educational outreach by educating over 500 students during the first year in 2004. Since 2004, the STARBASE program has been able to grow by transitioning from one, two, three, and now four classes as of January 2020. They have grown to educate more than 3,000 students a year and will continue to look for ways to reach more students.



Since STARBASE Maxwell has been around for 17 years, they have had some of our former students return in a different manner. Ms. Spradlin was one of our visiting teachers last year, and she was excited to show off the patch she drew while attending STARBASE as a fifth-grade student in 2007. Other students have moved on and have become successful in many careers, including STEM careers.

During the last couple of years, STARBASE Maxwell has worked to build a STARBASE 2.0 afterschool program with local sixth through eighth graders. Each semester, they team up with four different middle schools to provide this mentor-rich program. Military students attending Air Command and Staff College (ACSC) and other permanent party military and community organizations have donated their time by volunteering not only as 2.0 mentors, but also as guest STEM speakers for their fifth graders. It is amazing what mentors and STEM speakers have to offer our students! STARBASE Maxwell has learned to never assume what aspect of their program will reach a student!

Like most other STARBASE programs, STARBASE Maxwell has had to change some since March 2020. In January 2020, they were excited to start the new year with four classes and be able to reach even more students. Unfortunately, that did not last long. After figuring out how to adapt to the ever changing events, they were able to host a couple of virtual summer camps and plan for the 2020-2021 school year. In August 2020, they began the school year with one of their local school districts filling their seats with students eager to learn more about STEM. While they still operated four classes, due to social distancing they had to lower the total number of students per class.

However, some of the changes forced on STARBASE Maxwell during the pandemic allowed the staff to think differently. They are ready to tackle the upcoming 2021-2022 with new ideas. At STARBASE Maxwell, they have decided that while change is hard, it can also be a good thing. They are looking forward to seeing how their “changes” can enhance, improve, and help them become better STEM educators in order to educate the STEM leaders of tomorrow.

SPACED OUT! Program at Peterson AFB Was a Blast!

The SPACED OUT! program was conceived through a collaboration between STARBASE Peterson, 21FSS Marketing, and base library personnel. In an effort to connect the isolation the pandemic cast upon the world to the isolation felt by astronauts in space, this community event came to life. What started out as a simple idea, rapidly developed into a base-wide program.

The opening “BLAST OFF!” reception took place at The Hub (Peterson AFB Club) and coincided with National Space Day. The reception opened with a taped personal video message to the audience from former astronaut Scott Kelly. Additionally, Louis “Lou” Ramon, a former engineer with NASA, captured guests’ attention with his presentation, “Apollo 11 – There and Back, as I Lived It.” He worked closely with Neil Armstrong, Buzz Aldrin, and Michael Collins, the astronauts who landed on the moon. He entertained everyone with his fun, engaging personality, and stories.

Some other highlights from the week-long event include:

- » **Launch Boxes!** Kids were asked to put items in these small metal lunch boxes. They were the same size as an astronaut’s Personal Preference Kits (PPK) that they might take with them if they spent a year in space.
- » **A Call for Art** brought in over 30 pieces of imaginative art from community members of all ages. The eye-catching display was hung in the hallways at The Hub.
- » **SPACED OUT! Quest!** This is comparable to geocaching. “Planets” were hidden on Peterson AFB. Participants would find clues and locate the planets (think waypoints). If you want to try this activity visit www.letterboxing.org. What an adventure!
- » **Solar telescoping** was held at the base library. This was hosted by a knowledgeable member of the Colorado Springs Astronomical Society (CSAS) and he was filled with information for all participants.
- » **Magic and a Movie Night!** There was even a STEM magician! Afterwards, everyone settled down to watch the movie *Hidden Figures*, a perfect fit for the SPACED OUT! program.
- » **Star Party!** Hosted by the CSAS from 8-10pm and held on the driving range at the Silver Springs Golf Course on Peterson AFB, people were able to view the moon, the North Star, the Big Dipper, and other stars.
- » **STARBASE Peterson** finished up the week with four exoplanet classes taught at the STARBASE facility. There, they welcomed students from grades 1-6. The students learned about exoplanets and how they are discovered. After the lesson, students used their imaginations and created their own exoplanet to take home.



Kingsley STARBASE Adapts to COVID

The STARBASE classroom at Kingsley Field has sat empty for months, just like many other classrooms across the country.

“When COVID hit last year, we temporarily changed up our playbook for delivering STEM education to our local fifth graders,” said Alesha Earnest, the Deputy Director of STARBASE Kingsley. “We too were forced to pause in hosting classes every day at our STARBASE Kingsley Schoolhouse.”

Earnest said it was a challenge, but her team of educators came together to find a way to continue bringing STEM education to the local community. The team used virtual platforms to deliver remote lessons and even traveled to local schools to offer hands-on programs.

“We set up many temporary, outdoor classrooms at local elementary schools, where our staff taught fifth graders the most popular of Newton’s 3 Laws using straw rocket design and launching stations. We also created student robotics-programming challenges, and allowed the students to investigate fluid behavior with Alka-Seltzer rocket launchers,” said Earnest.

In March, though, the STARBASE team was finally able to welcome students back in to their classroom!

“When students were permitted to return to our classroom, honestly, we were elated,” said Earnest. “We love what we did prior to COVID, so we were more than ready to get back in, with a room full of eager, bright-eyed inquisitive kids.”

The team made many adaptations to their operations in order to follow Centers for Disease Control, Oregon Health Authority, and Oregon Military Department guidelines, including reducing the number of students served at one time, allowing for social distancing, requiring face coverings, eliminating non-essential visitors, and increasing sanitization. “We’ve gone through bottles and bottles of 70% Isopropyl Alcohol,” said Earnest with a laugh.

The Department of Defense STARBASE mission is to motivate and inspire students to explore science, technology, engineering and math educational opportunities, while empowering them to set and reach for personal goals, in a team environment. The STARBASE Kingsley program is offered to Klamath County fifth graders and is an opportunity for them to experience hands-on learning with science equipment and technology.

“The greatest thanks we receive is when our visiting students tell us we taught them about career fields they didn’t know existed, and that after what they’ve learned with us, they feel confident in pursuing their new dream,” said Earnest. “Last week one of our female students told us that she had never thought about what it was like to be an astronaut, but now she wants to be one. It is our pleasure to have a role in creating confident learners... the most valuable asset we could have.”

(Source: <https://tinyurl.com/3w7n5p82>)



2021 STARBASE Virtual Workshop “The New Normal” July 27th - 29th from 1:00-4:30 EDT Daily

The annual DoD STARBASE Director’s Workshop will be held virtually July 27th through July 29th from 1:00-4:30 EST. A linked schedule will be posted on STARBASE-U in the Director’s Workshop course in early July.

Some of the topics to look forward to include STARBASE’s role in the DoD STEM Education landscape, information about how the new DoD-I will impact inspections, and a curriculum update!



We would like to invite all staff to join us on July 28th @ 1:45 PM EDT for a presentation with Justin Shaifer, Mr. Fascinate!

Taking full advantage of the possibilities a virtual workshop offers us, all STARBASE staff members are invited to participate in this year’s STARBASE Director’s Workshop plenary speaker, Justin Shaifer, also known as Mr. Fascinate! [Check out this video for a little more information about Justin!](#)

The link to the presentation will be available in the STARBASE-U STARBASE News course! Please plan to join us!

