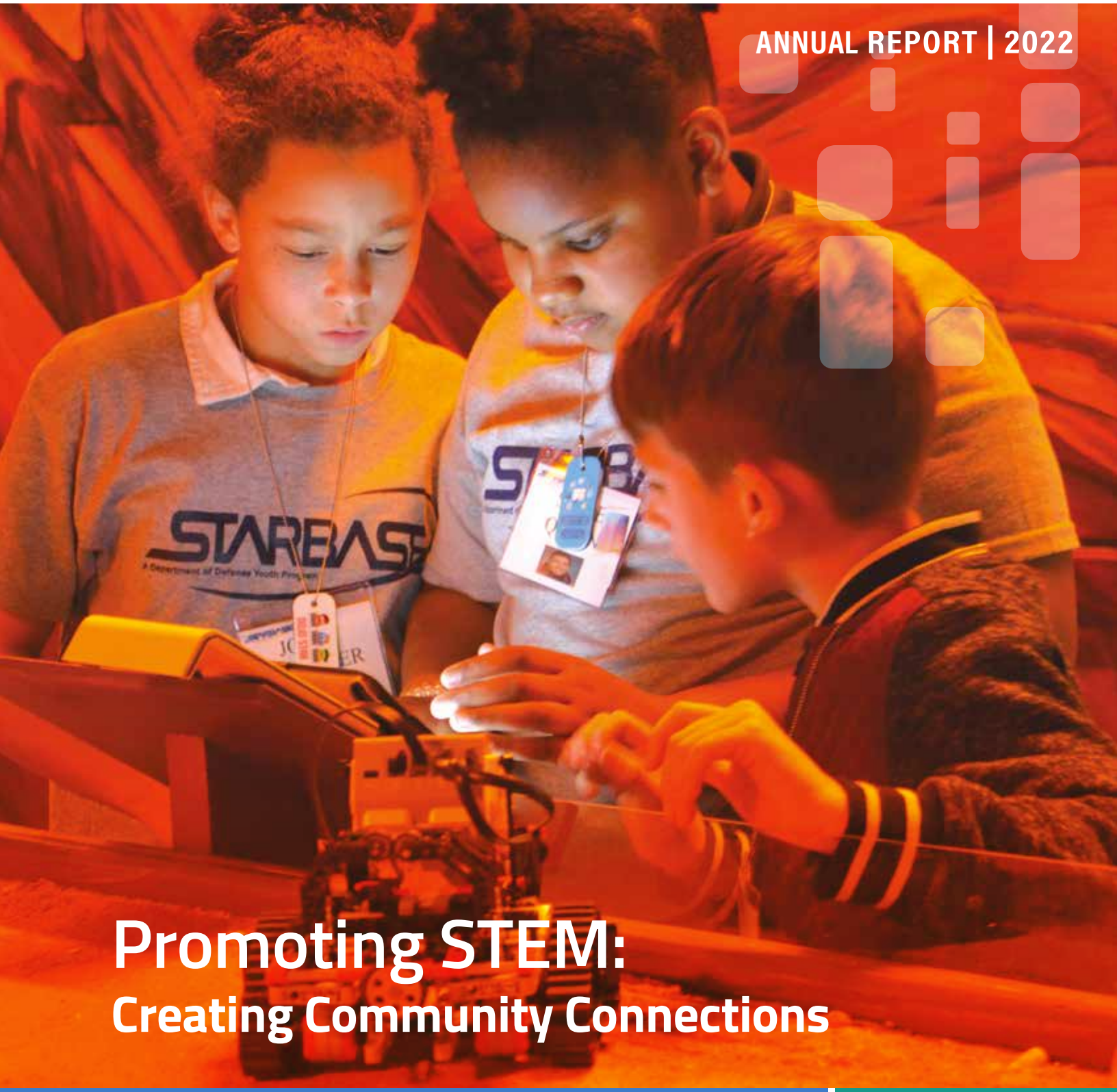
ANNUAL REPORT | 2022



Promoting STEM:
Creating Community Connections

DoD STARBASE
A Department of Defense Youth Program

DOD STARBASE

VISION & MISSION STATEMENTS

DoD STARBASE is a premier educational program, sponsored by the Office of the Assistant Secretary of Defense for Manpower and Reserve Affairs. At DoD STARBASE, students participate in challenging "hands-on, minds-on" activities in Science, Technology, Engineering, and Mathematics (STEM). They interact with military personnel to explore careers and observe STEM applications in the "real world." The program provides students with 25 hours of stimulating experiences at Air Force, Air Force Reserve, Army, National Guard, Navy, and Space Force bases across the nation, Guam, and Puerto Rico.

Vision Statement

To be the premier Department of Defense youth outreach program for raising the interest in learning and improving the knowledge and skills of our nation's underserved and underrepresented youth in STEM education so that we may develop a highly educated and skilled American workforce who can meet the advanced technological requirements of the Department of Defense.

Mission Statement

To expose our nation's youth to the technological environments and positive civilian and military role models found on Active, Guard, and Reserve military bases and installations, nurture a winning network of collaborators, and build mutual loyalty within our communities, by providing 25 hours of exemplary hands-on STEM instruction and activities that meet or exceed the national standards.

DOD STARBASE

CURRICULUM

Science

A. Science Fundamentals
B. Characteristic Properties
C. Motion & Force
D. Science Explorations

Mathematics

A. Number Relationships
B. Measurement
C. Geometry
D. Data Analysis

Technology

A. Applying Technology

Engineering

A. Engineering Design Process
B. 3-D Computer Aided Design

Science, Technology, Engineering, & Mathematics (STEM) Careers

A. STEM Careers on Military Facilities
B. Personal Investigations

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Introduction

2022 Assessment

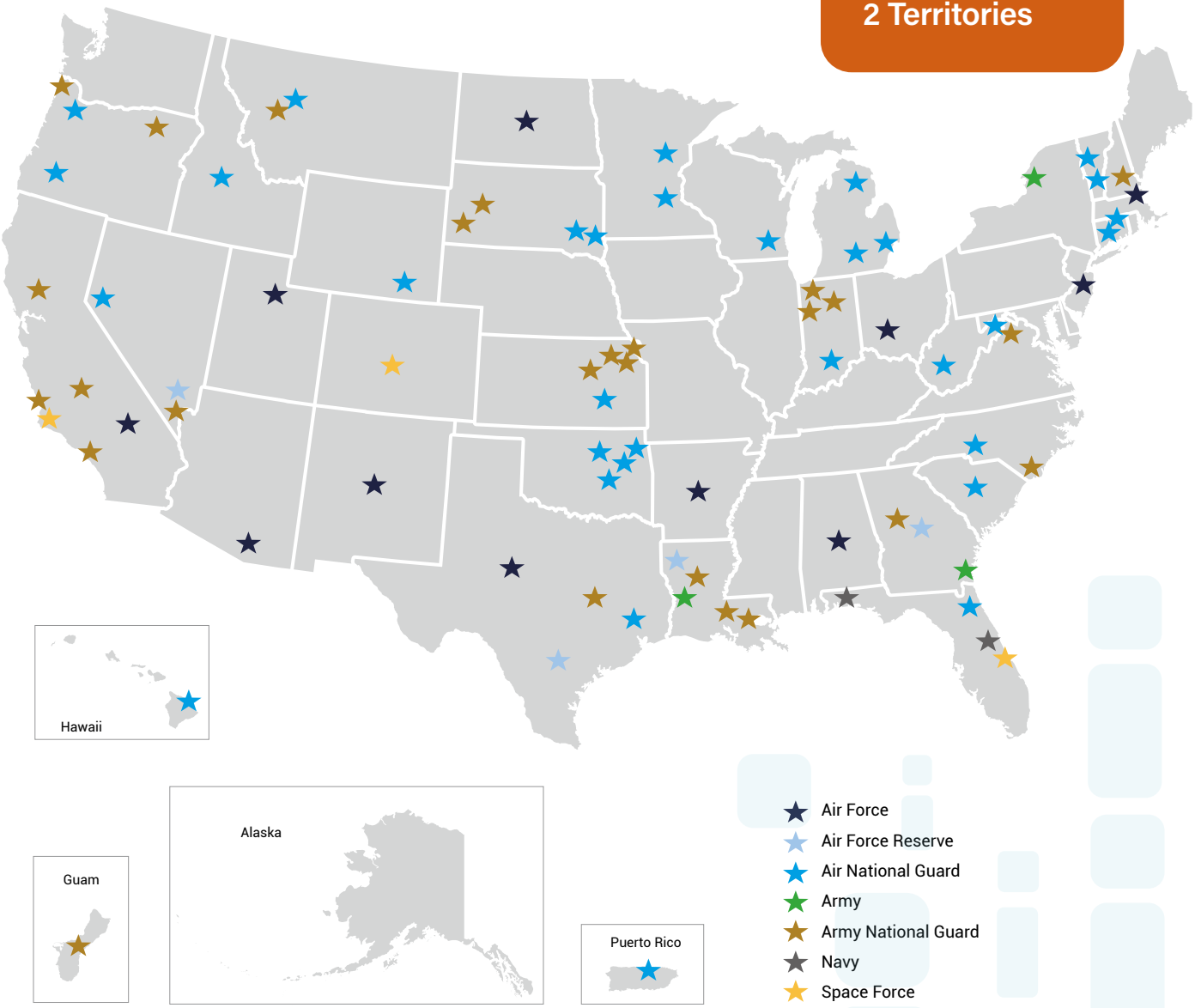
COVID protocols/mask requirements in photos vary from state to state.
All photo and name releases have been obtained and are on file with the STARBASE programs providing the images.

"DoD STARBASE has, and continues to be, the most anticipated week for my students. The experiences and exposure students receive in these five days is truly indispensable. Students thrive this week in a way I don't always get to witness in the classroom at school. Students are more willing to take chances, ask questions, and work collaboratively with their peers out here at DoD STARBASE."

- ELYSE RAMIREZ, EDUCATOR AT SMITH ELEMENTARY SCHOOL, ATTENDING STARBASE FORT HARRISON

DoD STARBASE at a Glance

81
DoD STARBASE Locations in 36 States and 2 Territories



$40,826,773
Program Operating Budget

$460,996
Median Operating Cost Per Location

88,853
Students Served in 2022 Basic and Required Supplemental Programs

1,569,773*
Students Served in all STARBASE Programs Since 1993

*Basic, Required Supplemental and Advanced DoD STARBASE Programs

DoD STARBASE Advanced Program Locations

2.0 (Middle School)	3.0 (High School)
47	12

Students Served in DoD STARBASE Advanced Programs

2.0 (Middle School)	3.0 (High School)
2,267	282

STARBASE DoD LOCATIONS

ST	Service Component Sponsor	Academy
AL	Air Force	STARBASE Maxwell
AR	Air Force	STARBASE Arkansas
AZ	Air Force	STARBASE Arizona
CA	Air Force	STARBASE Edwards
	Army National Guard	STARBASE Los Alamitos
	Army National Guard	STARBASE Porterville
	Army National Guard	STARBASE Sacramento
	Army National Guard	STARBASE San Luis Obispo
	Space Force	STARBASE Vandenberg
CO	Space Force	STARBASE Peterson
CT	Air National Guard	STARBASE Waterbury
	Air National Guard	STARBASE Connecticut - Windsor Locks
FL	Air National Guard	STARBASE Florida
	Space Force	STARBASE Patrick
	Navy	STARBASE Central Florida
	Navy	STARBASE Pensacola
GA	Air Force Reserve	STARBASE Robins
	Army	STARBASE Savannah
	Army National Guard	Peach State STARBASE
GU	Army National Guard	STARBASE Guam
HI	Air National Guard	STARBASE Hawaii
ID	Air National Guard	STARBASE Idaho
IN	Air National Guard	STARBASE Indiana - Fort Wayne
	Army National Guard	STARBASE Indiana - Gary
	Army National Guard	STARBASE Indiana - Indianapolis
	Army National Guard	STARBASE Indiana - South Bend
KS	Air National Guard	STARBASE Wichita
	Army National Guard	STARBASE Kansas City
	Army National Guard	STARBASE Manhattan
	Army National Guard	STARBASE Salina
	Army National Guard	STARBASE Topeka
LA	Air Force Reserve	STARBASE Louisiana
	Army	STARBASE Fort Polk
	Army National Guard	Bayou State STARBASE
	Army National Guard	Pelican State STARBASE
	Army National Guard	STARBASE Jackson Barracks
MA	Air Force	STARBASE Hanscom
MI	Air National Guard	STARBASE Alpena
	Air National Guard	STARBASE Battle Creek
	Air National Guard	STARBASE One
MN	Air National Guard	STARBASE Minnesota - Duluth
	Air National Guard	STARBASE Minnesota - St. Paul
MT	Air National Guard	STARBASE Great Falls
	Army National Guard	STARBASE Fort Harrison
NC	Air National Guard	STARBASE Charlotte
	Army National Guard	STARBASE Wilmington
ND	Air Force	STARBASE North Dakota
NH	Army National Guard	STARBASE New Hampshire
NJ	Air Force	STARBASE Joint Base McGuire-Dix-Lakehurst
NM	Air Force	STARBASE New Mexico
NV	Air National Guard	STARBASE High Sierra
	Army National Guard	STARBASE Henderson
	Air Force Reserve	STARBASE Nellis
NY	Army	STARBASE Fort Drum
OH	Air Force	STARBASE Wright-Patt
OK	Air National Guard	STARBASE Oklahoma - Burns Flat
	Air National Guard	STARBASE Oklahoma - Fort Sill
	Air National Guard	STARBASE Oklahoma - Oklahoma City
	Air National Guard	STARBASE Oklahoma - Tulsa
OR	Air National Guard	STARBASE Camp Kingsley
	Air National Guard	STARBASE Camp Portland
	Army National Guard	STARBASE Camp Rilea
	Army National Guard	STARBASE Camp Umatilla
PR	Air National Guard	STARBASE Puerto Rico
SC	Air National Guard	STARBASE Swamp Fox
SD	Air National Guard	STARBASE Nova Courage
	Air National Guard	STARBASE Sioux Falls
	Army National Guard	STARBASE Nova Honor
	Army National Guard	STARBASE Rapid City
TX	Air Force	STARBASE Goodfellow
	Air Force Reserve	STARBASE Kelly
	Air National Guard	Texas STARBASE Houston
	Army National Guard	STARBASE Austin
UT	Air Force	STARBASE Hill
VA	Army National Guard	Winchester STARBASE Academy
VT	Air National Guard	STARBASE Vermont - Rutland
	Air National Guard	STARBASE Vermont - South Burlington
WI	Air National Guard	STARBASE Wisconsin
WV	Air National Guard	STARBASE Martinsburg
	Air National Guard	West Virginia STARBASE Academy
WY	Air National Guard	Wyoming STARBASE Academy

Promoting STEM: Creating Community Connections

In October 2022, the US Department of Education released the National Assessment of Educational Progress (NAEP) 2022 results. Nationally, the average mathematics score for fourth graders fell five points since 2019 (from 241 to 236), while the score for eighth graders dropped eight points (from 282 to 274). The NAEP, also known as "the nations' report card," report scores were lower than pre-pandemic levels, as expected. In fact, every state's 2022 NAEP scores were worse than 2019 on at least two of the four tests (fourth grade reading, fourth grade math, eighth grade reading, eighth grade math). The majority of states were worse on all four.

Numerous studies have indicated that this learning loss permeates across all subject areas and hits particularly hard in science, technology, engineering, and mathematics (STEM). As such, educators are looking for effective, scalable, and evidence-based strategies to provide academic help to an unprecedented number of students, who now lag a year behind previous norms.

This is an opportunity to harness the new energies and mindsets of schools and communities to work together to support student learning and expand ideas of where and how science is taught, as well as what knowledge relates to science. When educators design science learning in collaboration with community members, families, and students, they can give young people more expansive perspectives on who does science, how and where they do it, and how science relates to their lives and the flourishing of their communities. In these ways, education can be more transparent and accountable to the needs of the students and the interests of the families and communities that rely on their expertise.

This opportunity is not new to the DoD STARBASE program. For over 30 years, it has focused on creating community connections between the military and local schools, weaving the fabric of real-life STEM opportunities into the education of underserved, underrepresented, and underestimated students across our country and territories. Managed by the Assistant Secretary of Defense for Manpower and Reserve Affairs, DoD STARBASE plays an important role in both the DoD and Federal STEM Education Implementation Plans, by creating connections between the classroom and the community. The basic DoD STARBASE program provides 5th grade students with a stimulating 25-hour experience through challenging "hands-on, minds-on" activities in STEM. In addition to the rigorous academic experience, students are given the opportunity to interact with military personnel and other STEM professionals to explore careers and observe STEM applications in the "real world." Additions to the program over the past ten years in the form of enrichment and after-school activities, have expanded DoD's STARBASE reach to both middle and high school students by taking full advantage of their K-12 authority under Title 10, United States Code, Section 2193b. Many activities involve partnerships with other community organizations, where STARBASE helps extend the reach of those entities for the benefit of all students including those who are socio-economically disadvantaged, low in academic performance, or have a disability. STARBASE brings STEM to life and encourages all students to set and achieve goals. Post-pandemic, their role in the community to re-ignite and engage with students is more important than ever.

Throughout this report, you will learn about some of the many community connections that are either provided or facilitated

By creating community connections, DoD STARBASE joins forces with other like-minded entities to develop young people's knowledge, skills, and build upon their initial interest in STEM careers.

by the DoD STARBASE program. In Texas, STARBASE Kelly is part of the Global Communities of Practice Alamo STEM Ecosystem. STARBASE Robins in Georgia, collaborated with Fort Valley State University to initiate an "Academy of Future Teachers" to allow high school students to explore a career in teaching STEM. The STARBASE New Mexico program is co-located with the Air Force Research Laboratory (AFRL) New Mexico STEM Academy on Kirtland Air Force Base which, for over the past 20 years, has provided a variety of K-12 STEM educational outreach programs and activities across the entire state of New Mexico. In Indiana, STARBASE Gary partnered with multiple aviation-related entities from their local airport to the "Bessie Colman Aviation All-Stars," to conduct their "Top-Flight Summer Aviation Academy" where students could explore aviation, the aerospace industry and the many career opportunities they provide. Each DoD STARBASE location has its own story to tell of community connections in their area and how important they are to local students.

The NAEP test scores should inspire urgency toward serving students who suffered the largest setbacks, and DoD STARBASE is doing just that, helping to cultivate a creative workforce that is ready to step into vital STEM-related fields. By creating community connections, DoD STARBASE joins forces with other like-minded entities to develop young people's knowledge, skills, and build upon their initial interest in STEM careers. This will ensure the upward mobility and economic vitality of their communities by creating a culture where STEM can thrive.

MILITARY LETTER OF SUPPORT

CAPTAIN TERRENCE SHASHATY

DEPARTMENT OF THE NAVY
NAVAL AIR STATION PENSACOLA
150 HASE ROAD SUITE-A
PENSACOLA FLORIDA 32508-1051

As the Commanding Officer of Naval Air Station Pensacola, I am proud to support the return of STARBASE Pensacola, one of only two Navy locations within the Department of Defense.

In February 2022, STARBASE Pensacola returned onboard Naval Air Station (NAS) Pensacola, FL, located at the National Flight Academy after an 8 year absence. The primary goal of the program at "The Cradle of Naval Aviation" is serving at-risk 5th graders through inclusion and diversity while continuing to build connections within our community. On March 1, 2022, six STARBASE staff members welcomed 5th grade students from Title I schools in Escambia County onboard NAS Pensacola to participate in Science, Technology, Engineering, and Math (STEM) programs with a learning based curriculum focused on aviation themes including flight simulation. Additionally, guest speakers including Navy Flight Demonstration Team (Blue Angels) Aircraft Mechanics, Naval Aviation Schools Command Water Survival Training Instructors, retired Master Chiefs, and current and future Naval Aviators shared their experiences pursuing and achieving graduate/postgraduate degrees and how STEM skills were utilized throughout their careers. As of November 2022, STARBASE Pensacola hosted three week long STEM summer camps serving 91 students and conducted 42 5th grade STEM class curriculums providing 840 students access to critical educational development.

STARBASE Pensacola is one of 81 programs nationwide as of fiscal year 2022, an increase from 70 programs reported in 2020 with over 1.5 million students attending nationwide since its foundation in 1993. STARBASE Pensacola staff have provided targeted outreach to the community by sharing program knowledge at several community events including Girls in Aviation day, STEM activities with the local Girl Scouts to earn flight badges, and Family STEM nights at local community schools.

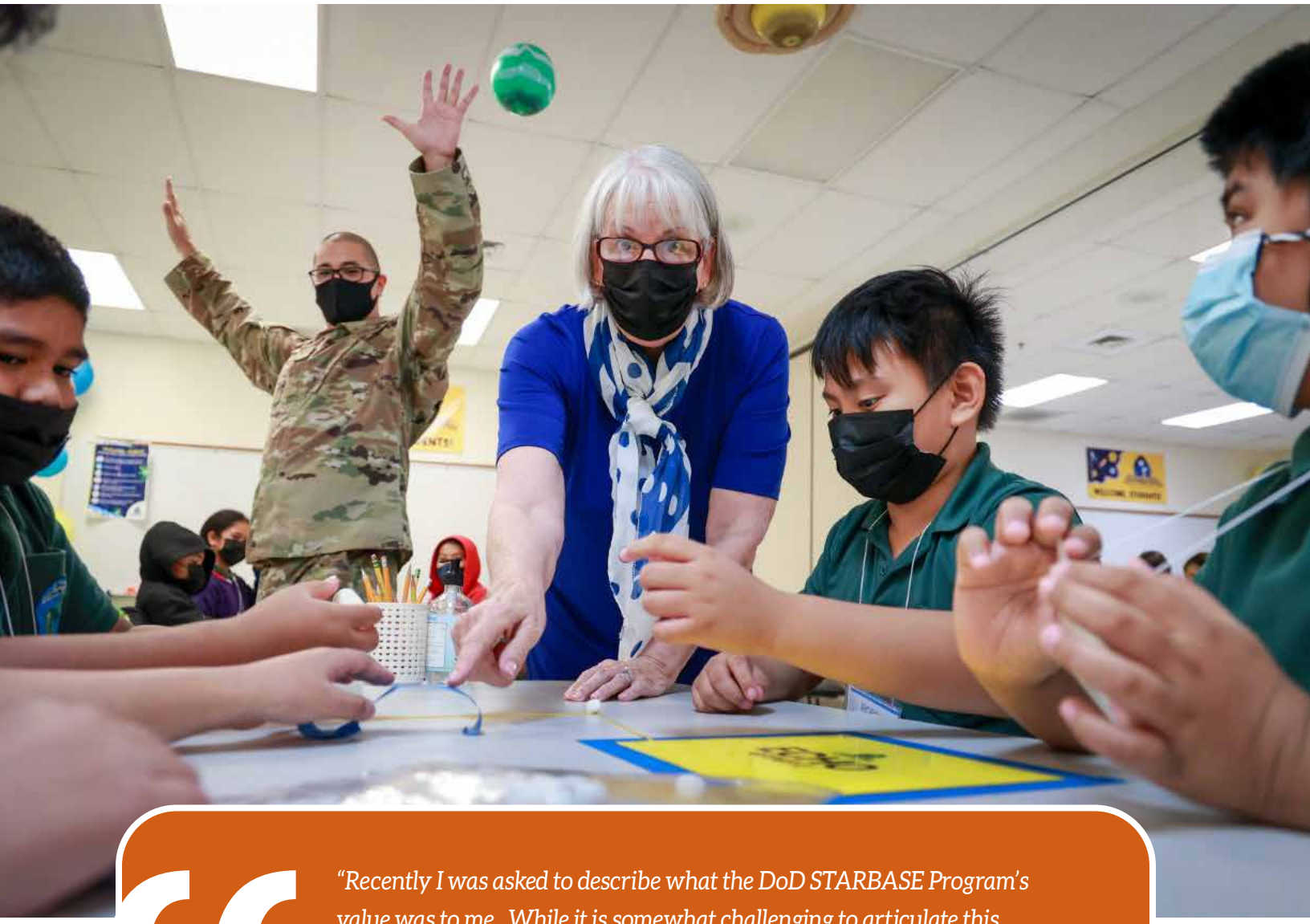
The basic STARBASE curriculum provides at-risk students with 25 hours of quality STEM instruction over a five week period. However, STARBASE Pensacola requested and was awarded a grant to support additional supplemental programming during school break periods, referred to as STARBASE Pensacola STEM "University" off base, serving students from local schools. Beginning December 2022, 5th grade students identified by their classroom teachers as needing extra help in courses of Science and Math have the opportunity to participate in the program during times school is not in session.

STARBASE Pensacola imparts confidence in our students and their ability to learn, understand, and thrive in environments requiring use of STEM principles. STARBASE Pensacola serves as the navigational component to limitless possibilities in a STEM driven workforce fueled by the diversity of our participants. The NAS Pensacola Community is proud of the work already accomplished in such a short period of time and we look forward to STARABASE Pensacola's continued success which is vital to the future of our youth, community, and country.

T.M. Shashaty
Captain, U.S. Navy
Commanding Officer

"Puerto Rico has limited options of well-established STEM programs directed to our children and young adults. The DoD STARBASE Program provides a unique opportunity for our youth to cultivate and develop an interest for the fields of aviation, science, technology, engineering, and math. Every year, dozens of children and young adults go through the amazing experience of learning theoretical and practical skills that challenge their minds and intellect. DoD STARBASE represents the foundational base from which we can start developing the next generation of aviators, scientists, engineers, and mathematicians. It is imperative to mention that the program would not be effective without the management and passion of the staff. The children receive instruction and guidance from an amazing and genuinely caring staff, whose motivation and drive is to develop individuals who will forge a better future—our future."

- MSGT JOSE A. FONTANEZ, PRANG SENIOR ENLISTED LEADER, 156th SECURITY OPERATION SQUADRON, STARBASE PUERTO RICO



"Recently I was asked to describe what the DoD STARBASE Program's value was to me. While it is somewhat challenging to articulate this as it has a multi-faceted benefit, it seems a fair comparison to me that it has the same value water has to my garden. It provides a critical element that, if lacking, the whole thing withers. Investing in our future soldiers, citizens, and workforce by providing beneficial opportunities such as DoD STARBASE that inspire is priceless."

- KEITH ELLIS, TRAINING SITE MANAGER, REES TRAINING CENTER CAMP UMATILLA PARTNER WITH STARBASE UMATILLA

DoD STARBASE
A Department of Defense Youth Program

2022

Program Overview

Executive Summary

The Department of Defense (DoD) STARBASE program provides Science, Technology, Engineering, and Mathematics (STEM) learning and career awareness experiences to youth at 81 military installations across the United States, Puerto Rico, and Guam. Each year, the conduct and effectiveness of the DoD STARBASE program is evaluated in many ways, including structured interviews, questionnaires, operational evaluations, resource management evaluations, program visits, and conversations with program participants. The program is also evaluated annually in terms of measuring basic STEM knowledge gained from program participation and improvements in student attitudes toward STEM subjects in the contexts of school, the military, and career opportunities. Assessments, interviews, and/or questionnaires were received from 1,899 students, 2,805 teachers, and all DoD STARBASE directors. A brief overview of the assessment highlights is provided below.

FY 2022 HIGHLIGHTS

DoD STARBASE Operations

- During FY 2022, funding was provided for four new STARBASE programs which include AR - STARBASE Little Rock (Air Force), CA - STARBASE San Luis Obispo (Army National Guard), CA - STARBASE Porterville (Army National Guard), and NH - STARBASE New Hampshire (Army National Guard).
- DoD STARBASE programs are located at a variety of military installations including Air Force (11 locations), Air Force Reserve (4 locations), Army (3 locations), Air National Guard (32 locations), Army National Guard (26 locations), Navy (2 locations), and Space Force (3 locations).
- FY 2022 was the first full year of operation under DoDI 1025.07 which set specific program operational tempo requirements for basic, supplemental, and outreach programs, as well as authorizing STARBASE advanced programs for middle and high school students.
- The median operating cost per location was $460,996.

"This DoD STARBASE experience has been so impactful in bringing the 'real world' to the standards we learn and cover in 5th grade. Spot on with covering science standards-energy, labs, chemistry, math, rocketry, and technology skills. Students were so excited and engaged, and continued to talk about concepts learned throughout the week. Having the opportunity to meet and listen to real service men/women discuss their careers, decisions, and experiences was so powerful for my demographics of students. This program was amazingly organized and well planned. It ran like clockwork."

- AMY MARTINEZ, EDUCATOR AT LULU WALKER ELEMENTARY SCHOOL, ATTENDING STARBASE ARIZONA

DoD STARBASE Basic Program

- More than 79,618 students attended the basic DoD STARBASE program through 3,562 traditional 5-day academies in FY 2022.
- A total of 258 weeks of required supplemental DoD STARBASE programs over school vacation breaks served an additional 9,235 students.
- A total of 1,558 schools from 611 school districts participated in the DoD STARBASE program during SY 2021-22.
- DoD STARBASE programs primarily served students from public schools (84 percent) in urban areas (76 percent) with (79 percent) of the schools participating with DoD STARBASE meeting Title 1 requirements. Most of the DoD STARBASE locations (93 percent) serve school districts within a 50-mile radius of their program site.
- The majority of DoD STARBASE students are 5th graders (95 percent).
- Groups of students underrepresented in STEM fields and STEM careers served at DoD STARBASE include Females (49 percent), American Indian or Alaskan Native (3 percent), Blacks/African American (19 percent), Hispanic or Latino (30 percent), Low Income Students (58 percent), Students with Disabilities (11 percent), Students that use English as second language (11 percent). The average instructor to student ratio for FY 2022 was 2:21.
- The average class size for FY 2022 was 22 students. The highest average class size was 32 students at KS – STARBASE Manhattan and over 35 students per class in GU – STARBASE Guam, a new location.

DoD STARBASE Advanced Program

- In FY 2022, 47 DoD STARBASE locations in 24 states and Puerto Rico reported coordinating a total of 90 DoD STARBASE Advanced 2.0 programs and 164 individual STARBASE 2.0 clubs for middle school students.
- Almost 2,270 students participated in STARBASE 2.0 Advanced clubs during FY 2022.
- The average student retention rate within the STARBASE 2.0 Advanced programs was 84 percent. Relocations, time conflicts, and lack of interest in the chosen curriculum are cited by directors as the main reasons why students leave the program.
- Former DoD STARBASE students made up 40 percent of the DoD STARBASE 2.0 program participants.
- A total of 491 STEM Coaches from a variety of professions participated in the DoD STARBASE 2.0 program to include: Military (48 percent), DoD Science and Engineering coaches (11 percent), non-military/DoD Professionals (7 percent), industry professionals (2 percent), staff members from the school hosting the 2.0 program (17 percent), STARBASE staff members (11 percent), and other (3 percent).
- The DoD STARBASE 2.0 programs operate through a combination of federal and private funds. Of the 47 DoD STARBASE locations coordinating a 2.0 program, 60 percent operate using only their federal DoD STARBASE funds and 40 percent receive funding from both sources.
- Partnerships involved in the 2.0 program include a wide variety of local and national outreach programs such as FIRST LEGO League, FIRST Robotics, Civil Air Patrol, The American Rocketry Challenge, Girl Scouts, and Scouts BSA.
- Twelve DoD STARBASE locations initiated or continued high school level STARBASE Advanced 3.0 programs for high school students through 21 organized clubs involving over 280 participants.

Other DoD STARBASE Program Activities

- A total of 181 additional DoD STARBASE STEM educational activities were conducted for 531 schools/participant groups, 483 of which were considered "at-risk". A total of 32,594 students and 1,448 adults were reported as participants in these additional initiatives.
- A new requirement to conduct at least four Outreach activities per academy was met at 59 of the 75 active STARBASE locations. An additional 12 locations conducted at least one outreach program. These activities include, but are not limited to providing teacher training, judging science fairs, participating in local STEM activities/conferences, and informational presentations for local organizations.

DoD STARBASE Staffing

- Contractor affiliations make up 54 percent of the employment relationships, followed by state and federal[1] affiliations which are at 45 percent and 1 percent, respectively.
- The majority of DoD STARBASE staff (53 percent) have more than 3 years of DoD STARBASE experience with most (24 percent) in the 1-2-year range. Directors and deputy directors/instructors have typically worked with DoD STARBASE for over 5 years at 65 percent and 49 percent, respectively. FY 2022 data indicates that 42 percent of instructors have over 2 years of STARBASE experience compared to 50 percent a year ago. The experience level of office managers with more than 3 years with the STARBASE program is 62 percent. Instructional assistants have the least amount of DoD STARBASE experience with 80 percent in their first or second year.
- There were 102 staff departures in FY 2022. This is a 25 percent increase in the number of employees who left the program in FY 2021 (76 employees). The majority (48 departures) were at the instructor level. Instructional Assistants were the next highest at 26 departures, followed by Deputy Director at 8 positions. Instructor/Office Manager and "other" positions each had five departures. The overall turnover rate in FY 2022 was 23 percent.

DoD STARBASE Program Volunteers

- DoD STARBASE locations documented participation of 10,435 volunteers who contributed a total of 131,281 hours, worth an estimated $3,875,256 contribution to the program during FY 2022.
- DoD STARBASE directors reported 6,630 hours of support by 2,902 military personnel with an additional 1,074 hours of support provided by 213 DoD Science and Engineering (DoD S&E) personnel. This is a significant increase from FY 2022 when pandemic restrictions on volunteers were in place and indicates a steady return to pre-pandemic volunteer participation.

Student Assessment FY 2022

- 1,899 mostly 5th grade students who attended DoD STARBASE in person at 69 STARBASE Academies during January to May 2022 anonymously answered questions about their understanding of STEM concepts and their attitudes toward STEM-related topics and careers. They also gave their opinions of STARBASE and military settings.
- Student performance on STEM knowledge questions improved significantly from pre- to post-program, with 16 percent more correct answers on average. The gain was particularly evidenced by increases of 26 percent in answering Engineering questions correctly and 20 percent each for science questions related to Motion and Force and to science fundamentals.
- Students' positive opinions of STEM rose on all of the attitude questions, of which 91 percent were significant increases. The largest shifts were toward greater science confidence, awareness of jobs using STEM—including military, belief that the STARBASE experience will be helpful in school, and wanting a STEM-related career.
- Girls' STEM knowledge scores were lower than boys' scores at both pre- and post-program. Yet, girls showed more improvement in overall STEM knowledge than boys.
- Analyses found that students with prior exposure to military personnel achieved significantly higher knowledge scores both pre- and post-program, and also attained greater improvements in STEM knowledge. Yet, students who did not have prior military exposure still made significant improvements, though their knowledge gains were smaller.
- Students who had prior experience with military personnel also showed significantly more favorable pre-program and post-program attitudes about STEM, including feeling that learning about science is easy, being good at mathematics, realizing that engineers help solve challenging problems, and concluding that a military base is a good place to work. In addition, they showed more awareness of and interest in STEM-related jobs.

[1] STARBASE Edwards is the only location with federal employment affiliations (four employees) in FY 2022.

Teacher Assessment FY 2022

- 2,805 classroom teachers who attended DoD STARBASE at 72 different Academies from August 2021 to June 2022 answered survey questions anonymously online about their students' and their own experiences.
- Teachers indicate that the biggest impact of DoD STARBASE on student attitudes and behaviors related to STEM is an improved understanding of science, followed by an increased interest in learning more about technology.
- Additionally, teachers say that participation in DoD STARBASE leads to greater student appreciation of mathematics applications, and more interest in learning about science.
- Teachers strongly agree that students talk about STARBASE long after attending the program.
- 61 percent of teachers visiting DoD STARBASE for the first time say they are "Extremely Likely" or "Very Likely" to recommend the DoD or the military as career options to students.
- Notably, almost every teacher who responded (99.2 percent) agreed they will recommend DoD STARBASE to other school personnel and also expressed high confidence that their school plans to attend again next year (6.93 rating on a scale of 1 to 7).

"STARBASE is fast becoming a game changer and providing opportunities for students to foster a love for STEM and become familiar with military and civilian career choices."

- MAJ . GEN. ONDRA BERRY

MILITARY LETTER OF SUPPORT

MAJOR GENERAL ONDRA L. BERRY,

THE ADJUTANT GENERAL, STATE OF NEVADA

As the Adjutant General and head of the Nevada Office of the Military, I am proud to support our state's two newest STARBASE programs.

Nevada is home to the National Guard's STARBASE High Sierra in Reno and STARBASE Henderson, which is just outside Las Vegas. In less than one year, STARBASE High Sierra and Henderson instructed more than 1,000 students through Science, Technology, Engineering, and Math (STEM) weeklong courses for 5th graders. We are already positioned for growth here in Nevada because of the great success of our first year.

Nationwide, STARBASE now has 81 programs. Since its inception in 1993, more than 1.5 million students have graduated. STARBASE ensures students in schools designated "Title I" have equitable access to high-end STEM and STEM careers. Equity is about providing students with what they individually need to succeed.

This program shapes lives, promotes equitable educational opportunities and diversity of thought, and builds communities. My career has taken me many places, from leadership roles in the Reno Police Department, the Nevada National Guard, and as Vice President of Diversity and Inclusion at MGM Resorts in Las Vegas. Throughout, I have witnessed how leadership strategies and educational opportunities have evolved in the 21st century. A focus on equity is vital to tap into the true potential of communities around our nation. Few programs do a better job at providing equity in education than STARBASE.

In Nevada, STARBASE High Sierra and Henderson incorporate culturally diverse representation through images, books, and resources to enhance program curriculum. We ensure instructors use culturally responsive language when addressing students, and inclusive practices for culturally linguistic students, students with special needs, and students with varying levels of abilities. We also assist underserved schools and areas in our communities to provide skills needed for STEM learning and development.

As Nevadans continue to build a brighter future for youth, the Nevada National Guard is committed to addressing the historical gaps that exist for underserved students. STARBASE is fast becoming a game changer and providing opportunities for students to foster a love for STEM and become familiar with military and civilian career choices. Not only do we want our students to dream big, but we also want them to see the possibilities. Both programs are already looking at ways to expand from serving elementary students to secondary schools to ensure a K-12 continuum of opportunities. My only regret is we did not bring more of this vital education tool to our state before now.

DoD STARBASE Program Overview

THE PARTICIPANTS

DoD STARBASE programs operate under the auspices of the Department of Defense (DoD) through the Office of the Assistant Secretary of Defense (OASD) for Manpower and Reserve Affairs (M&RA). A Congressional Appropriation to the DoD funds the operation of DoD STARBASE. Synergy between the local military installation, schools, and surrounding communities enhance and strengthen the program. As such, it provides underserved youth a variety of STEM programs and activities as defined in the revised Department of Defense Operating Instruction (DoDI) 1025.07, dated 15 January 2021 which governs the STARBASE program. This was the first full school year (SY) under the new DoDI which offered multiple ways to participate in the program. Seventy-five active STARBASE programs reported participant data for the 2021-22 academic year.[2]

The Students

Traditional 5-Day Program: The traditional STARBASE program focuses on classroom-based STEM lessons and activities targeted toward 5th grade students and is typically conducted on a military installation. Each STARBASE unit of an instructor pair and classroom must conduct at least 30 classes during the school year, each comprised of 25 classroom contact hours over 5 days. While STARBASE operations were deeply impacted by school schedules and closures during SY 2020-21, overall participation rebounded this year as most locations were able to return to business as usual and host students at pre-pandemic levels.

During SY 2021-22, the traditional 5-day DoD STARBASE program conducted 3,562 classes serving a total of 79,618 students across the United States and Puerto Rico. During the previous school year, service had only included 1,701 classes and 26,671 students.

Required Supplemental Programs: In addition to the basic 5-day STARBASE program, the revised DoDI now requires each STARBASE location to provide at least two weeks of classroom contact hours (20-25 hours per week) over schools' vacation breaks. This requirement is multiplied by the number of instructional pairs and classrooms. During SY 2021-22, this included a variety of specialized STEM summer camps (drones, rocketry, robotics, coding, engineering), targeted to specific underserved groups (girls, Native Americans, migrant and inner-city youth, etc.) as well as summer academies for military dependents from host locations.

"DoD STARBASE at the Alpena Combat Readiness Training Center in Michigan serves an instrumental need for today's students in the math and science related fields. The knowledge gained, hands-on approach and excitement on students' faces serve as a true testament to the entire DoD STARBASE Program. It is a pleasure and an honor sharing with students the specifics of Air Traffic Control while promoting Air Force core values; integrity, service, and excellence."

- MSGT BRETT TRISKO,
CHIEF CONTROLLER, TOWER,
STARBASE ALPENA

Of the 75 reporting locations, 53 fully met or exceeded supplemental programming requirements. All of the remaining 22 programs conducted some supplemental programs but did not meet the per instructional pair/classroom level requirements for their locations. A total of 258 weeks of required supplemental programs were conducted serving 9,235 additional students.

[2] Six additional STARBASE programs (AR - STARBASE Arkansas, CA - STARBASE Porterville and STARBASE San Luis Obispo, LA - STARBASE Fort Polk, NH - STARBASE New Hampshire, and NY - STARBASE Fort Drum) received start-up funding but did not see students during the 2021-22 academic year.

Community Outreach: The revised DoDI also requires each STARBASE location to participate in a minimum of four community outreach activities each academic year to strengthen existing relationships and work to develop new connections between educational entities, employers, and the communities. These are intended to build community support and strong STEM ecosystems to help broaden and enrich a learner's journey. These include but are not limited to, participating in local STEM activities and community events, judging science fairs, conferences, and informational presentations for local organizations. These outreach requirement activities were met at 59 of the 75 active STARBASE locations. An additional 12 locations conducted at least one outreach activity during the academic reporting year.[3] Many of these relationships include a wide variety of local and national outreach programs such as FIRST LEGO League, FIRST Robotics, Civil Air Patrol, The American Rocketry Challenge, Girl Scouts, and Scouts BSA. In addition, the DoD STARBASE location may coordinate a DoD STARBASE 2.0/3.0 program at the middle/high school level to extend the overall STARBASE experience and influence.

Teacher training is another way that STARBASE shares their STEM expertise with outreach to the community. During academic year 2021-22, 21 DoD STARBASE locations provided training to local teachers. This ranged from general program orientation to training on specialized STEM subjects such as CAD/3D printing, modeling and simulation, and aerial robotics/drones. Some participating teachers were able to obtain continuing education credits.

Other Alternative Supplemental Programs: Some STARBASE locations also utilized other optional forms of program delivery which were outside of the required DoDI basic and supplemental program criteria. Early in the school year, these initiatives were developed to accommodate the schools and students impacted by pandemic-related school limitations such as bus transportation issues or limitations on travel outside their school. Other sessions, such as a two-day "Best of STARBASE," were conducted to accommodate schools that could not otherwise be scheduled for a full STARBASE experience.

During the 2021-22 school year, 181 additional supplemental programs were conducted for 531 schools/participant groups, 483 of which were considered "at-risk". Some were done in partnership with community youth programs. A total of 32,594 students and 1,448 adults were reported as participants in these additional initiatives.

The Military

The military hosts and supports DoD STARBASE programs, and most are located at various military installations.[4] During FY 2022, funding was provided for four new STARBASE programs: AR - STARBASE Arkansas, NH - STARBASE New Hampshire, CA - STARBASE San Luis Obispo, and CA - STARBASE Porterville. The SC - STARBASE MCAS Beaufort (Marine Corps) location was closed permanently in FY 22. This results in a total of 81 STARBASE programs across the United States, Guam, and Puerto Rico as indicated in Table 1 below.

Table 1 - Distribution of DoD STARBASE Programs by Branch of Service

Air Force	Air Force Reserve	Army	Navy	National Guard	Space Force	Total Programs
11	4	3	2	58	3	81

[3] GU - STARBASE Guam and NJ - STARBASE Joint Base McGuire-Dix-Lakehurst were new programs and had only limited student activity during SY 2021-22. Established programs, GA - Peach State STARBASE and OK - STARBASE Burns Flat, did not conduct outreach activities due to staff shortages and facility issues, respectively.

[4] Most STARBASE academies operate within the confines of a military base. A few operate in an affiliate site contiguous to the military installation but under the property management of the base. LA - Bayou State STARBASE is currently located in Rosedale at the original Iberville High School because there is not a military installation within 50 miles of a population of Title I students. CT - STARBASE Waterbury is currently located at Naugatuck Community College because space became limited at the Waterbury Armory. OK - STARBASE Burns Flat, SD - STARBASE NOVA Courage and STARBASE NOVA Honor are outreach programs that serve Native Americans.

The military is an integral part of the overall STARBASE experience. DoD has a wealth of expertise in STEM education and provides the DoD STARBASE locations access to resources and services that most school districts cannot offer. Many elementary school teachers do not have the time, educational background, and/or resources to cover STEM topics appropriately and simply cannot match the DoD STARBASE experience in their own classrooms. OASD/M&RA provides state-of-the-art equipment and technology, and military commands provide classroom space, utilities, and security. The host command may also provide additional equipment, janitorial services, maintenance, travel services, and IT support. DoD STARBASE operates at the discretion of the host commander who may view this program as a venue for military personnel to positively interface with their community. As such, military personnel are encouraged to volunteer their time to the program as STEM coaches, expert speakers, tour guides, and other support activities.

Military volunteers share unique, informative, and highly varied experiences with the students, which provide an exciting, stimulating environment to enhance their STEM experience. Military volunteers provide a powerful force to inspire students to set goals for their own lives and serve their communities as they grow. Modeling selfless service, consistent and conscientious leadership, dedication to mission, and respect and dedication to the United States, these hard-working, highly disciplined men and women distinguish themselves in such a way that others admire and want to emulate. Participating classroom teachers are also inspired and encouraged by the involvement of military volunteers in the DoD STARBASE program.

This year, 93 percent of the DoD STARBASE programs served school districts within a 50-mile radius of the program's location.[5] Most locations that extend beyond a 50-mile radius have established special accommodations to reach more students, such as those in the Native American outreach programs in South Dakota or in sparsely populated areas such as northern Minnesota and Vermont. In Puerto Rico, students typically travel from all over the island to participate in the program located in San Juan.

The Schools and School Districts

Students from local school districts surrounding the host military installation participate in the DoD STARBASE program. School districts enter a formal agreement with the military command hosting the program in order to participate in DoD STARBASE. Accompanied by their classroom teacher, entire elementary classes are transported to their DoD STARBASE location to attend the 25-hour program over 5 consecutive days or once a week over 5 consecutive weeks. As such, DoD STARBASE exposes a richly diverse population of students to content and careers in STEM fields, presenting unparalleled opportunities for underrepresented/underserved populations in STEM enrichment. As a result of the school's participation in DoD STARBASE, the school's curriculum is enhanced; students are better prepared for standardized state testing, and they are excited about continued STEM education and STEM careers.

A total of 1,558 schools from 611 school districts participated in the DoD STARBASE program during SY 2021-22 through full 5-day academies. This is approximately twice that of the previous academic year when there were only 755 participating schools and 330 school districts reported. The FY 2021-22 data in sub-categories also indicates an overall return to pre-pandemic participation rates. (See Table 2).

[5] KS - STARBASE Manhattan, MN - STARBASE Duluth, NM - STARBASE New Mexico, NV - STARBASE High Sierra, PR - STARBASE Puerto Rico, SD - STARBASE NOVA Honor and STARBASE NOVA Courage and VT - STARBASE Rutland and South Burlington served students beyond 50 miles of their host facility during this reporting period.

Table 2: FY 2022 Participating School Demographics – Full 5-Day Programs[6]

School Type	School Year 2020-21 Number of Schools	School Year 2021-22 Number of Schools
Title I Eligible	518 (69%)	1163 (79%)
Public	404 (64%)	1228 (84%)
Private (includes Homeschool Groups)	230 (36%)	241 (16%)
Urban/Urban Cluster	403 (70%)	1068 (76%)
Rural	176 (30%)	336 (24%)

As shown in Table 2 above, DoD STARBASE programs primarily served students from Title I public schools in urban areas during the 2021-22 school year. Title I, Part A (Title I) of the Elementary and Secondary Education Act, as amended by the Every Student Succeeds Act (ESEA) provides financial assistance to local educational agencies (LEAs) and schools with high numbers or high percentages of children from low-income families to help ensure that all children meet challenging state academic standards.[7] The large increase in number of schools is reflective of a return to pre-covid levels.

The Community

Public and private organizations support and enhance the DoD STARBASE curriculum and operation. Community leaders may volunteer their time by serving on boards, assisting with gaining access to community facilities, visiting classrooms and/or providing financial support and awareness about the DoD STARBASE program. They also view the program as benefiting the community by promoting better life choices, problem-solving skills, and future job opportunities. Community leaders identify DoD STARBASE as a mechanism to nurture student interest in STEM and facilitate a well-trained STEM workforce and STEM-literate public, thereby enhancing the future of their communities.

"It takes just one look into a student's eyes to see how important DoD STARBASE is. DoD STARBASE not only helps prepare our nation's youth to take on the challenges of tomorrow but inspires them to learn and have fun today."

- CAPT ADAM PASQUALE, ASSISTANT DEAN, COLLEGE OF PROFESSIONAL DEVELOPMENT, NATIONAL SECURITY SPACE INSTITUTE, STARBASE PETERSON

[6] Numbers shown are for five-day programs and do not include other supplemental programs. Some schools may be counted in more than one category.

[7] U.S. Department of Education, Office of State Support. (2018). Improving Basic Programs Operated by Local Educational Agencies (Title I, Part A). Retrieved from https://www2.ed.gov/programs/titleiparta/index.html.

"When I think back to my time at STARBASE, I recall the excitement of problem solving and the process of discovery."

- LaTosha Ramos Lake

DoD STARBASE GRADUATES WHERE ARE THEY NOW?

LETTER OF SUPPORT FROM DOD STARBASE GRADUATE

LATOSHA RAMOS LAKE

I went to elementary school in Rossville, Kansas, a small rural town west of the capital city of Topeka. I was an inquisitive child who loved to learn and relished any opportunity to ask questions to better understand the big world beyond the boundaries of my midwestern landscape.

When I attended STARBASE Topeka in the sixth grade, my questions were plentiful, and they were welcomed. What was unique about this learning environment was that instead of just being told the answers, we got to discover them on our own and then come up with new questions in the process. The experiential learning environment was a mecca for a child like me. I remember the flight simulator and how many times I crashed, trying to land at a place I had never heard of called "O'Hare." I remember trying to keep our "pilot" from cracking during the Eggbert exercise and how I went home and raided a carton of eggs in an effort to make a better restraint system. When I think back to my time at STARBASE, I recall the excitement of problem solving and the process of discovery.

STARBASE was instrumental in the trajectory of my life in more than one way. It solidified my love for science and penchant for analysis. It also introduced me to a means to obtain a college education. My parents did not have college degrees, and although I wanted an education, the price tag made that dream seem unrealistic. I attended STARBASE at the 190th Air Refueling Wing on Forbes Field, and members from the Kansas Air National Guard came to talk to our class. I remembered this years later when I was trying to decide how I could afford college tuition. I enlisted into the Kansas Air National Guard when I was a senior at Topeka High School and was able to attend college at the University of Kansas using my tuition assistance.

Not only did I have the opportunity to attend college, I also traveled the world, provided security for three presidents, responded to two natural disasters, and deployed in support of Operation Enduring Freedom and Operation Freedom's Sentinel. I even got the opportunity to represent the Kansas Air National Guard and speak to a STARBASE class myself.

I remained in the 190th Air Refueling Wing while I pursued a career to make good use of my penchant for analysis, in psychology. I received my doctorate from the University of Denver and was offered an active-duty commission and residency at Wright-Patterson Air Force Base in Dayton, Ohio, the "Birthplace of Aviation". I am currently a captain in the United States Air Force and the officer-in-charge of mental health operations at Tinker Air Force Base in Oklahoma City, Oklahoma. As a clinical psychologist, I ensure the psychological readiness of the force by conducting therapy, psychological testing, outreach, crisis response/intervention, assessment and selection for specialty career fields, command consultation, and performance optimization.

The inquisitive child who loved to learn now asks questions for a living and uses the science of human behavior to analyze issues of the heart and mind, in service of those who make up the world's greatest Air Force. All of this might not have been possible without that week at STARBASE!

CAPTAIN LATOSHA RAMOS LAKE
Mental Health Element Chief
72nd Operational Medical Readiness Squadron, Tinker AFB

STARBASE Edwards "MiSS" Initiative Provides After-School STEM Program for Kern County Middle School Girls

The need for increased educational opportunities in Kern County, CA was reflected in data from the U.S. Census Bureau, which found that of residents 25 years and over, 2 percent have had no formal schooling, and 1 in 4 residents (26 percent) never received a high school diploma.

Altogether, 50 percent of women and 55 percent of men have a high school education or less.[8] Looking for a way to help inspire and enhance STEM engagement for Kern County students, particularly girls who are traditionally underserved, STARBASE Edwards Director, Amira Flores, submitted a proposal and was awarded a grant through the Women's and Girls' Fund of Kern County (WGFKC) in 2021. Through the grant, Flores developed a STARBASE Advanced after-school STEM initiative for girls called "Mighty in STEM Sisters" (MiSS). The program, launched in partnership with two school districts, resulted in over 200 hours of STEM engagement and outreach. According to Flores, "The program's focus was to embed STEM principles, rocketry, and aerospace education to middle school girls from East Kern County, since two of the STEM areas where women remain truly underrepresented are in computer science and engineering."

[8] U.S. Census Bureau, Kern County, CA 2018.

"...Since joining MiSS, I have learned to not be so shy. Whenever I'm confused about something I'm not scared to ask at all, and I've always been afraid to ask before."

Kay Pitts, WGFKC Grants Allocation Committee Chair, expressed her appreciation for the STARBASE Edward's program as an example of how programs can mentor each other and build on each other's strengths. "Our objectives are to transform lives, educate by creating awareness, endow funds to support programs, and empower women to become philanthropists and advocates of positive social change," said Pitts. The WGFKC committee, invited the MiSS students to attend their annual luncheon where congressional and community leaders received a presentation on the success of the program. "It was so wonderful to meet the leaders and young women participating in this wonderful program. It was a special presentation to have all our donors and sponsors hear from Flores and see what can be accomplished when we focus on women working together."

The MiSS program attracted over 40 DoD civilian and military coaches who dedicated 150 hours total in support to MiSS students. Students were able to collaborate and network with mentors from NASA, DoD civilians and military members, representatives from the Air Force Research Laboratory, and STARBASE instructors. Their first hand experience in STEM careers, STEM knowledge, and focus on real-world problems led to an increased STEM interest among the students. Natalie Ventura, 775th TS, Weapons Integration, flight-technical expert stated, "I wholeheartedly believe in women helping women, and the younger we start, the better. We need to support each other and promote that we can do anything. These girls are amazing and deserve every opportunity to grow and feel empowered."

Sienna, a MiSS 9th grade student participant said, "What I like most about this program is that there aren't any grades. I still learn so much yet it doesn't stress me out, and I like the people here. Since joining MiSS, I have learned to not be so shy. Whenever I'm confused about something I'm not scared to ask at all, and I've always been afraid to ask before."

With the support and partnership of the WGFKC, STARBASE Edwards was able to bring STEM programs to these underserved girls and shine a light on what is most needed for the women and girls in our county. STEM education and opportunities provided by groups of like-minded women in our community bring visibility and representation to fields that are underrepresented, to the forefront.

Top-Flight Summer Aviation Academy at STARBASE Indiana – Gary

STARBASE Indiana - Gary's "Top-Flight Summer Aviation Academy" provided 30 local 6th - 8th grade students a 5-day adventure to explore the aviation and aerospace industry and the many professional career opportunities it provides.

The academy put students' skills in science, technology, engineering, and math (STEM) to the test with hands-on activities, simulations, and experiments related to aviation and aerospace.

STARBASE Gary partnered with multiple aviation-related entities such as the AeroStar Avion Institute, the Griffith-Merrillville Airport, Lt. Colonel Jennifer-Ruth Green's "Archer Academy," as well as Gigi Coleman and the "Bessie Coleman Aviation All-Stars" to bring the aviation world alive for the students. Lt. Colonel Coleman capped her visit off with a theatric monologue, portraying her great-aunt Bessie Coleman, which detailed the rich history of African American aerospace icons.

Academy participants were able to explore an array of hands-on challenges with access to flight simulators, wood and foam airplanes, drones, and were even equipped with the necessary requisites to earn their own recreational drone flying license. They learned about aerodynamics, the forces of flight, assembling aircraft, and topics in rocketry. Midway through the week, the academy was relocated to the Griffith-Merrillville Airport, where camp attendees were able to tour the entire facility from the maintenance area to the hangar where their academy graduation was held. The students also competed in engine building challenges where they were able to build real plane engines from start to finish. They created infomercials to highlight the numerous career opportunities in the aviation industry and participated in flight planning exercises that challenged their ability to manage the weight, fuel, weather, and navigational encounters as they pertain to air travel. The highlight of the camp came at the end, where each academy participant was able to experience their own introductory flight on actual planes with licensed pilots.

Gigi Coleman (center), great niece of the iconic aviation pioneer Bessie Coleman, with participants of the STARBASE Gary Top-Flight Summer Aviation Academy.

Chief flight instructor Neil Hutton of the Griffith-Merrillville Airport works with STARBASE Gary Top-Flight Summer Aviation Academy participants in a challenging engine building competition.

As the most recent addition to the STARBASE Indiana programs, STARBASE Gary is immensely proud of all their accomplishments over the last four years and intends to continue as the spark to ignite the interests and awareness of STEM for students in their community.

The Program Elements of DoD STARBASE

The guidelines and directives for the DoD STARBASE program are outlined in DoDI 1025.07 which includes operational requirements such as budget, student grade level, class size, scheduling hours, curriculum guidelines, the desired demographics, documentation requirements, testing, and program location. DoD STARBASE directors are required to report on these items annually by obtaining aggregate data on students from the schools participating in the DoD STARBASE program.[9]

DoD STARBASE STUDENTS

Grade Level

The DoD STARBASE program is authorized to serve students in kindergarten through 12th grade. Because of the dramatic decline in math and science performance by U.S. students after the 4th grade, the DoD STARBASE curriculum and standards are developed for the 5th grade level. During SY 2020-21, 45 locations (66 percent) used their Title 10 authority and adapted their full 25-hour curriculum to expand their reach beyond 5th grade in order to fill their class schedule under pandemic conditions. This year, that number reduced to 39 percent (29 of 75 established academies) as the program focus normalized to the 5th grade target audience. Table 3 shows the reported distribution of students for SY 2021-22.

Table 3: SY 2021-22 Grade Level of DoD STARBASE Students – Basic 25-Hour Program

Grade Level	Number of Students
Kindergarten through 3rd Grade	94
4th Grade	1,360
5th Grade	74,265
6th Grade	1,968
7th Grade	183
8th Grade	52
9th Grade and Above	138
Total Number of Students – Basic Program	**78,060**[10]

"DoD STARBASE is an incredible equity builder, offering opportunities and accountability to each student to participate at a high level. You show students that they can begin to control things that 'seemed' too hard to begin with. These experiences empower students and have them ask the question, "'What other hard things might I master if only I apply myself?'"

- SHANNON KARLOWICZ, EDUCATOR AT RD SEYMOUR SCHOOL, ATTENDING STARBASE WINDSOR LOCKS

[9] Federal reporting requires aggregate data concerning all elementary and secondary students be reported to the DoD using one of the seven aggregate reporting categories discussed in the guidance given by the Department of Education (http://www2.ed.gov/policy/rschstat/guid/raceethnicity/questions.html#elsec).

[10] Grade distribution information was only collected for basic onsite 25-hour programs and does not include alternate delivery methods such as STARBASE on Wheels or virtual academies.

"The DoD STARBASE program is so important in helping to motivate these young students in the Albuquerque area, many of whom are definitely working through some tough circumstances. I remember on a few occasions some students sadly saying they weren't sure if they would make it to high school, and after my presentation, I was able to have a great discussion with these kids, motivating them to have a goal and stick with school. Introducing STEM subjects and answering any/all their questions is an absolute joy, and I will continue to do this as long as I live in the area."

- MSGT DALE KIRKENDALL, 58th TRAINING SQUADRON - STUDENT OPERATIONS SUPERINTENDENT, STARBASE NEW MEXICO

Underrepresented/Underserved in STEM

DoD STARBASE presents a unique opportunity to expose groups of students that have been historically underrepresented in STEM fields to STEM content and STEM careers. Information released in April 2021 by the National Science Foundation and National Center for Science and Engineering Statistics stated that women, persons with disabilities, and some minority groups—Blacks or African Americans, Hispanics or Latinos, and American Indians or Alaska Natives—are underrepresented in science and engineering (S&E).[11] This also encompasses low-income students, students with disabilities and students who use English as a second language.

Table 4 shows the percentage of students from each of these underrepresented groups who attended basic STARBASE programs. While the information is fairly consistent with SY 2020-21 data in most categories, modest increases were seen in the Native American/Alaska Native (1 percent), low-income students (3 percent), students with disabilities (1 percent), and students who use English as a second language (1 percent). The rate for Black/African American students dropped by 3 percent, with the most significant change being an increase in Hispanic/Latino students of 7 percent.

Table 4: STARBASE Students - Groups Underrepresented/Underserved in STEM

Group	Percentage of Students
Females	49%
American Indians or Alaska Natives	3%
Blacks/African Americans	19%
Hispanics or Latinos	30%
Low Income Students	58%
Students with Disabilities	11%
Students that use English as second language	11%

[11] National Science Foundation/National Center for Science and Engineering Statistics (2021), *Women, Minorities, and Persons with Disabilities in Science and Engineering.* Retrieved from https://ncses.nsf.gov/pubs/nsf21321/report.

Class Size

Smaller class size is particularly important to the inquiry-based instruction used at DoD STARBASE locations. The DoDI requires two DoD STARBASE instructors per class or an average DoD STARBASE instructor to student ratio of 1:15, with 20-35 students as an acceptable class size. The average instructor-to-student ratio for SY 2021-22 increased to 2:21, up 7 students per teacher from the previous year when social distancing restrictions forced reductions in overall class size. Last year, 78 percent of STARBASE programs reported an average class size of less than 20 students. This year, the average class size increased to 22 students and 85 percent of locations reported class averages of at least 25 students, which is another indicator of a return to more normal operations. Only 10 locations reported class averages of less than 20 students.[12] The highest reported average class sizes were 32 students at KS – STARBASE Manhattan and over 35 students per class in GU - STARBASE Guam, which is a new location. Program delivery schedules also changed post-pandemic with STARBASE locations adapting to adjusted school needs and schedules. This year, 37 percent of programs used a combination of consecutive days and one day per week class scheduling, 35 percent were provided programs on consecutive days, and 27 percent operated one day per week for five weeks. Last year, the majority of programs (48 percent) were conducted on consecutive days to keep school groups together in order to limit COVID exposure and allow time for classrooms and equipment to be sanitized between sessions.

Many DoD STARBASE locations have increased their efforts to serve more students by opening additional DoD STARBASE classrooms so that classes may operate simultaneously. Additional DoD STARBASE classrooms allow schools to send more students, using the same transportation, who are then assigned a DoD STARBASE class. Depending on the number of students arriving from the school, the resulting "DoD STARBASE class" may contain students originating from multiple classrooms. In SY 2021-22, 40 percent of the STARBASE locations operated with a single classroom, while 60 percent run two or more classrooms at a time. Under the revised DoDI, STARBASE locations are expected to serve a minimum of 30 classes per classroom and instructor pair each year. Table 5 shows the number of sites operating each different classroom configuration and their required operational tempo.

Table 5: Number of Locations by Number of Classrooms

Number of Classrooms	Number of STARBASE Locations	DoDI Required Classes Per Year
1	30	30
2	33	60
3	7	90
4 or More[13]	5	120+

[12] AL - STARBASE Maxwell, CT - STARBASE Waterbury, HI - STARBASE Hawaii, NV - STARBASE High Sierra, OR - STARBASE Camp Rilea, PR - STARBASE Puerto Rico, SD - STARBASE Nova Honor, VT - STARBASE South Burlington, STARBASE Rutland, and WY - STARBASE Wyoming reported class averages of less than 20 students.

[13] AL - STARBASE Maxwell, GA - STARBASE Robins, MN - STARBASE St Paul, MN - STARBASE Duluth, and OH - STARBASE Wright-Patt have the capacity to run four or more simultaneous classes.

DOD STARBASE STAFF

Employment Affiliation

The DoDI provides general guidelines on staffing models, salary parameters, and position descriptions. The primary employment affiliations are federal, state, and contractor agencies. Employment affiliation is an important consideration for each location. The employee's affiliation determines his/her salary administration, hiring requirements, benefits, personnel policies, and practices, as well as reporting relationships. Federal and state affiliations often provide retirement and health benefits, which increase a location's personnel costs and use a greater portion of the location's operating budget. Contractor affiliations make up 54 percent of the employment relationships, followed by state and federal[14] affiliations which are at 45 percent and 1 percent, respectively.

STAFFING MODEL

The DoDI outlines the prototypical staffing model for a DoD STARBASE location operating a single classroom. It includes broad guidelines on pay scale for each staff position. This model is also the basis for an annual budget for each location. The staffing model includes four full-time, paid staff positions: a director, a deputy director/instructor, an instructor, and an office manager or instructor assistant. Determination of starting salaries is the prerogative of each location. The suggested pay scale equivalencies of the above positions in the DoDI are GS 12-13, GS 11-12, GS 9-11, and GS 6-9, respectively. Of the 81 DoD STARBASE locations, 30 operated a single classroom during SY2021-22.[15] Of these 30 locations, 14 also reported coordinating a DoD STARBASE Advanced program during FY 2022. Table 6 outlines the staffing profile for full-time and part-time personnel of DoD STARBASE locations with a single classroom.

Table 6: FY 2022 Single Classroom Staffing Profile

Position	Number of Staff	Full-Time[16]	Part-Time
Director	23	23	0
Deputy Director/Instructor	25	24	1
Instructor	47	39	8
Office Manager	20	14	6
Instructional Support	3	2	1
2.0 Coordinator	4	2	2
Other	4	2	2
Total	**126**	**106**	**20**

[14] CA - STARBASE Edwards was the only location with federal employment affiliations (four employees) in FY 2022.

[15] DoD STARBASE locations that operate a single classroom: AZ - STARBASE Arizona, CA - STARBASE Edwards, CT - STARBASE Connecticut - Waterbury and STARBASE Connecticut - Windsor Locks, GU - STARBASE Guam, HI - STARBASE Hawaii, LA - Bayou State STARBASE and Pelican State STARBASE, MA - STARBASE Hanscom, MI - STARBASE Alpena, MT - STARBASE Fort Harrison and STARBASE Great Falls, ND - STARBASE North Dakota, OK - STARBASE Oklahoma - Burns Flat, OR - STARBASE Kingsley, STARBASE Camp Rilea and STARBASE Umatilla, SD – STARBASE Rapid City/NOVA Honor and STARBASE Sioux Falls/NOVA Courage, TX - STARBASE Kelly, VT - STARBASE Vermont - Rutland and WI - STARBASE Wisconsin. Due to local pandemic restrictions, IN - STARBASE Gary, IN - STARBASE Indianapolis, VT - STARBASE South Burlington temporarily operated at single classroom levels.

[16] Full time is defined as an employee working more than 125 days per year.

"I have never liked science because reading is my thing. This week at DoD STARBASE has opened up a new world of science and I love it."

- TINLEY NORTON, STUDENT AT EMPIRE ELEMENTARY SCHOOL, ATTENDING STARBASE FORT SILL

Many locations adjusted the staffing model to support additional classrooms and serve more students and/or support a DoD STARBASE Advanced program. The most common changes in the staffing model are additions to instructional and support staff to meet the "two instructors per STARBASE classroom" requirement. Some locations restructured the administrative position to include instruction. Other DoD STARBASE locations have made the following adjustments: establish job-sharing positions, consolidate job tasks, limit benefits, eliminate the deputy director position in favor of two instructors, eliminate the administrative position, and/or hire retirees who require fewer benefits. In FY 2022, the "other "category included: an Executive Director (IN), a retiring DoD STARBASE Director, and technical assistants. Table 7 shows the staffing profile for full-time and part-time personnel for DoD STARBASE locations operating two to four classrooms simultaneously.

Table 7: FY 2022 Multiple Classroom Staffing Profile

Position	Number of Staff	Full-Time	Part-Time
Director	40	39	1
Deputy-Director/Instructor	39	37	2
Instructor	136	96	40
Office Manager	48	38	10
Instructional Support	53	20	33
2.0 Coordinator	10	6	4
Other	6	4	2
Total	**332**	**240**	**92**

Tables 6 and 7 also show there are fewer staff directors than DoD STARBASE locations. Some directors manage more than one location, some DoD STARBASE locations are new and have not hired a director yet, and other DoD STARBASE locations are in the process of replacing directors who have left the program.[17]

[17] During FY 2022, Directors in Connecticut, North Carolina, Oklahoma, Oregon, South Dakota, and Vermont operated multiple STARBASE locations. The locations in Indiana were under the oversight of an Executive Director.

STAFF EXPERIENCE

The majority (53 percent) of DoD STARBASE staff have more than three years of DoD STARBASE experience with most (24 percent) in the 1-2-year range. Directors and deputy directors/instructors have typically worked with DoD STARBASE for more than five years at 65 percent and 49 percent experience, respectively. FY 2022 data indicates that 42 percent of instructors have more than two years of STARBASE experience compared to 50 percent a year ago. Most instructors currently fall into the 1–2-year range at 58 percent. The experience level of office managers with more than three years with the STARBASE program is 62 percent. Instructional assistants have the least amount of DoD STARBASE experience with 80 percent in their first or second year. New staff members are typically trained on the job. Prior to teaching at DoD STARBASE, new instructors may observe experienced instructors who often serve as their mentors. Instructors also attend regional workshops for delivery of computer aided design (CAD) instruction, tablet training, and the DoD STARBASE curriculum.

STAFF DEPARTURES

There were 102 staff departures in FY 2022. This is a 25 percent increase in the number of employees who left the program in FY 2021 (76 employees). The majority (48 departures) were at the instructor level. Instructional Assistants were the next highest at 26 departures followed by Deputy Directors at 8 positions. Instructor/Office Manager and "other" positions each had five departures. The overall turnover rate in FY 2022 was 23 percent. Thirty percent cited "other" as their reason for leaving the STARBASE program and this category included pandemic-related issues. Directors reported the most common reasons given from staff members leaving the DoD STARBASE program were better opportunities elsewhere (22 percent), relocation (19 percent), returning to school teaching (10 percent), and retirement (6 percent). Fourteen employees (14 percent) were terminated from the program.

"I think the DoD STARBASE experience is a memorable moment that allows young people an opportunity to see the connection between what they are being taught in school and how the elements of STEM work together to shape technology, the world, and activities around them. The experience itself will inspire some to want to learn more and others to want to be a part of something that makes a difference for the better, whether they choose to join one of the military services or not."

- RICHARD L HAWKINS, 433RD OSS CURRENT OPERATIONS SCHEDULER, STARBASE KELLY

VOLUNTEERS AND MILITARY SUPPORT

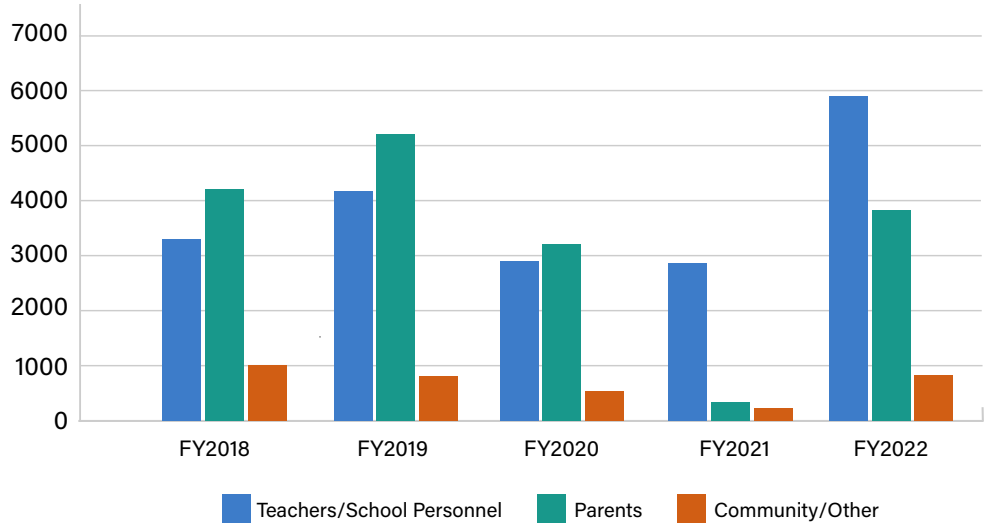
Volunteers are an essential participant group in the DoD STARBASE program. Volunteers include teachers, parents, and community leaders that offer their time and support to enhance the overall STARBASE program. They serve as presenters, board members, advisors, tour guides, and instructor aids, and they perform a wide variety of daily support services. All locations reported using volunteers. The DoD STARBASE locations documented a total of 10,435 volunteers who contributed a total of 131,281 hours, worth an estimated $3,875,256[18] contribution, to the program during FY 2022 (see Table 8).

Table 8: FY 2022 Volunteer Participation

	Volunteers	Hours	Value
Teachers/School Personnel	5,822	105,598	$3,040.736
Parents	3,750	17,945	$464,742
Community/Other[19]	863	7,738	$369,778

Many locations were still impacted by COVID-related restrictions at the military installations and participating schools. However, the volunteer numbers are steadily returning to pre-pandemic numbers (see Figure 1).

Figure 1: Volunteer Participation Pre/Post Pandemic



[18] The value of volunteer time presented here is the average wage of non-management, non-agricultural workers by state found at: https://www.independentsector.org/volunteer_time.

[19] Other volunteers include STEM groups, firefighters, board members, etc.

This year, teachers and school personnel account for the greatest number of volunteers and the most hours. Teachers participate in the DoD STARBASE program along with their students. Teachers and school personnel provide instructional support to the DoD STARBASE classroom and learn valuable classroom techniques that can be applied to activity-based education. It is estimated that teachers and school personnel provided a volunteer value of $3,040,736 to the program in FY 2022. The amount of time donated by this field of experts (over 131,000 hours) remains a testament to schools' commitment and support of the DoD STARBASE program.

Military personnel who support the DoD STARBASE program inspire students' interest and community engagement with linkages between education and application. Approximately 93 percent of STARBASE locations were able to use military personnel to support their program this year. They may serve as guest lecturers to explain the use of STEM in different careers and/or act as base tour guides highlighting the use of STEM concepts in their missions and giving students access to military facilities and operations. Military personnel share unique, informative, and highly varied experiences with the students, which provide an exciting, stimulating environment to enhance their STEM experience. DoD STARBASE directors reported 6,630 hours of support by 2,902 military personnel with an additional 1,074 hours of support by 213 DoD Science and Engineering (DoD S&E) personnel. It is noted that the number of support hours and personnel per military and DoD S&E participant increased in FY 2022.

"One hears the old adage that you cannot be what you cannot see. DoD STARBASE helps students envision a world in STEM that otherwise may have been beyond their reality."

- MAJ GEN (bvt) RET MNANG, STARBASE MINNESOTA-ST. PAUL

DoD STARBASE Advanced Program – STARBASE 2.0 and 3.0

PROGRAM ELEMENTS

STARBASE 2.0 is a unique school-based extracurricular program that targets underserved 6th to 12th grade students. Initiated in 2010, it combines STEM activities with a relationship-rich, school-based, after-school and extracurricular environment to provide the missing link for youth making the transition from elementary to middle school and/or high school. It extends the positive impact of the DoD STARBASE program through an after-school STEM coaching approach that solidifies students' attachment to and engagement with school. The program takes place in partnering schools that have expressed the desire for additional DoD STARBASE program instruction and resources. As with other school-based coaching/mentoring programs, DoD STARBASE 2.0 is highly structured and intends to help support school goals, provide safe environments for students, and improve student-teacher relationships. In FY 2021, STARBASE 3.0, a similar program for high school students, was introduced and is now included under the "STARBASE Advanced" program umbrella.

PROGRAM REQUIREMENTS

DoDI 1025.07, released 15 January 2021, formally documented operational requirements for the STARBASE 2.0 program, which also applies to the STARBASE 3.0 high school programs. In addition, a new STARBASE Advanced Program Guide was developed in response to the evolution of the program, and this additional resource has been made available to program directors via the STARBASE U platform. Execution of the STARBASE Advanced program must adhere to the following requirements:

- It must support STEM activities and must target middle school students for 2.0 and high school students for 3.0.
- The program should be school based with district support. Meetings will typically take place after school and each program will be led by a teacher from the participating school.
- Meet for no less than four hours each month, for a minimum of 20 hours for the school year.
- Each STEM coach will support no more than four students.
- Must have a memorandum of understanding or memorandum of agreement in place.
- Must have a designated STEM coach coordinator.

The DoDI also requires cooperation from the participating school to include:

- Providing adequate meeting space, such as classroom or all-purpose room.
- Appointing a teacher or designated school representative as the STARBASE Advanced point-of-contact.
- Providing background checks of STEM coach volunteers.
- Providing computer/information technology support as needed.
- Arranging for an after-school snack for students and providing parking for DoD STARBASE program staff and STEM Coaches.

STARBASE ADVANCED CURRICULUM

Middle school STARBASE Advanced students typically work with a STEM coach on a team project at their school, whereas high school students work with STEM coaches both in person and in a virtual format. The outcomes for all students participating in the DoD STARBASE Advanced program are as follows:

- Increased STEM interest and knowledge
- Reduced high-risk behavior
- Increased engagement with school
- Increased STEM career awareness

Program locations use a variety of different team projects to achieve these goals. STEM projects include robotics, rocketry, computer-aided design, coding, aerial robotics (drones), engineering design process, CO_2 cars, weather balloon launch and wind energy. Several programs culminate with some related competition, such as FIRST LEGO League competitions and The American Rocketry Challenge (TARC).[20]

PARTICIPANTS

STARBASE 2.0

During FY 2022, STARBASE 2.0 programs were active at 47 STARBASE locations in 24 states and Puerto Rico.[21] This is a significant increase from FY 2021 when pandemic-related school restrictions limited the opportunity for after-school activities to 28 locations and 14 states and is indicative of a return to more normal pre-pandemic operations when the 2.0 program was conducted at 50 locations.

In FY 2022, school districts and schools partnered with DoD STARBASE at 90 school locations to operate 164 STARBASE 2.0 clubs. Forty percent of the 2.0 clubs were conducted at GA - STARBASE Robins, LA - STARBASE Louisiana, and UT - STARBASE Hill at 26, 23, and 17 clubs, respectively. The majority (85 percent) of clubs were located in urban school settings. During FY 2020, only 63 percent of 2.0 programs were able to complete their sessions due to pandemic restrictions. In FY 2021, program completions rose to 97 percent and this year were reported at 100 percent. Many of the FY 2021 DoD STARBASE 2.0 students were former DoD STARBASE students (40 percent). Most reported participants were male (74 percent), and the average club size was 15 students. In FY 2022, the DoD STARBASE 2.0 program served 2,267 student participants, up 17 percent from FY 2021. The majority (54 percent) of these students came from low-income backgrounds, 8 percent were military-affiliated, 8 percent were designated as ESL/ELL, and 5 percent were students with disabilities.

The duration of STARBASE 2.0 club activity ranged from a concentrated time period to year-long initiatives with 63 percent of programs meeting in weekly sessions and 77 percent meeting after school hours. The retention rate for FY 2022 Advanced programs was 84 percent. Directors reported several reasons why students discontinued the program. School suspension/prohibition of after-school/extracurricular activities, relocation, time conflicts, and lack of interest in the chosen curriculum were cited as the main reasons why students drop from the program.

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[20] FIRST LEGO League is a global competition where elementary and middle-school students build LEGO-based robots to complete tasks on a thematic playing surface. The American Rocketry Challenge (TARC) is an annual American model rocketry competition for students in 7th - 12th grades where they design, build, and launch a rocket with specific characteristics.

[21] In FY 2022, DoD STARBASE 2.0 programs were offered in Alabama, Arizona, California, Georgia, Idaho, Indiana, Kansas, Louisiana, Massachusetts, Michigan, Minnesota, Montana, North Carolina, New Mexico, Ohio, Oklahoma, Puerto Rico, South Carolina, South Dakota, Texas, Utah, Virginia, Vermont, West Virginia, and Wyoming.

STARBASE 3.0:

Twelve STARBASE locations reported initiating or continuing high-school level STARBASE 3.0 programs during FY 2022.[22] The joint effort with the United States Marine Corps Junior Reserve Officers' Training Corps (JROTC), started last year by the Martinsburg, Winchester, Los Alamitos, and Kansas STARBASE programs, expanded to 12 clubs this year, although again, pandemic-related concerns limited it to a virtual program. STARBASE Louisiana continued to work with high school students through six TARC clubs, and STARBASE Robins initiated a program with JROTC cadets in Broward County, FL. In addition, STARBASE Puerto Rico and STARBASE Texas - Austin piloted 3.0 initiatives during FY 2022 for a total of 21 organized 3.0 clubs with 282 student participants. Additional information on the STARBASE 3.0 program is provided on page 35.

Staff

STARBASE ADVANCED PROGRAM COORDINATOR

DoD STARBASE Advanced is primarily a volunteer program. The participation of volunteer STEM coaches and volunteer classroom teachers is managed by a designated DoD STARBASE Advanced program coordinator. This is typically a part-time position, and many programs choose to assign the coordinator in-house with their existing DoD STARBASE director, deputy director, program instructor, or office manager taking on the additional responsibilities. If hiring in-house is not possible, candidates are recruited from the partnering school or community. The STARBASE Advanced program coordinator plays an invaluable and critical role in the success of the program. The responsibilities of the Advanced program coordinator include:

- Creating and implementing program marketing
- Managing relationships with schools
- Recruiting and screening program volunteers
- Managing volunteer STEM coaches
- Coordinating and delivering volunteer training
- Tracking data
- Supporting and motivating program volunteers
- Selecting program curriculum

STEM Coaches

STEM coaches play a vital role in the success of both the participants and the STARBASE Advanced program as accessible examples of successful STEM professionals. Serial engagements with professionals in STEM careers allow students to network with someone experienced in the field and to envision pathways for themselves to pursue those types of careers. Additionally, STEM coaching can be a powerful experience for STEM professionals, building communication skills, and connecting them to their community. The ideal STEM coaching team consists of a lead STEM coach, representatives from local STEM industries, college students, and members of the military. To serve as a DoD STARBASE Advanced STEM coach, volunteers must meet the following minimum requirements:

- Be at least 18 years of age
- Successfully pass screening/background check
- Volunteer six hours per month through the club duration

[22] STARBASE 3.0 programs were conducted at CA - STARBASE Los Alamitos, GA - STARBASE Robins, KS - STARBASE Kansas - Kansas City, Manhattan, Salina, Topeka, and Wichita, LA - STARBASE Louisiana, PR - STARBASE Puerto Rico, TX - Texas STARBASE Austin, VA - Winchester STARBASE Academy, and WV - STARBASE Martinsburg.

The 491 coaches who participated in the STARBASE 2.0 program during FY 2022 came from a variety of STEM professions which included military, DoD professionals, industry professionals, and college students (see Table 9). Working with a coach, participating students are exposed to the lifelong benefits of higher education and a career in a STEM-related field. They may also receive guidance about educational and career options. Pandemic restrictions prevented or limited participation of several volunteer groups in FY 2021. With a return to more normal operations, the number of military volunteers increased significantly in FY 2022, while the number of DoD Science and Engineering, Non-Military/DoD Professionals, and Industry Professionals remained consistent with the previous data. The coach-to-student ratio was reported as 1:4 or less at 27 of the 47 participating STARBASE locations.

"DoD STARBASE plays a vital role in many young children's development bringing information that may not be provided at their local school, but also new perspectives. Nowhere else are these children provided with the opportunity to see things or meet people that STARBASE is able to provide, such as hands-on learning with military equipment and aircraft. We now have young ladies and gentlemen who are joining the South Dakota Air National Guard because DoD STARBASE played such a big role in their lives and piqued interests that they never knew they had."

- TSGT MATTHEW MCCARTHY,
114FW/AMXS AVIONICS,
STARBASE NOVA COURAGE

Table 9: STEM Coach Types

Type	Number of Coaches
Military	235
DoD Science and Engineering	54
Non-Military, DoD, Professionals	34
Industry Professionals	11
College Students	2
STARBASE Staff Members	56
Host School Staff Members	83
Other	16
Total Number of Coaches	491

FUNDING

The DoD STARBASE Advanced programs operate through a combination of federal and private funds.[23] Of the 47 DoD STARBASE locations coordinating an Advanced program, 60 percent operate solely using their federal DoD STARBASE funds. The remaining 40 percent receive funding from a combination of federal and private organizations.

STARBASE ADVANCED PROGRAM OVERSIGHT

Throughout FY 2022, directors of the participating locations were interviewed during site visits and surveyed to obtain data regarding program requirements, participants, curriculum, staff, and funding to help determine the overall operational status of the STARBASE Advanced program.

[23] Private funds include not-for-profit, donations, grants, and host school contributions.

DOD STARBASE 2022 HIGHLIGHTS

STARBASE 3.0: The Power of Partnerships in STEM Education

DoD STARBASE has led the way to inspire young minds in STEM by offering elementary and middle school students a proven approach through its premier 5th-grade STEM education and STARBASE 2.0 after-school programs. The expansion of DoD STARBASE's current programming to include STARBASE 3.0 for high school students creates a STEM education pipeline that carries students from the 5th - 12th grade. As a program now called "STARBASE Advanced," STARBASE 3.0 exposes high school students to 21st century skills that extend beyond the classroom and help to prepare them for the future whether they choose to enroll in a college or university, enlist in the military, or enter the workforce.

Last year, three STARBASE locations used the power of partnerships to successfully develop a pilot STARBASE Advanced 3.0 program with the Junior Reserve Officers' Training Corps (JROTC). Although the vision/model for STARBASE 3.0 varies from site to site, the overarching goal involved high school students' exposure to engaging activities designed to develop their science, technology, engineering, and mathematics (STEM) knowledge and skills, and to prepare them for future STEM opportunities.

This year, the STARBASE Advanced program was expanded to include STARBASE Robins and the five STARBASE Kansas sites (Kansas City, Manhattan, Salina, Topeka, and Wichita) along with STARBASE sites in Los Alamitos, CA, Martinsburg, WV, and Winchester, VA continuing the partnership with JROTC programs. The model for STARBASE Louisiana involved a partnership with female Youth Challenge cadets to compete in The American Rocketry Challenge (TARC) and reach their goal of advancing to the national finals of the TARC competition. New 3.0 programs in Puerto Rico and Austin, TX piloted similar programs with high school students in their area. While the locations and approach may be different, the theme is common to all sites: "The Power of Partnerships."

CONTINUED

STARBASE 3.0 CONTINUED

Wesley Fondal Jr., Audra Hubbard, and Andrew Dennis, STARBASE ROBINS, teaching Broward County JROTC cadets about the correlation between Newton's Laws of Motion and rocketry.

Broward County JROTC cadets building two types of model rockets: the Alpha II and Starcruiser.

STARBASE Robins
Warner Robins, Georgia

In partnership with Broward County JROTC program, STARBASE Robins facilitated a five-day rocketry summer academy from June 13-17 with 80 cadets in Pompano Beach, Florida.

Broward County Public Schools (BCPS) has the largest JROTC program in the nation, with a program in every traditional high school. The BCPS JROTC Cadet Leadership Camp (JCLC) provides a STEM leadership experience on a college campus. The program was initially delayed due to COVID-19. During the two-year delay, STARBASE Robins worked to strengthen the partnership, planning, and preparation to provide an extraordinary experience for cadets.

Through the 2022 summer academy, led by STARBASE Robins Director Wesley Fondal Jr., Lead Instructor Audra Hubbard, and 2.0 Coordinator Andrew Dennis Jr, the JROTC cadets, studied Newton's Laws of Motion and spent four rigorous days building two types of model rockets, the Alpha II and Starcruiser. The JROTC cadets used digital altimeters to compare and measure the distance the rocket traveled during the launch.

"Our new partnership with Broward County's JROTC program has been an experience to remember, and we look forward to future partnership opportunities" said Fondal. The BCPS Coordinator of JROTC and Military Programs, Lt Colonel (Retired) Kenneth Green, stated, "After connecting with STARBASE Robins and enduring the pandemic, we were finally able to conduct a weeklong STEM camp at Pompano Beach High School. STARBASE Robins provided valuable resources, knowledgeable instructors, and meaningful training to our cadets. We will partner with STARBASE Robins for future STEM opportunities."

STARBASE Kansas

(Locations in Kansas City, Manhattan, Salina, Topeka, and Wichita), STARBASE Los Alamitos, CA; STARBASE Martinsburg, WV; and Winchester STARBASE Academy, Winchester, VA

DoD STARBASE staff from Kansas, West Virginia, Virginia, and California successfully planned, organized, and executed the second annual STARBASE 3.0 robotics program during FY 2022. The STARBASE 3.0 program was conducted in conjunction with the Marine Corps JROTC summer camps organized by Paul Jornet, First Sergeant (Retired), United States Marine Corps. With the support and vision of OASD M&RA, many high school-age students are given the opportunity to expand their knowledge of the Engineering Design Process, robotics, electronics, micro-processing board schematics, and C++ programming language through STARBASE 3.0. The STARBASE 3.0 model provides a pathway to fully extend the Title 10 authority of the DoD STARBASE program to encompass high school-age students.

Establishing a collaborative relationship between the STARBASE sites was essential for the success of the 3.0 program. A "Development Team" was created with representation from participating STARBASE programs. This year, they used the Parallax BOE Shield-Bot; this new robot included a breadboard, which allowed students to modify the robot's circuitry and sensors. The Development Team created and provided resources to the sites for each instructor to become proficient in building and coding the Shield-Bot robot. These resources included an introduction to the micro-processing board, instructions in robotics, circuit board schematics, building tips, and C++ coding instructions.

While the STARBASE 3.0 team planned for in-person robotics sessions at various Marine Corps JROTC camps around the country this year, limiting circumstances outside their control required the camps to be conducted virtually again. As such, four-person teaching teams were established for each of the three virtual classrooms. This manning model allowed instructors who had virtual classroom experience from the previous year to take the lead in the classroom while providing an opportunity for new 3.0 instructors to experience teaching robotics to high school students in a virtual environment. The STARBASE 3.0 team met in Stafford, VA during the last week of July to facilitate the virtual classrooms and a hybrid classroom at Norwich University from a central location. They worked with over 90 students from a variety of states and territories. Student Ryan Fenton stated, "It was hard, but the hardest things in life mold you." The STARBASE team looks forward to expanding this program as they prepare to meet in person at various JROTC camps across the United States in FY 2023.

STARBASE 3.0 Collaborative Team Members Instructing JROTC Cadets Utilizing a Hybrid Classroom

STARBASE 3.0 Collaborative Team with representatives from the 5 Kansas Sites (Kansas City, Manhattan, Salina, Topeka, and Wichita), Winchester STARBASE Academy, STARBASE Martinsburg, and STARBASE Los Alamitos

CONTINUED

STARBASE Louisiana
Barksdale AFB, LA

STARBASE Louisiana's dream of a STEM education pipeline from 5th - 12th grade actually started in FY 2015 when they first began to involve high school students in STARBASE-related STEM activities. The American Rocketry Challenge (TARC) was a perfect fit for the students and staff. Initially, the 3.0 program consisted of two clubs in the north and south areas of the school district where a few students gathered after school. When it became apparent that this model did not reach at-risk students, chapters were formed at individual schools to alleviate transportation issues. Later, a partnership was established with the female Youth Challenge cadets of Camp Minden.

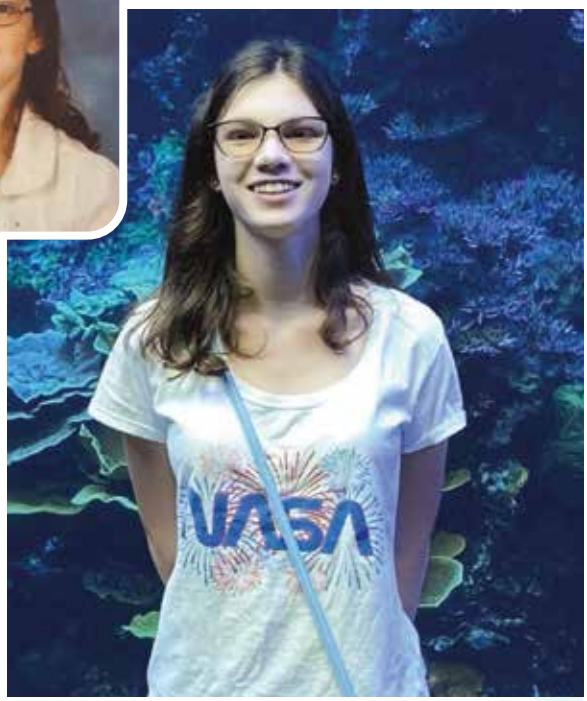
As the program grew, the rocket engineering students were determined to reach their goal of making it to the national finals of the TARC competition. Staff and STEM coaches assisted students as they studied the physics and mathematics of rocketry, created and simulated virtual rockets, manufactured prototypes, and gathered and analyzed data from each rocket launch to aid in the redesign. Two STARBASE Louisiana teams made it to the TARC nationals in 2021 and again in 2022, garnering rankings of 25th, 32nd, and 34th in the nation out of 725 teams. One team of five seniors saw every member go on to study the aerospace field in various colleges around the nation. The story of STARBASE Louisiana's 3.0 program is one of determination, collaboration, and celebration that has made a significant impact on the STEM education of northwest Louisiana.

STEM education programs, such as STARBASE, would not be possible without the help of dedicated partners which starts with the Department of Defense and flows throughout industry, education, and local communities. Partnerships create opportunities to bring everybody to the table to "Educate, Equip, and Empower" the broader community in STEM. As such, STARBASE 3.0 affords an additional opportunity to collaborate and partner with schools, industry, and community organizations to create a pathway for high school students to develop 21st century skills. These skills are paramount and provide a framework for learning to ensure students can thrive in the classroom, world, and the global economy.

STARBASE Louisiana's Top 25 Rocketry Team at the 2021 Finals of The American Rocketry Challenge.

DoD STARBASE GRADUATES WHERE ARE THEY NOW?

LETTER OF SUPPORT FROM DOD STARBASE GRADUATE
KENDALL CLARK



Dear STARBASE,

I attended STARBASE Winchester when I was a 5th grader at Armel Elementary in Stephens City, Virginia. It was an amazing experience, and I am so glad I got to do it. My parents had helped me develop a love of learning, but I had not been exposed to too many STEM activities. STARBASE was my first exposure to engineering and an experience I am extremely grateful for.

My favorite memory from STARBASE was when we had to create a spaceship for Eggbert. It was really fun and exciting to see your egg go down the zipline. I was not that interested in space before, but after that activity I wanted to see how real rockets worked and how they would land on actual planets.

STARBASE helped me realize that I loved engineering. I enjoy trying to create solutions to problems, and I want to help other people find that same joy. That is why I became an EngineerGirl Ambassador. I was able to help other people find that same joy the way STARBASE helped me.

Now, I am going to become an aerospace engineer. I applied to colleges and will be starting next fall. I am hoping to go to the University of Virginia or Georgia Tech. I am really excited for the future. I am glad that I discovered my love of engineering and am looking forward to becoming an engineer. I hope to eventually work for NASA.

STARBASE is very important to me. I may have only gone there for a week, but it has affected my whole life. All the people working there were very supportive of me and helped me develop a positive view of engineering. They care about what they do and want to help everyone develop a love for STEM. I am extremely grateful for the experiences I had at STARBASE Winchester, and I hope that all kids get to have the same kind of experiences I did.

"STARBASE is very important to me. I may have only gone there for a week, but it has affected my whole life."

- KENDALL CLARK

Sincerely,
KENDALL CLARK

DoD STARBASE GRADUATES WHERE ARE THEY NOW?

LETTER OF SUPPORT FROM DOD STARBASE GRADUATE

MATTHEW EDWARDS

As a 6th and 7th grade student attending STARBASE Oregon – Kingsley, I felt like a true engineer and designer, being able to utilize the latest technology and skills that I could potentially use in college, achieving the ultimate dream of becoming an Air Force pilot.

My two favorite memories from my time at STARBASE were designing 3D models and programming LEGO Mindstorm robots.

When I went to my first STARBASE summer camp in 7th grade, I had hands-on experience learning to construct 3D printed models with CAD design programs. Being able to see these designs become a physical reality through a 3D printer completely dumbfounded me, as I had never seen anything like this in person. Several weeks later at my second STARBASE camp, I would get the opportunity to build and program LEGO Mindstorm robots, competing in several competitions which required each design to complete timed tasks. Going to these camps fueled my interest in engineering and pursuing it after high school in college for my bachelor's degree, as I felt like one of the Wright Brothers inventing the first airplane whenever I was using these engineering skills.

Even though I would choose to not pursue an engineering degree in college, this passion for hands-on design work and the hard work ethic that STARBASE taught me would help me excel in Air Force ROTC at Oregon State University and in my bachelor's degree.

I will never forget the impact STARBASE Kingsley had on my earlier life and how it led me to where I am now. It opened my world up to new possibilities and endeavors I had not even imagined coming from a small rural town. I graduated from Oregon State University in June 2022 with a Bachelor of Science in Political Science and received my commission as a second lieutenant through ROTC. Currently, I am waiting to attend Remotely Piloted Aircraft (RPA) pilot training in Texas next year.

> "It opened my world up to new possibilities and endeavors I had not even imagined coming from a small rural town."
>
> - MATTHEW EDWARDS

MATTHEW EDWARDS
2nd Lieutenant, USAF
Randolph Air Force Base, TX

The DoD STARBASE Curriculum

Today's DoD STARBASE STEM curriculum is standardized, cutting-edge, research-based instruction that meets national educational standards and ensures a qualitative assessment of curriculum outcomes. DoD STARBASE curriculum is designed to increase students' involvement and interest in STEM activities, enhance their understanding of the role that STEM literacy plays in their lives, strengthen potential for future careers, and make the pursuit of STEM activities more attractive and accessible. Curriculum development is aligned with the concepts presented by the Executive Office of the President of the United States. It also supports the Federal STEM Education goal to improve STEM instruction. The DoD STARBASE program was reported to have aligned with all the goals and pathways identified in the strategic plan by the Office of Science and Technology Policy (OSTP). Their findings indicated that the DoD STARBASE program met the following criteria: "building strong foundations for STEM literacy; increasing diversity, equity and inclusion in STEM; preparing the STEM workforce for the future; developing and enriching strategic partnerships; engaging students where disciplines converge; and building computational literacy."[24]

All STARBASE curriculum focuses on an accessible presentation of accurate scientific information, which promotes the development of STEM skills, knowledge, and practices, thereby supporting the federal goals of a learning investment. According to the Executive Office of the President, "Basic STEM concepts are best learned at an early age—in elementary and secondary school—because they are the essential prerequisites to career technical training, to advanced college-level and graduate study."[25]

The 27 STARBASE learning objectives are clearly outlined for each of the curriculum's STEM categories, which align with various national education standards utilized throughout the United States. The DoD STARBASE curriculum engages students with rigorous, hands-on, minds-on STEM lessons. STEM is intertwined in standardized lesson plan activities and experiments to address real-world issues. Students work in teams simulating a workplace environment. Students find the learning meaningful and inspiring. For example, while studying the engineering design process, students design and create items with 3-D computer-assisted technology. The student summative assessment tool is applied pre- and post-program to determine if the learning objectives have been met.

There are four basic types of lesson plans that are used to teach DoD STARBASE learning objectives:

1. **Parent lesson plans** provide the introductory background, instructional strategies, and materials required to teach the overall concepts of a curriculum topic. These are used in conjunction with lesson plan appendices.
2. **Appendix lesson plans** offer a choice of activities that provide students "hands-on, minds-on" opportunities to understand the introductory material presented in the parent lesson plan. Instructors teach the parent lesson plan and then choose one of the approved appendices to complete the lesson. This allows DoD STARBASE instructors to differentiate their approach to teaching the learning objective.
3. **Activity station lesson plans** are intended to give students multiple activities to strengthen their understanding of the learning objective. These inquiry-based stations are generally short, and in most cases, a number of stations are taught in conjunction with a curriculum segment.
4. **Stand-alone lesson plans** are complete, self-contained documents that fully address the stated components of the curriculum objective. They contain the necessary background information, instructional guidance, and support criteria to meet the requirements for the objective.

STARBASE utilizes a rigorous process to continuously expand and enhance the curriculum offerings with a peer-reviewed evaluation process. DoD STARBASE directors and instructors may choose from multiple approved lesson plans to teach the required 27 objectives. Directors are asked to create a schedule outlining the lessons they have chosen to teach. The schedule also includes any time spent on academy management, student breaks, lunch, and graduation to give an accurate portrayal of how students spend their days at each DoD STARBASE location. Curriculum schedules are submitted annually with the Directors' Questionnaire and are verified by a STARBASE Curriculum Advisory Group representative and validated during visitations by the evaluation team.

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[24] https://www.whitehouse.gov/wp-content/uploads/2022/01/2021-CoSTEM-Progress-Report-OSTP.pdf.

[25] Executive Office of the President of United States, "Charting a Course for Success: America's Strategy for STEM Education, Report by The Committee on STEM Education of the National Science and Technology Council," December 2018. Executive Summary, page v.

Program Oversight

COMPLIANCE

The Office of the Assistant Secretary of Defense (OASD) for Manpower and Reserve Affairs (M&RA) has the overall responsibility for the management of the DoD STARBASE program. The Department of Defense Instruction (DoDI) 1025.07, which was updated 15 January 2021, provides the policies and procedures that guide the current DoD STARBASE academies.

In FY 2022, a separate Resource Management evaluation function was added to ensure that all DoD STARBASE programs comply with the regulations, policies, processes, and procedures associated with the accountability and management of DoD-owned property and equipment and the financial management of federal funds.

Operational Compliance Procedures

The operational compliance program was designed and developed to ensure that the DoD STARBASE academies adhere to the DoDI requirements as well as administrative directions and reporting requirements. The program is reviewed and adjusted annually based on OASD/M&RA guidelines and is comprised of three progressive levels of program and organizational performance. Each level has a prescribed set of activities that range from obtaining adherence to basic DoDI requirements, procedures and full installation of program delivery (Level I); to obtaining desirable operating outcomes, key planning strategies, and managerial efficiencies (Level II); and lastly, to exhibit advanced strategic program linkages and downstream relationships for promoting a continuum of student skills and abilities in STEM-related activities (Level III). The following sections outline details of the performance assessment system.

For each DoD STARBASE location, the assessment system requires the attainment of each of the objectives at each level and their maintenance and sustainability over time to retain their status level. Performance level is determined through site visitations, academy reporting requirements, and periodic surveys using detailed criteria that is established and reviewed annually by OASD/M&RA and the STARBASE evaluation team. Shortfalls or non-compliance in required activities are usually handled through a corrective action plan agreed upon by the participants and OASD/M&RA. In most cases, these corrective action plans are short-term and successfully obtained. The attainment of the performance level under review is held in abeyance until the corrective action requirements are completed and verified.

The assessment system ensures that the academy can only advance to higher levels of performance after it successfully attains a positive assessment at the prior level (i.e., an academy must meet all required activities at Level I before it can claim any activities at Level II, and so on). While an academy program could move toward and complete an activity at another level, the program would not be reviewed for acceptance until the prior level had been successfully achieved.

The successful attainment of these levels of performance provides OASD/M&RA and the military service representatives a way to determine the efficacy of the program. The system also distinguishes and identifies those locations that operate at higher levels of performance to their sponsors and participant groups, the local community, the target group of students, the school systems, and military sponsors.

The DoDI directs the locations on operational requirements such as the number of classes, classroom hours, student numbers, target student population, participant eligibility, program site location, staffing models, core curriculum, and reporting requirements.

Performance Level Descriptions

LEVEL I: THE BASIC/FULLY OPERATING LOCATION

Level I criteria includes all DoDI requirements and operating guidelines stipulated by OASD/M&RA. This incorporates required program activities such as student numbers, classroom hours, installation of core curriculum content, military-installation program delivery, emphasis on target student population, required documentation (i.e., MOU's, student participation forms, etc.), reporting requirements, and a number of administrative responsibilities such as employee evaluations, building accessibility, student assessments, visiting teacher surveys, etc.

LEVEL II: THE ADVANCED PERFORMING LOCATION

The second level of performance requires attainment of Level I status and success with a set of defined operational, planning, and managerial upgrades, fiscal program operations, and the successful installation and maintenance of a DoD STARBASE Advanced program. These are organizational and administrative requirements set up by OASD/M&RA to obtain program delivery efficiencies and operational effectiveness.

These requirements include: program enhancements; STEM program inventories and an assessment of potential fit that enhances student participation in further skill development; budget management planning and review; public relations planning; personnel management plans; equipment status assessment; "children-at-risk" review; staff development/personnel plans; transfer of leadership plans (i.e., succession plans); resource management manuals; and several other considerations that upgrade program management and operating performance.

LEVEL III: THE HIGH PERFORMING LOCATION

Academies must achieve Level I and II status levels before they can be assessed at Level III. Level III requires maintenance of Level I and II for two evaluation cycles (six years) and the development of an activity, or set of activities, that significantly advances the DoD STARBASE program vision and mission.

Operational and program enhancements, higher-level problem-solving techniques, time-sensitive improvements, and efficiencies in operations could be included in the assessment of Level III activities if they are of significant magnitude. High priority activities are those that promote the welfare and STEM skill/abilities of the student population, demonstrate program sustainability, provide transportability to other locations, and have the ability to be installed and operable within an 18-to-24-month period.

The validation of the program's installation and sustainability, as well as the operational potential for transportability, is reviewed by the evaluation team for approval by OASD/M&RA.

Each of the above performance levels are reviewed on an ongoing basis for location-wide application, appropriate-level designation, the typical period in which they can be successfully attained, and the ability for downstream sustainability. As collaborations and newly established operations are introduced, the academy performance level review process is expected to be refined and expanded.

"One of the consistently best news stories of our organization is DoD STARBASE Idaho. As the public affairs officer for the Idaho Military Division, it's always a pleasure to inform our elected leaders and stakeholders about DoD STARBASE accomplishments and to see the interest that this program generates throughout the community. Providing these kids with STEM opportunities at this age helps ensure their future success. I know my own child's STARBASE experience sparked excitement and an interest in STEM he otherwise may have missed out on. It was a thrill seeing his excitement while taking part in the program last summer. He loved it!"

- LT COL CHRISTOPHER BORDERS, IDNG PUBLIC AFFAIRS OFFICER, STARBASE IDAHO

OPERATIONAL COMPLIANCE

During FY 2022, 22 of the 30 scheduled visitations focused primarily on Level I compliance. This included Director Launch Training (DLT), three initial Level I evaluations, and one Level I follow-up visit. In addition, there were 11 periodic combined Level I/II evaluations, one Level I/II follow-up, one Level II evaluation, and four Level III recertification visits. STARBASE MCAS Beaufort was permanently closed, and a scheduled evaluation at STARBASE Kansas City was postponed because of director turnover.

Program Directors at newly established academies (or new DoD STARBASE Directors at existing sites) will attend Director Launch Training (DLT) or receive an orientation visit to outline DoDI requirements. In either case, the director and staff are briefed and provided information along with reference materials on best practices, testing administration, reporting schedules, documentation, performance expectations, resource management, training, and other operational protocols. This time is also used to answer any questions and concerns the staff and sponsors may have. No rating is given for DLT or orientation visits; instead, each is followed up with a full Level I program evaluation the following year. A group DLT was conducted in January 2022 for 13 Program Directors.[26]

The Level I visit is conducted on a three-year cycle, regardless of performance level, to confirm basic compliance with program requirements. This visit involves a two-to-three-day review of program operations, documents, audits, fiscal reports, classroom observation, and structured interviews with staff, school administration, sponsor groups, not-for-profit board members (if appropriate), and members from other participant groups. At the conclusion of the visit, a meeting is conducted with the commanding officer hosting the program and the DoD STARBASE director to review the preliminary results of the compliance visit and to discuss if any corrective action is required. A plan of action is developed, and a schedule for completion is mutually agreed upon. A written report is then sent to the OASD/M&RA program manager upon completion of the visit. OASD/M&RA forwards

[26] DLT was provided for directors from CA - STARBASE Sacramento, CA - STARBASE Vandenberg, CO - STARBASE Peterson, FL - STARBASE Central Florida and STARBASE Pensacola, GU - STARBASE Guam, HI - STARBASE Hawaii, KS - STARBASE Wichita, NH - STARBASE New Hampshire, NV - STARBASE Henderson, STARBASE High Sierra and STARBASE Nellis, and OK - STARBASE Tulsa.

the report to the director and host command leadership/commanding officer and may discuss the key points of the report with them. A written summary of progress, made by the DoD STARBASE director, is sent to OASD/M&RA as corrective action tasks are completed, and in some instances, a follow-up visit is recommended for the following year by the evaluation team to document that corrective action has been taken and to provide assistance in obtaining Level I performance.

Overall, the non-compliant activities most commonly noted are administrative/technical in nature. They include lack of timely responses to periodic and required reporting schedules; lack of local financial and property audits within the required three-year period and/or documented requests by the academy to have them conducted by the appropriate local base agency; incomplete documentation; and incomplete implementation of the core curriculum. Given the number and scope of activities, the number of incidents is small and involves only a few academies. During FY 2022, some locations faced challenges in obtaining student numbers, hours of instruction, audit schedules and completions, and meeting reporting requirements in a timely fashion. However, even with overall operations impacted by pandemic-related program restrictions, most locations met compliance requirements or had an approved exception-to-policy on file.

Level II visitations build upon Level I program responsibilities and also include evaluation of any DoD STARBASE Advanced program activities. If a location has a STARBASE Advanced program, the evaluator attends and observes a club meeting, interviews school staff, and mentors and examines the execution/recordkeeping of the program in accordance with compliance guidelines. An orientation to the purpose and establishment of a STARBASE Advanced program is provided for those fully compliant Level I programs who have not yet started any advanced activities.

Four STARBASE locations were recertified as Level III programs: GA - STARBASE Robins, LA - STARBASE Louisiana, NM - STARBASE New Mexico, and OH - STARBASE Wright-Patt.

Past academy performance for all other DoD STARBASE locations will continue to be reviewed on an annual basis to determine future eligibility for Level III consideration/designation.

Resource Management Compliance Procedures

During FY 2022, OASD/M&RA introduced Property Management site visits for STARBASE programs in order to review compliance with policies and procedures related to property management and how each program accounts for their equipment. This was the beginning of a more in-depth Resource Management Evaluation process which was expanded in the later part of FY 22 to include all the fiscal responsibilities and requirements related to the STARBASE program. This included review of FY expenditures to evaluate compliance with fiscal regulations and the execution of each location's annual budget.

The Department of Defense service component (Army, Air Force, Air Force Reserve, Space Force, Navy, Air National Guard, and Army National Guard), governing fiscal documents and resource management procedures are vastly different in some instances. As such, the financial section of the Resource Management Checklist is broken down into two sections – National Guard (Cooperative Agreements) and Active/Reserve Programs, which allows the evaluation to center in on the pertinent requirements of the host service component.

RESOURCE MANAGEMENT COMPLIANCE

During FY 2022, 22 existing STARBASE programs and 4 new programs were visited. Visitations at existing sites centered on their current property management practices, some financial management aspects of their program, and how they could be improved. At the new STARBASE sites, the Resource Management team members trained the directors and their staff on proper procedures and related documentation. All locations were found to be compliant with the Resource Management checklist.

Air Force Research Laboratory (AFRL) New Mexico STEM Academy

PARTNERSHIP AT KIRTLAND AIR FORCE BASE JOINS STARBASE NEW MEXICO AND THE AIR FORCE RESEARCH LABORATORY K-12 STEM ACADEMY INTO STEM POWERHOUSE

DoD STARBASE New Mexico (NM), which opened in 2003 is co-located with the Air Force Research Laboratory (AFRL) New Mexico STEM Academy on Kirtland Air Force Base (AFB) in Albuquerque, NM. The AFRL sponsors the STEM Academy which, for over the past 20 years, has provided a variety of K-12 STEM educational outreach programs and activities across the entire state of New Mexico. Their common goals aim to attract students from diverse backgrounds to participate in STEM-based curriculum, involve STEM professionals in outreach activities, and ultimately increase the STEM workforce pool for military and civilian careers, making for a great partnership.

Through collaboration with the STEM Academy, STARBASE NM supports local and national STEM community events including AFRL's Super STEM Saturday, the NM Science Fiesta, and the Big Brothers Big Sisters Discovery Festival. Additionally, STARBASE NM assists with the culminating events for the AFRL NM STEM Academy mission: Mission to Mars Link-Up Day, TECH Mission Rocket Launch, Robotics Challenge Expo, and STEM Challenge Symposium. Together they have increased their overall community impact and developed solid leadership reputations in the delivery of high-quality STEM outreach opportunities.

The AFRL STEM Academy, in turn, provides STARBASE NM special access to a variety of unique and high-tech resources. These include state-of-the art equipment and programs like 3-D printers, laser cutters, coding and robotics platforms, a STEM Demo Lending Library, and much more. This allows STARBASE staff members to develop new skills and keep up with current technologies without increasing costs to the program. Students who have graduated from STARBASE NM learn firsthand how to continue their STEM journey via the many additional STEM opportunities available to them through the AFRL NM STEM Academy. In addition, the partnership facilitates interaction between staff members from both programs where they can share ideas, skills, and knowledge to broaden their impact on students.

With the help of an extensive and diverse pool of volunteers from Kirtland AFB, this strong community partnership has helped increase participant awareness and interest in both STEM content and STEM careers.

Staff members from STARBASE New Mexico partner with the AFRL New Mexico STEM Academy annual Mission to Mars event.

A STARBASE NM summer camp participant uses an electric human gyroscope from the AFRL NM STEM Academy Lending Library.

With the help of an extensive and diverse pool of volunteers from Kirtland AFB, this strong community partnership has helped increase participant awareness and interest in both STEM content and careers. Many volunteers participate in both programs through the support of STEM Academy community outreach events, while also volunteering at STARBASE NM as coaches for the STARBASE 2.0 after-school programs or as guest classroom speakers. Interacting with volunteer scientists, engineers, and military personnel presents an opportunity for students to explore both civilian and military careers, and in general, to see themselves as members of the future STEM workforce.

The urgent need to improve STEM skills among U.S. students is completely understood in New Mexico. Future careers will require STEM skills and a STEM education to develop the basic analytical, problem-solving, and critical thinking skills required for academic achievement and workforce readiness in the 21st century. Collaborations like these, as well as those with other local, state, and national STEM programs are critical to keeping the STEM pipeline open, attracting students from diverse backgrounds, and improving the overall STEM ecosystem. The STARBASE NM and AFRL STEM Academy partnership is dedicated to creating and preparing future STEM leaders for the benefit of local and state communities and the overall advancement of innovation for the United States and territories.

Interacting with volunteer scientists, engineers, and military personnel presents an opportunity for students to explore both civilian and military careers, and in general, to see themselves as members of the future STEM workforce.

REPRESENTATIVE LETTER OF SUPPORT

REPRESENTATIVE BOB DETTMER,
MINNESOTA HOUSE OF REPRESENTATIVES

The Minnesota State Legislature and STARBASE Minnesota, Inc. have a long, enduring partnership that spans nearly two decades, and it is one that has significantly advanced STEM education in the state. It has been my honor and privilege to be a member of the MN State Legislature and of the STARBASE Minnesota Board of Directors that has helped educate and inspire over 82,000 Minnesota youth of the Twin Cities and Duluth regions. Over the past two years, an additional 65,000 5th grade students and their teachers benefited from the development and dissemination of STARBASE STEM kits throughout the State of Minnesota.

I was a member of the Minnesota Legislature for 16 years, representing District 39A up until my recent retirement. I also served 25 years in the U.S. Army Reserves, was deployed for Operations Enduring Freedom and Iraqi Freedom, and was a teacher and coach for 34 years. I have twin sons who are West Point Academy graduates proudly serving their country for over 23 years. Suffice it to say, I understand the compelling reasons—even necessity—for STARBASE to exist and be located on military installations. It creates a completely unique and captivating learning environment that motivates students, along with a way for the military to engage with its communities, to volunteer, support, and be positive role models.

"It creates a completely unique and captivating learning environment that motivates students, along with a way for the military to engage with its communities, to volunteer, support, and be positive role models."

- REPRESENTATIVE BOB DETTMER

While at STARBASE, students can experience STEM by conducting the work of real scientists and engineers, by designing and testing 3D-printed prototypes and utilizing technologies like robotics, virtual and augmented reality. The State of Minnesota's future is stronger with these growing minds and skill sets of students who will become our state's future innovators, leaders, and citizens. STARBASE Minnesota STEM kits have extended the reach to the many thousands of other students and teachers who are unable to participate in on-site STARBASE 5-day programs due to limitations in capacity or geographic proximity. The "Destination Mars" STEM kits, contain over 20 hours of hands-on STEM lessons, student mission logs, teacher guides, and all the necessary materials and supplies packed for each student in an orange Mars Survival Team backpack. A companion website of over 60 mission and instructional videos, which is free to the schools, is the next best thing to being there.

One of the highlights of my tenure in the legislature was to author a bill that brought both political parties together and resulted in funding for STARBASE through the Minnesota Department of Education. This partnership has strengthened and expanded STEM opportunities for thousands of Minnesota youth and created a brighter future for our state.

Fiscal Analysis

A congressional appropriation to the Department of Defense (DoD) funds the operation of DoD STARBASE. The Office of the Assistant Secretary of Defense for Manpower and Reserve Affairs (M&RA) oversees the program and distributes funding. In FY 2022, the total program budget was $42,000,000, an increase from the $40,000,000 allocated in FY 2021. This increase funded the start-up of four new program sites and allowed several existing programs to add classroom capacity, upgrade classroom technology, add staff, and make other program improvements. During FY 2022, OASD/M&RA allocated $40,826,773 to program operations. The remainder of the appropriation was used for assessment activities, staff development, training, and overall program design and development activities.

In FY 2022, the median operating cost per location was $460,996. Several factors contribute to the cost variances, including geographic location, number of operational classrooms, type and number of supplementary programs, salary scales, and number of employees. OASD/M&RA annually reviews each location's budget to maintain an equitable distribution of funds.

The operation of simultaneous classrooms requires duplicate equipment, supplies, and staff. Many DoD STARBASE locations offset these expenses by sharing equipment between classrooms. These offsets keep staff costs down to an average of 76 percent of their operating budget. Operating costs per operational classrooms are shown in Table 10.

Table 10: Operating Costs Per Classroom

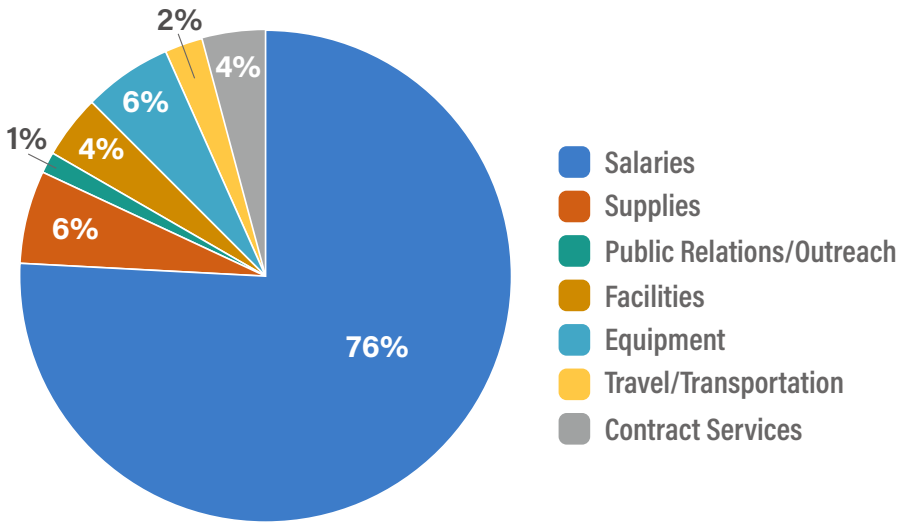
Classrooms	Median	Average Staff Costs
1	$405,000	$293,869
2	$475,186	$368,997
3	$644,000	$544,023
4	$697,100	$559,018

"I loved DoD STARBASE! It made me realize that you shouldn't judge anything by the way it sounds if you haven't tried it, because it might turn out to be more fun than what you expected. I also learned new things and got to do stuff that I didn't think I could. I never imagined that I could accomplish what I did at DoD STARBASE. I think DoD STARBASE is the best and most exciting place to be at. If I grew up and was successful, and DoD STARBASE was still running, I would sponsor and provide money so they could get more items and more kids could come to DoD STARBASE and experience what I got to."

- SHINY SIZZLER, STUDENT AT CANYON LAKE ELEMENTARY, ATTENDING STARBASE RAPID CITY

Overall expenditures of DoD STARBASE funds allocated to each program site are shown in Figure 2. Staff costs on average, account for 76 percent of the site budget followed by equipment (6 percent), supplies (6 percent), and contract services (4 percent). Also shown are costs for facilities at four percent. Travel/transportation was two percent and public relations expenditures was one percent. Travel and transportation costs are for staff business travel.

Figure 2: FY 2022 Expenditures of DoD Funds



In addition to DoD funds, 28 of the 81 locations obtained funding from non-DoD sources such as state allocations, grants, and donations. The total raised from non-DoD funding for FY 2022 was $1,720,437, with the majority coming from state funds and grants at 45 and 41 percent, respectively. Academies used supplemental funding for supplies (62 percent); equipment (11 percent); staff salaries (9 percent); facilities/furnishings (7 percent); contract services (5 percent); public relations/outreach (4 percent); and transportation/travel (3 percent).

DoD STARBASE GRADUATES
WHERE ARE THEY NOW?

LETTER OF SUPPORT FROM DOD STARBASE GRADUATE
GRETCHEN NOBLE

"...STARBASE Rapid City opened the door to what would end up being one of the most important STEM opportunities of my life."
- GRETCHEN NOBLE

My love for STEM started in my sixth-grade science classroom. My science teacher, Mr. Jesus Garcia, played a NOVA video that explained the vastness of the galaxy and just how small we are. I was immediately hooked, and I began my own research about space and stars that day after school. For the longest time, I was dead set on becoming an astronomer, astrophysicist, or theoretical physicist because of my love for space and stars, and the engineering profession had never even crossed my mind. This all changed two years later in 2018, my eighth-grade year, when I heard about this after-school program called STARBASE South Dakota - Rapid City. I initially joined because of the name, but little did I know that I would soon be exposed to the world of engineering and that it would completely change my career and life. I can't believe how much I learned about engineering and the design process just from modeling and racing a CO_2 car I designed myself. I also frequently think back to what I could have improved upon if we had even one redesign.

In addition to teaching me a lot about engineering, STARBASE Rapid City opened the door to what would end up being one of the most important STEM opportunities of my life. It introduced me to the FIRST Robotics team, Rapid Acceleration. I was already thinking about how cool building this CO_2 car was, but seeing this high school team with their big robot only solidified my interest in STEM and engineering. I joined that robotics team, and later became the team captain because of STARBASE Rapid City.

That robotics team only continued to help me get more opportunities. My teammates encouraged me to pursue a research opportunity with NASA my sophomore year of high school that I would have otherwise been too scared to do. Fast forward almost three years, and I am proud to say that the effort I put in as a high schooler is going to result in a publication of a scientific paper. The same robotics team also got me an engineering internship as a recently graduated high schooler with VRC Metal Systems. I am incredibly blessed to already have an ongoing internship as a freshman in college.

I am currently attending South Dakota School of Mines and Technology and plan to get a master's in mechanical engineering and go on to use my degree to help people. In the future, I hope to work within the defense department, either at a national lab or federal agency. My future may not be set in stone. I do know that if I hadn't joined the program at STARBASE Rapid City, I would not be anywhere near where I am right now in life. I am forever grateful for the opportunities it provided me, both directly and indirectly.

Many thanks,
GRETCHEN NOBLE

Student Assessment

OVERVIEW

The effectiveness of the DoD STARBASE program in sparking the 5th-graders' interest in STEM is evaluated each school year by measuring changes in STEM-related knowledge and attitudes of students who attend a DoD STARBASE Academy. This evidence-based approach utilizes a time-series research design to look for significant improvements over baseline inclinations after going to STARBASE. An online questionnaire gathers student answers and background facts privately.

The questionnaire assesses students' takeaways from STARBASE in terms of:

- Knowledge questions that measure STEM conceptual understanding,
- Attitudes about STEM topics (e.g., subjects, applications, personal mastery),
- Interest in STEM careers, both military and civilian, and
- Opinions about the military (e.g., military personnel, jobs, and locations).

EVALUATION METHODOLOGY

ASSESSMENT ADMINISTRATION

- *Students completed the questionnaire online under the supervision of STARBASE instructors.*
- *Students completed the questionnaire twice, first at the start of their 25 hours of instruction (pre-program) and again at the end of their experience (post-program), to evaluate the effect of STARBASE participation on their STEM understanding and related attitudes.*

STEM KNOWLEDGE MEASUREMENT

The knowledge section of the questionnaire consisted of 21 multiple-choice STEM problems reflecting domains of the approved STARBASE STEM curriculum for 2021-2022. An additional "choose all that apply" item sampled student awareness of STEM relevance to 20 kinds of jobs.

- Curriculum areas are Science, Technology, Engineering, and Mathematics. The Science domain includes subcategories of Motion and Force, Characteristic Properties, and Science Fundamentals.
- Scores for the multiple-choice problems were computed as: the percentage correct of all 21 questions for a total score and on subsets of questions within each curriculum area. This approach was taken in order to facilitate comparisons across previous years' results because of changes in the number of items.
- A "gap" score was determined by subtracting the pre-program assessment value (i.e., percentage) from the post-program value obtained by each student and then averaging across the entire sample.

STEM ATTITUDES MEASUREMENT

The attitude survey portion of the questionnaire consisted of 22 core statements about student views on STEM topics and careers, and also perceptions of the military. Students rated their opinion of each one on a Likert-type scale from 1 *(Strongly Disagree)* to 5 *(Strongly Agree)*. An additional five items assessed student attitudes of STARBASE upon completion of the program.

- A total score of overall STEM interest measure was created by summing each student's ratings for the 22 core items and dividing the sum by the overall number of items to get a mean rating value.
- Total scores were averaged across students to obtain the mean total score of the sample on overall STEM interest for both the pre-program and post-program analyses.
- For the post-program assessment only, five extra evaluation items surveyed student impressions about STARBASE.
- Five reliable dimensions of students' attitudes and interests related to STEM were derived from their questionnaire responses using statistical modeling techniques. Table 11 describes these student STEM interest dimensions at a general level.

Table 11: Measurement Dimensions of STEM Attitudinal Survey

Measurement Dimension	Definition	Number of Items[27]
STEM Concept Awareness	Recognition of the value of STEM in everyday life, in solving problems, improving life.	9
Science Confidence	A positive view of one's capacity for learning science.	3
STEM Interest & Motivation	Appreciation for and enjoyment of STEM.	6
STARBASE Program Evaluation	Positive rating of the impact of the STARBASE program on learning about STEM.	7
Military Setting Endorsement	Positive impressions about military facilities and the range of work done by people in the military.	2

"I am very grateful that I was given the privilege to attend DoD STARBASE Hill. I have already heard my classmates talking about how much fun it is. They even learned about some jobs that they might want to do in the future, like engineer, baker, perfume artist, explosion scientist, Air Force, and chemist, and that's only the beginning."

- ASYA SCOFIELD, STUDENT AT SOUTH CLEARFIELD ELEMENTARY SCHOOL, ATTENDING STARBASE HILL, UTAH

[27] The total number of items is 27 because the STARBASE Program Evaluation scale includes five statements used only in the post-program assessment in addition to the 22 statements presented both times.

STUDY SAMPLE

This year, the STARBASE student assessment was administered between January and May. The assessment was administered online twice to participating classes of students (pre-program and post-program) at each participating academy to gauge program impact. All locations assessed at least one class as requested. Some locations assessed two or more classes.

- Students attended one of 69 active STARBASE Academies, which were capable of hosting classes onsite for the full 25-hour program, out of 78 programs distributed nationwide.
- The participating academies are sponsored by one of six DoD components across the U.S., as shown in Figures 3 and 4 below by region or sponsor.[28]
- 3,798 completed, pre- and post-program records were matched for 1,889 students that served as the sample for analysis.

Figure 3: Student Sample by Region

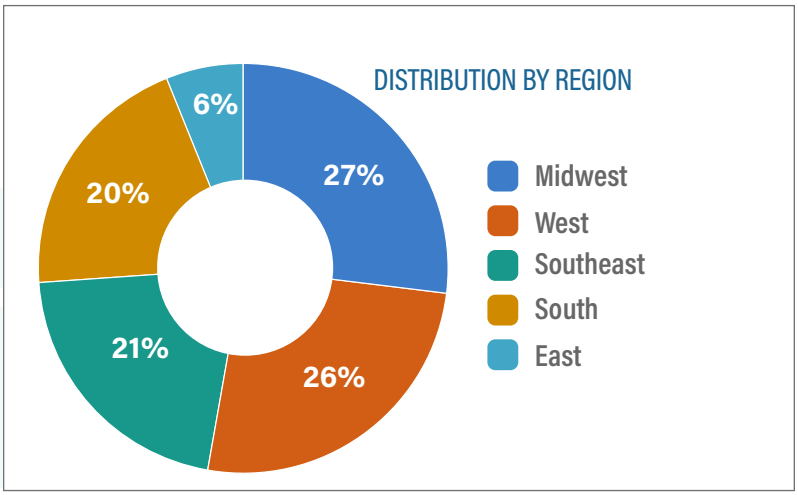
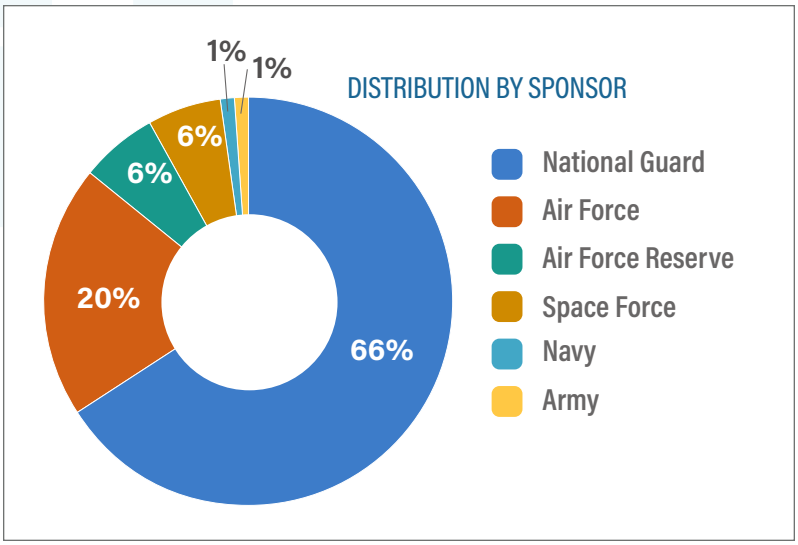


Figure 4: Student Sample by DoD Component



[28] The Marine Corps components were not able to participate during 2021-2022.

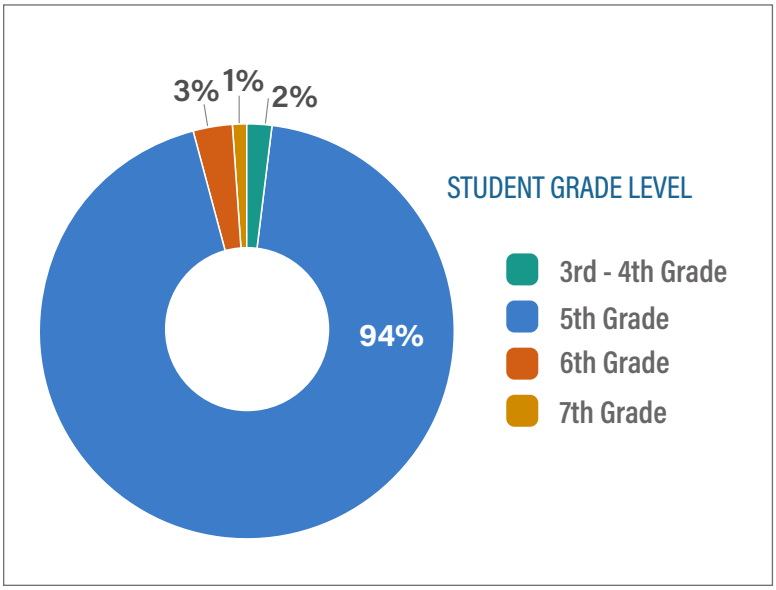
STUDENT SAMPLE SNAPSHOT

Students who attended STARBASE in person and completed the questionnaire both before and after participation appear reasonably like students assessed in previous years.

- A very large majority of the students, 94 percent, were 5th-graders, which is the program's target population (see Figure 5).
- 50 percent of students with matched assessment records were girls and 50 percent were boys.
- More than half (54 percent) of participating students reported they had heard of STARBASE before finding out that they would be attending.
- About 38 percent reported they had not met any military personnel before attending DoD STARBASE.
- Approximately 21 percent of the students reported their parent or guardian as being in the military.
- Half of the students (50 percent) reported they knew someone who attended STARBASE before them.

These aspects of the students' prior experience with military personnel and knowledge about STARBASE suggest that DoD STARBASE continues to reach out to the general communities of 5th-grade students in the vicinity of each academy.

Figure 5: Percentages of Students Participating in the DoD STARBASE Program



"Over the past six years, I have been a regular presenter to both school year DoD STARBASE sessions as well as the summer academies. Detroit Sector Border Patrol's participation in the DoD STARBASE programs is a great addition to our normal community outreach efforts. It is awesome to see how excited the students get about the technology that we share with them. I really enjoy the interaction with the students, and they always ask insightful questions. Almost every session, I get a question that adults I give the same presentation to would never think of asking. I look forward to continuing our partnership with DoD STARBASE and helping to further the students' STEM knowledge."

- OPERATIONS OFFICER GEOFF RAMER, US BORDER PATROL DETROIT SECTOR, STARBASE ONE

STEM KNOWLEDGE PERFORMANCE

STARBASE IMPACT ON STEM PERFORMANCE

- *Gap scores of the total score as well as all five STEM knowledge curriculum area scores showed significant increases in the post-program test after attending STARBASE.*
- *Total STEM knowledge scores went up by 16 percent on average (mean gap score = +15.8 percent).*
- *Scores in the Engineering curriculum area increased by about 26 percent on average (Engineering mean gap score = +25.8 percent).*
- *The Science domain showed a score improvement of 17 percent on average (mean gap score = +16.9 percent).*
- *Technology scores increased by approximately 11 percent on average, while Mathematics increased by 8 percent (Technology mean gap score = 10.7 percent; Mathematics mean gap score =8.1 percent). Yet students registered the highest pre-program score on Mathematics (62.2 percent) and the second highest pre-program score on Technology (51.6 percent). These findings suggest that students were fairly knowledgeable already in the two areas when they arrived.*

GENDER COMPARISON ON STEM PERFORMANCE

Total STEM knowledge scores were examined for girls and boys before and after their participation at STARBASE. Individual student gap scores were computed and averaged by gender for comparison.

- Total STEM knowledge scores increased significantly for both girls and boys from pre- to post-program assessment (mean gap score = +16.19 percent for girls and +14.24 percent for boys).
- At the same time, the difference in gap scores of girls and boys on the total STEM score was significant, as girls scored about half a point lower than boys on the post-program score.

These results demonstrate that girls and boys benefited equally in their understanding of STEM concepts from attending DoD STARBASE.

MILITARY EXPOSURE COMPARISON ON STEM PERFORMANCE

Students' total STEM knowledge was compared according to whether they had met military people before attending STARBASE.

- Students who previously met military people had significantly higher total knowledge scores, both prior to and after the program, than students who did not know military people before.
- Both groups made significant gains in STEM knowledge, which indicates that the STARBASE program impacted performance of students with no previous exposure to military people.

RECOGNITION OF STEM-RELATED JOBS

A nomination question in the STEM knowledge section asks, "*Who uses science, technology, engineering, and math concepts in their jobs?*" for 20 diverse jobs (e.g., firefighter, mechanic, plumber).

- The number of jobs nominated as STEM-related increased by 34 percent pre- to post-program, which is statistically significant.
- Students were most likely to identify a mechanic, construction worker, and camera operator as using STEM concepts in their work.
- Jobs that rose the most were firefighter (+22 percent) and cook (+21 percent).

"I have worked with the Georgia National Guard's DoD STARBASE Program for many years. It's been a great honor and pleasure to be associated with it, and as I near retirement, I know it will be one of the highlights of my career that I will miss the most. It is an exceptional, effective, positive, and highly motivating program for all the students fortunate enough to go through it."

- CW4 KEN DYSON, CHIEF MEDIVAC INSTRUCTOR, PILOT GANG, PEACH STATE STARBASE

STEM ATTITUDES

STARBASE IMPACT ON STEM ATTITUDES

- The post-program total score increased significantly over the pre-program total score, from 4.10 to 4.26. This is on par with the absolute amount of change seen in recent years for STARBASE, which has typically been on the order of +.10 - +.20. The mean values are approximately 1.5 points lower than in past years due to changing the survey to a 5-point response scale from a 7-point scale. The mean values were converted to percentage values of the highest attainable response favorability (5.0) to facilitate comparability of scores across years. The relative percentage of change this year is +3.2 percent, which is in line with the gains observed during 2018-2021.
- The top two rated attitudinal statements by students both pre- and post-program are:
  (1) *I like doing science experiments.*
  (2) *I will remember enjoying my time at DoD STARBASE.*
- The five STEM-related attitudes that showed the greatest increase in favorability by students from pre-program to post-program assessment are:
  (1) *I am good at science (+7.71 percent).*
  (2) *Engineers help solve challenging problems (+6.94 percent).*
  (3) *Learning about science is easy for me (+6.07 percent).*
  (4) *A lot of people who work for the military use science, technology, engineering, or mathematics (+5.78 percent).*
  (5) *When I finish school, I would like to get a job that has something to do with science, technology, engineering, or mathematics (+5.32 percent).*
- Overall, 100 percent of the survey attitude statements increased in favorability, and 20 (91 percent) statements yielded ratings that were significantly more favorable on average at the post-program than at pre-program assessment.
- Two attitude dimensions that showed the most positive shift between pre- and post-program are *Science Confidence* and *STEM Concept Awareness*. All attitude dimensions reflected significant increases.

These results demonstrate that STARBASE promotes confidence in students, particularly in science, with a growing interest in STEM-related careers. At the same time, attitudes about all aspects of STEM improved after attending STARBASE as well. For example, students became more interested in STEM for solving problems and identified its importance with the contributions of engineers and scientists to making life better for everyone. The results also show that STARBASE promotes more awareness among students that military personnel perform a variety of jobs using STEM principles.

GENDER COMPARISON ON STEM ATTITUDES

Attitudes and interests of girls and boys toward STEM and STARBASE were compared on the overall total scores for both pre- and post-program, responses to specific statements in the post-program questionnaire, and on five broader attitudinal scales.

- There were significant differences between the attitudes of girls and boys about STEM and STARBASE on 67 percent of the post-program survey statements.
- Boys displayed significantly more positive attitudes than girls on 16 statements regarding:
  - Liking and learning about science, technology, engineering, and mathematics,
  - Being good at math and finding it useful for engineering and technology, and
  - Wanting a STEM-related job.
- Girls expressed significantly more positive attitudes than boys on two statements relating to:
  - Finding STARBASE is not boring and wanting to tell friends to attend STARBASE.
- Boys were significantly higher in their *STEM Interest* and *Motivation, Science Confidence, STEM Concept Awareness,* and *Military Setting Endorsement* attitudinal dimensions than girls on the post-program measurement.
- Though the total score of boys on STEM interests and attitudes was significantly higher than for girls at the end of STARBASE participation, as well as at the beginning, the gap score for girls was higher than for boys at the end of the program. In addition, the post-program mean for girls exceeded the pre-program mean for boys. These results suggest that STARBASE helps girls develop increased favorable attitudes toward STEM that bring them to a point where boys are at the start of the program within a matter of a few days.

MILITARY EXPOSURE COMPARISON ON STEM ATTITUDES

- Students who met military people before going to STARBASE expressed significantly more favorable attitudes about STEM, both prior to and after the program, than students who had no previous interactions with military people.
- This was borne out by significant differences on 64 percent of the core survey statements at both points of assessment, including greater appreciation for math, liking engineering, doing science experiments, learning how technology works, working at military bases, and STEM.

RELATIONS OF STEM ATTITUDES TO STEM KNOWLEDGE

Student scores on measurement scales of the five STEM attitudinal dimensions were correlated to STEM knowledge total score. This analysis was performed by correlating pre-program attitudes with 1) pre-program knowledge; 2) post-program knowledge; and 3) pre- to post-program knowledge gap. Additionally, post-program attitudes were correlated with post-program knowledge. Results of the analysis shown in Table 12 determined that:

- The *STEM Concept Awareness* dimension is the most strongly-related attitudinal indicator of STEM knowledge, both pre- and post-STARBASE, with all correlations significantly positive (i.e., **higher** attitude scores = **higher** knowledge scores).
- The *Science Confidence* attitudinal dimension is the second strongest indicator of STEM knowledge total score pre- and post-STARBASE.
- Student *STEM Interest and Motivation* attitudes are also related significantly to STEM knowledge total score pre- and post-program at a more moderate level.
- Post-program *STARBASE Program Evaluation* and Military Setting Endorsement scores are slightly but significantly related to post-program STEM knowledge scores, also in a positive direction. Pre-program *Military Setting Endorsement* is also slightly but significantly related to pre-program STEM total knowledge scores.

"DoD STARBASE was really fun! I learned to work with my team, and we got along pretty well. Working with the satellite station in the CAD program was really fun, and I like how mine turned out. I am really excited to launch our rockets! I wish DoD STARBASE was longer, but I guess not everything stays forever."

- STUDENT AT INTEGRATED ARTS ACADEMY, ATTENDING STARBASE SOUTH BURLINGTON

Table 12: Correlations of Pre/Post Attitudinal Dimension Scores with Pre/Post Knowledge Scores

Attitude Dimension	Pre-Program Attitude with Pre-Program Knowledge	Pre-Program Attitude with Post-Program Knowledge	Post-Program Attitude with Post-Program Knowledge	Pre-Program Attitude with Pre- to Post-Program Knowledge Gap Scores
STEM Concept Awareness	.32***	.31***	.33***	.08**
Science Confidence	.22***	.24***	.25***	.08**
STEM Interest and Motivation	.16**	.16***	.18***	.08**
Military Setting Endorsement	.06**	.02	.05*	-.02
STARBASE Program Evaluation	.03	.04	.08**	.04

** p < .05; ** p < .01; ***p < .0011*

The relationships identified between student attitudes about STEM and student STEM knowledge improvements at multiple levels of analysis demonstrate the important role of student interest and motivation in driving STEM performance outcomes.

CONCLUSION

The STARBASE program met its major goals successfully in 2022 as evidenced by analytics performed on the student assessment of STEM-related knowledge and attitudes before and after attending the program:

1. Program attendance produced significant gains in students' overall understanding of STEM concepts as demonstrated by their pre- and post-program knowledge test performance, as well as in each of the STARBASE STEM curriculum areas.
2. Participation in the program resulted in significant gains in students' attitudes toward science, technology, engineering, and mathematics as demonstrated by their pre- and post-program attitudinal survey responses. The strongest improvements occurred in attitudinal areas related to Science Confidence and STEM Concept Awareness. The enhanced favorable attitudes are likely to encourage students to learn more about STEM topics throughout their academic careers.

The STARBASE program also supported the DoD's community outreach objectives by creating favorable impressions among many students of the military and of the STEM nature of many jobs held by people who work for the DoD and the military.

Overall, many students completed the program with better STEM knowledge, greater awareness of STEM importance, and more interest in STEM-related careers. This broader appreciation should help stimulate their continued school learning about STEM principles, applications, and career opportunities.

STARBASE Kelly Builds Key Partnerships Through STEM Ecosystem

Launched in Denver, CO in 2015 at an international global conference, the STEM Learning Ecosystem is a Global Community of Practice with extensive sharing of resources and expertise among leaders from education, business, industry, non-profits, philanthropy, and others.

One hundred communities selected from across the world formed a global Community of Practice, including San Antonio, TX, home to STARBASE Kelly. In the past, individual organizations once did the endless and exhausting work of finding, planning, and seeking out partners for events, looking for natural allies within local or regional school systems. Now, their STEM Ecosystems provide the network, contacts, and opportunities in an easy-to-utilize database of calendars, resources, and points of contact. In 2018, STARBASE Kelly joined the "Alamo STEM Ecosystem" and have extended their reach to include local student and school participants, specifically by forging their main attending school district Southwest ISD (SWISD), into the Ecosystem's Chief Science Officer Program.

STARBASE Kelly Deputy Director, Valerie Acosta, was chosen as the mentor to induct the first ever group of SWISD students into the program, which elects one female and one male from several campuses to serve and represent their school at meetings with other students from all over the city.

A different project is assigned each year and during Acosta's time as a mentor, the 5th-grade students from Elm Creek Elementary, a STARBASE Kelly school, were tasked to plan, design, and execute a STEM Open House at their campus to infuse 21st-century skills, STEM-mindedness, and begin growing a love of STEM in their communities. Participants heard from different community stakeholders, collaborated with other students from varying backgrounds, and problem-solved their way to the execution of the successful event that the STARBASE Kelly staff proudly attended.

Students from Southwest ISD (SWISD) participating in the Alamo STEM Ecosystem Chief Science Officer Program. STARBASE Kelly mentored the first group of SWISD students who were asked to join the program.

The main idea behind a STEM Ecosystem is to provide a network of collaborators, and the Alamo STEM Ecosystem does just that. STARBASE Kelly has been privileged to be a part of so many opportunities over the years because of the regular meetings, mail-outs, and connections from the Alamo STEM Ecosystem. The San Antonio aviation community has even mirrored the Ecosystem setup and created an additional network of aviation-minded organizations, which includes STARBASE Kelly, called the San Antonio Aviation Pipeline. STARBASE Kelly has provided

programs for campus STEM Nights, community college STEM events, neighborhood community events, partnered with speakers, connected to local industry partners, and strengthened existing partnerships, all because of the ecosystem concept.

STARBASE Kelly looks forward to being part of the upcoming Educator Conference and all of the new and exciting ways that they can continue their growth, while celebrating the growth of all partners within the collaborative network. The true beneficiaries, however, are not the partners themselves, but the community of children whose horizons have been broadened and brightened by the collective impact of the Alamo STEM Ecosystem.

AvPipeline Event: The Alamo STEM Ecosystem connects numerous San Antonio business, industry, and non-profit partners. STARBASE Kelly, the City of San Antonio, and Valero are all part of the group working to provide a mobile flight simulator to educational partners in town.

Neighborhood Event: STARBASE Kelly attended the Edgewood ISD Neighborhood National Night Out Event because of a connection to the Dee Howard Foundation. This connection was made possible by their partnership in the Alamo STEM Ecosystem.

DoD STARBASE GRADUATES WHERE ARE THEY NOW?

LETTER OF SUPPORT FROM DOD STARBASE GRADUATE

KAYLEE BOGART

As a child growing up in rural Kansas, my opportunities to try new things were limited. During my 5th-grade year at Concordia Middle School, I was given the opportunity to go to STARBASE in Salina, Kansas. I grew up on our family farm, we raised crops and cattle, and I loved everything about it. I participated in 4-H, and this is where I got my love for teaching the younger generation, however after making our trips to STARBASE my 5th grade year, I was hooked on science and engineering. After completing STARBASE, I knew that I wanted to teach science to kids. I wanted to give them the same feeling of wonder, curiosity, and achievement that I had felt when I was in school. I also remember my teachers at STARBASE to be high energy, engaging individuals that always kept learning fun. I had no idea how to fly a plane, but I had all of the confidence in the world when it was my turn to try out the flight simulator during one of our sessions. That was all due to the learning and support I got from my instructors.

After deciding teaching was the career path I wanted to pursue, I went to Fort Hays State University and graduated with an elementary education degree. I then was able to come back home to rural Concordia, Kansas and begin teaching 5th grade at my alma mater. I would be teaching science, and I was excited to introduce my students to the world of possibilities. This was also my first year going back to STARBASE, but now in a new role as the teacher. I told my students of my memories of STARBASE years ago, and I was excited to share this experience with them.

My time at STARBASE looked a little different as we did a few activities that we no longer do when I now take my 5th-grade classes. I remember having a test on the military alphabet (which I still remember today) and using flight simulators. I have enjoyed seeing how much the program has grown with new technology, robots, and STEM activities. My students learn so many valuable skills during our five days, some of which would not be possible in my classroom. Teamwork, coding, and communication are just a few skills that STARBASE helps instill in students.

"After completing STARBASE, I knew that I wanted to teach science to kids. I wanted to give them the same feeling of wonder, curiosity, and achievement that I had felt when I was in school."

- KAYLEE BOGART

I know that I would not be sitting in my own classroom, teaching my students science, engineering, and other STEM subjects if it had not been for my time at STARBASE. This program left a huge impact on me as a 5th-grader, and I know that it is a wonderful opportunity for my 5th-graders today!

DOD STARBASE 2022 HIGHLIGHTS

STARBASE Robins and Fort Valley State University Partner to Prep Future STEM Teachers in Georgia

STARBASE Robins collaborated with Fort Valley State University to initiate their Academy of Future Teachers (AFT). The Academy invites Middle Georgia's bright, talented, and diverse high school students to explore a career in teaching math and science. AFT is a hybrid STEM program designed to prepare young scholars from surrounding high schools to be future teachers or STEM professionals. The major goal of the program is for participants to design and implement effective lessons in an educational environment.

Fort Valley State University AFT spotlights the professional and academic skills educators need, with practical skills every student and future STEM educator can use in the classroom. The AFT participants get hands-on, practical teaching experience. Fort Valley State University's AFT program began last summer with students meeting virtually and STARBASE Robins serving on their advisory panel. This summer, the students met in person with the STARBASE Robins instructional team to receive consultation on their lesson planning and delivery.

The Academy of Future Teachers program, co-directed by Ms. Jessica Jefferson and Dr. Rebecca McMullen, allowed young scholars to visit STARBASE Robins where they learned skills to develop lesson plans used to teach third, fourth, and 5th-grade students at partner schools. Participants showcased their lesson planning on engineering, physical science, and chemistry. AFT participants attended workshops on social-emotional and mental health, physical health and wellness, diversity and inclusion, computer programming, financial literacy, public speaking, effective pedagogy, and art.

Learning to Teach STEM – STARBASE Robins staff members work with Academy of Future Teacher participants to develop STEM lesson plans and activities.

Scholars invited to this year's AFT program came from seven rural school districts. Fifty students registered and 30 percent attended in person daily for two weeks and received stipends. They will return to campus for the Induction Ceremony in November 2022 and be honored as AFT ambassadors.

Fort Valley State University Academy of Future Teacher program participants at STARBASE Robins.

This partnership is a great way to allow future teachers to use STEM to meet real-world challenges by utilizing essential pedagogy and differentiated teaching. With this partnership, STARBASE Robins and Fort Valley State University's College of Education are building a strong STEM teacher pipeline.

"DoD STARBASE Swamp Fox has been an integral part of our STEM Instructional program. Our 5th-grade students look forward to this awesome, hands-on program. DoD STARBASE impresses our students to the point that many celebration speeches often include DoD STARBASE as their 'favorite' activity of the year. DoD STARBASE touches the lives of our 5th-graders in so many ways. It is interesting to see how many students remember their 'call signs' many years after they leave us. We have been so fortunate to have this opportunity and look forward to the continued experience."

- DR. MARY KAY NORTON, PRINCIPAL AT HIGH HILLS ELEMENTARY SCHOOL, ATTENDING STARBASE SWAMP FOX

Participating Teacher Survey

OVERVIEW

Each school year, classroom teachers who attend a DoD STARBASE Academy with their students are asked to complete an online survey to share their opinions about the STARBASE program.

- The DoD STARBASE Teacher Survey is one component of a multimethod evaluation strategy designed to gauge program impact, goal attainment, and value to stakeholders.
- Teachers completed the 66-item survey on or after the final day of the DoD STARBASE program session they attended.
- The survey measures teachers' perceived effectiveness of STARBASE in terms of:
  - Presenting STEM concepts to students,
  - Its impact on their students' interest in STEM-related learning and careers,
  - Its influence on improved personal characteristics of students in school,
  - Its influence on their own attitudes toward endorsing STEM careers in the DoD to their students and in becoming more skilled in STEM instruction, and
  - Support for the program by key stakeholders in the school ecosystem.
- Teachers use a seven-point Likert-type scale to rate STEM-relevant student attitudes and behaviors during or after STARBASE program participation.

SURVEY SAMPLE

The DoD STARBASE Teacher Survey captures feedback from teachers throughout the school year. Given the voluntary nature of answering the survey and its broad use, the sample is reasonably representative of many, if not all, of the classes and schools that attended a DoD STARBASE academy during the 2021-2022 academic year.

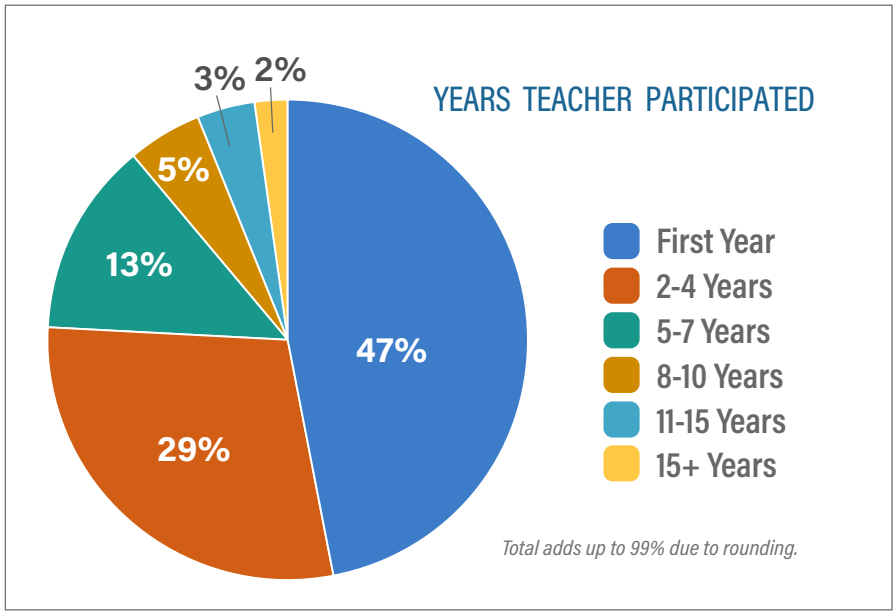
- Teachers attended one of 79 active STARBASE Academies distributed nationwide and in two U.S. territories, sponsored by one of 6 DoD components – Air Force, Air Force Reserve, Army, Navy, National Guard, and Space Force.
- During the 2021-2022 academic year, 2,805 school personnel responded to the Teacher Survey from August 2021 until June 2022, of which 97 percent were classroom teachers. This is an increase from 1,294 respondents in the 2020-2021 academic year where 93 percent were classroom teachers.

TEACHER SNAPSHOT

Respondents to the DoD STARBASE Teacher Survey appear fairly similar to public school elementary teachers in the U.S. in regard to their teaching experience. The most recent data that is available on elementary school teachers, reported by the *National Center for Education Statistics* in 2017-2018, found 63 percent of all public school teachers had 10 years or more of experience and 28 percent had 3-9 years of experience, while nine percent had fewer than three years of teaching experience.

- In this sample, 53 percent of responding teachers have taught more than 10 years, 25 percent have been teaching for 5-10 years, and 14 percent have 2-4 years of experience teaching.
  - Eight percent of respondents indicated this is their first year of teaching; thus, at least 222 new teachers were exposed to DoD STARBASE this past year.
- In addition, 85 percent of respondents report that their college major and/or minor was not in a STEM-related area. These teachers are about evenly divided in being very/quite confident (51 percent) or fairly/somewhat confident (47 percent) in teaching STEM topics to students, but two percent of them admit to being not at all confident.
- Teachers who have attended STARBASE previously (53 percent) were asked a series of questions about its impact on student outcomes they observed afterward.
- Importantly, there were 1,321 teachers, or 47 percent of the sample, that attended STARBASE for the first time. These teachers bring a fresh perspective to the evaluation of the program, many of whom gave suggestions for improvements to STARBASE in an open-ended comment question. Mostly, these concern class management, adaptive learning and accessibility, advance teacher notice, follow-up materials, or scheduling.

Figure 6: Number of Years Attending the DoD STARBASE Programs



STUDENT IMPACTS

STIMULATING STEM INTEREST

- *Teachers commonly report that students gain an improved understanding of science by attending DoD STARBASE (mean rating = 6.72).*
- *Teachers also indicate more interest from students in learning about technology (mean rating = 6.48) and science (mean rating = 6.41) after participating in STARBASE.*
- *Teachers view DoD STARBASE as helping students better appreciate how math can be applied to a variety of situations (mean rating = 6.38).*
- *Most teachers observe that students also show an increased interest in learning about engineering (mean rating = 6.18) and mathematics (mean rating = 5.79).*

POST-PROGRAM IMPACT

Teachers with at least one year of prior experience at DoD STARBASE also rated the beneficial impacts they noticed after students have had a DoD STARBASE experience. The means for the post-program impacts are presented by Table 13 in rank order. Students talking about STARBASE long after it has ended is once again the highest rated post-program impact this time, perhaps because it is the easiest outcome for teachers to observe.

While most of the item means closely approximated magnitudes and rankings from 2021, teacher reports of better student understanding of how STEM skills and abilities fit job requirements for certain fields showed the largest absolute gain (+.08) year over year. Conversely, teachers reported better school attendance by students had the biggest absolute decrease from 2021 (-.22). Perception of better student performance on standardized state assessments also reflected a small decrease from the large improvement that was seen in 2021 (-.07).

Table 13: Teacher Mean Ratings for Post-STARBASE Student STEM Behavior Impact

Post-Program Impact Item	2021 Mean	2022 Mean
The students talk about DoD STARBASE long after the program has ended.	6.56	6.50
Attending DoD STARBASE helps students understand better how STEM skills/abilities fit job requirements for certain career fields.	6.36	6.44
DoD STARBASE helps to improve cooperative learning in the classroom even after the program ends.	6.15	6.19
After DoD STARBASE, students are more interested in using computers for class-related learning activities.	6.10	6.08
Attending DoD STARBASE helps students link their experience to careers in both military and non-military positions.	6.05	6.06
After the DoD STARBASE program, students ask more questions about technology.	5.96	5.93
Students that have attended DoD STARBASE seem to perform better on standardized state assessments.	5.82	5.75
After DoD STARBASE attendance, there is increased participation in STEAM and other STEM-related challenge programs (e.g., FIRST LEGO League, Odyssey of the Mind, The American Rocket Challenge, etc.).	5.53	5.47
After DoD STARBASE, students have better school attendance.	5.30	5.80

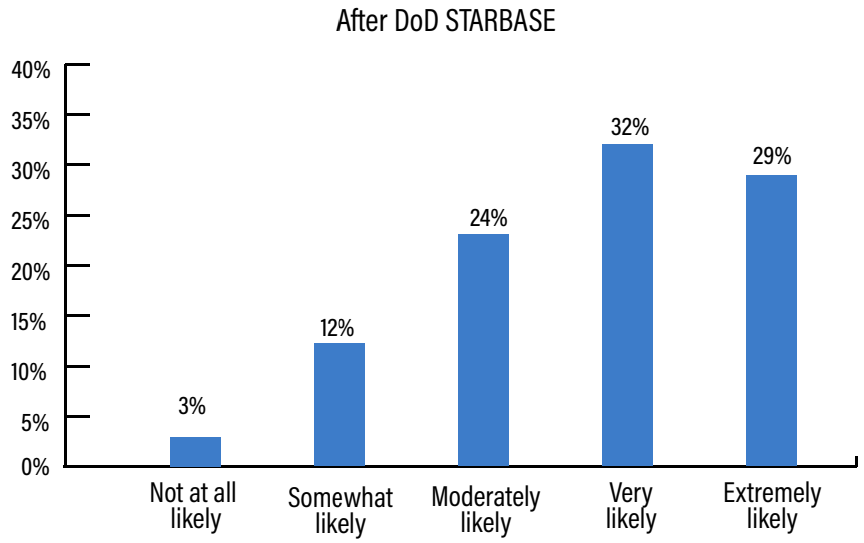
TEACHER IMPACTS

For teachers, attending STARBASE has some meaningful impacts on their perspectives.

- *91 percent of teachers attending STARBASE for the first time agree that the DoD STARBASE experience has influenced them to become more skilled in STEM instruction.*
- *81 percent (N = 1,068) of teachers who attend STARBASE for the first time report becoming more aware of DoD STEM career opportunities (both military and civilian).*
- *These first-time teachers also indicated how likely they are to recommend the DoD or the military as a career option after attending a DoD STARBASE program.*
  - Results show that 61 percent of the teachers are Extremely or Very Likely to recommend military or DoD civilian careers after participating in STARBASE for the first time.

Figure 7 displays the level of endorsement based on the percentage of responses within each of the response categories.

Figure 7: Likeliness to Recommend DoD or Military Career Options After Attending DoD STARBASE



"DoD STARBASE is a great way to help students become aware of their many options for careers in the future, as well as getting the chance to work with the types of technology they don't normally get to use. Some of our students don't even have access to iPads or tablets. It's nice for them to get to see them in a more purposeful way than just games."

- AMBER SQUIRES, EDUCATOR AT OAKDALE ELEMENTARY SCHOOL, ATTENDING STARBASE SALINA

SCHOOL IMPACTS

- *Nearly all responding teachers (99.2 percent) say they will recommend DoD STARBASE to colleagues.*
- *Nine out of ten teachers (90.2 percent) say that DoD STARBASE provided information about how the STARBASE curriculum relates to state education standards.*
- *A large proportion (88.7 percent) also say they will use DoD STARBASE materials in their classroom.*

The DoD STARBASE program influences students and teachers, yet also impacts the school system as well, both formally and informally. As part of the Teacher Survey, teachers shared their knowledge of specific practices based on their participation in the program. Table 14 provides the pattern of results in favorable responses to six items for this year and last year. These data show how DoD STARBASE impacts the school environment and classroom STEM-related activities.

Table 14: DoD STARBASE Impact on the School System

Item	Positive (Yes) Responses	Positive (Yes) Responses
Current Item	**2021**	**2022**
Is there formal communication from your school that raises community awareness of the DoD STARBASE program (e.g., letters to parents, overview at parent open house meetings, etc.)?	60.0%	59.2%
Will you recommend DoD STARBASE to other teachers, principals, or school educators/administrators?	99.6%	99.2%
To the best of your knowledge, did your DoD STARBASE provide you and/or your school with information about how STARBASE curriculum is related to your state education standards?	92.6%	90.2%
In your view, does the DoD STARBASE curriculum help you reach your state education standards?	87.3%	86.9%
Do you or will you use DOD STARBASE materials/applications in your own classroom?	89.7%	88.7%
Do you or will you use DoD STARBASE take-home activities beyond your classroom?	69.3%	65.7%

SCHOOL SUPPORT

- *Teachers responding to the survey agree strongly (mean rating = 6.93) that their school will attend DoD STARBASE again next year.*
- *The teachers agree strongly (mean rating = 6.41) that parents are enthusiastic about their students attending DoD STARBASE.*
- *Teachers are also very favorably disposed (mean rating = 6.34) toward receiving more STEM supplemental teaching materials from DoD STARBASE to use in their classrooms.*

Program support includes support and advocacy of DoD STARBASE by teachers themselves, as well as the resources and support provided to the teachers in the school environment. Table 15 presents mean values on the 7-point rating scale of teacher responses to five items that reflect school and community support. A school's plan to continue participation in the DoD STARBASE program next year (mean rating = 6.93) indicates that participating schools perceive value from having students attend the program. Additionally, it is evident that parents are delighted their children are participating (mean rating = 6.41), and that principals are strong advocates for the program as well (mean rating = 6.02).

> *"The foundation of the DoD STARBASE program is the excellent teaching. The instructors use effective methods to engage the students throughout the entire program and are skilled at maintaining that high level of instruction with a diverse population of students. As a father of a child entering a STEM-related career path, I can attest to the impact this program makes on students in both the short and long term. I could not be more pleased with the DoD STARBASE Program."*
>
> - RYAN FAULK, EDUCATOR AT RIVERVIEW ELEMENTARY SCHOOL, ATTENDING STARBASE GREAT FALLS

Table 15: Program Support Attitudes Ranked from Most to Least Favorable

	Mean
My school plans to participate in the DoD STARBASE program again next year.	6.93
Parents are delighted that their children are participating in DoD STARBASE.	6.41
I would like more DoD STARBASE supplemental resources to take back to my classroom.	6.34
I plan to incorporate DoD STARBASE teaching techniques into my daily classroom activities.	6.16
My principal is a strong advocate of DoD STARBASE.	6.02

TEACHER ATTITUDINAL RATINGS

STARBASE ATTITUDES

Teachers rated 38 attitudinal items in the survey on a 7-point Likert scale from Disagree (1) to Agree (7) based on their experience with the DoD STARBASE program. Nine items relate to changes in student behavior *after* attending STARBASE. Therefore, teachers in their first year of attending DoD STARBASE were not asked these items. Instead, they were asked two other questions related to how DoD STARBASE affected their awareness of military and non-military jobs in the DoD, and their likelihood of recommending these career options to students.

Survey findings show that most responding teachers embrace the STARBASE program. This is evidenced by favorable attitudes and overall high approval ratings of DoD STARBASE.

- *All the rating factors showed mean averaged ratings well above the rating scale midpoint of 4, which indicates overall favorable ratings of STARBASE impact.*
- *Teachers gave relatively higher mean ratings for the impact of STARBASE on students' grasp of STEM concepts (mean rating = 6.33 on a scale of 1 to 7) and for STEM education resources provided to teachers (mean rating = 6.34).*
- *They gave relatively lower mean ratings for STARBASE impact on students' future STEM career planning (mean rating = 5.80) and on teachers' perceptions of students' opinions about military personnel and DoD STEM career options (mean rating = 5.8*6).

The 38 items were combined into an Overall Index[29] to reflect teachers' own attitudes and their perception of students' reactions as a result of STARBASE program participation, such as:

- Grasping and enjoying the STEM curriculum content,
- Displaying confidence and motivation in classroom settings, and
- Planning for future goals and careers in STEM-related fields.

The Overall Index is calculated as a composite average of responses given by a teacher to the 38 items. **The mean rating of the Overall Index for all teacher respondents in 2022 is 6.10**. The Overall Index value indicates strong favorability of responding teachers toward DoD STARBASE's influence on them and on their students as a whole.

The attitudinal items were grouped into rational behavioral areas based upon data analytic methods. Measures of participant engagement and student outcomes were also created to evaluate broader impacts of STARBASE. Table 16 presents brief descriptions of the seven areas and mean rating values on the 7-point scale for the total sample.

Consistent with the Overall Index rating, teachers responded favorably across all engagement topics. The most favorable responses this year (presented in rank order) occur in the areas of: Program Support, STEM Concepts, and Student Confidence.

[29] For teachers in their first year, the Overall Index included 26 items.

Table 16: Teacher Survey Overall Index Rating by Engagement Areas

Measurement Area	Definition	Mean Rating
Program Support	Support and resources provided to the teachers	6.34
STEM Concepts	Students' interest in and understanding of STEM concepts	6.33
Confidence	Students' confidence in their abilities and capabilities	6.18
Behavioral-Motivational	Teachers' views of positive student behaviors as a result of STARBASE participation	6.13
Teamwork	Students working with and supporting each other	6.05
Military and Career	Teachers' personal opinions on military career options and their perceptions of student opinions on same	5.86
Future Planning	Students seeing future possibilities and opportunities in STEM fields	5.80

The analyses also examined the outcomes of DoD STARBASE on student STEM and academic motivation beyond the immediate effects of attendance. The Post-Program Impact scale uses responses to nine items completed by those teachers who have more than one year of experience with the DoD STARBASE program (N = 1,484). Items included a broad range of post-program measures including students' interest in STEM topics, their career choice options, performance on state tests, and participation in STEM-related activities. The mean rating of Post-Program STARBASE impact by experienced teachers is a realistic 5.98 on the 7-point scale.

CONCLUSION

The DoD STARBASE program enables 5th-grade students to link STEM concepts to real-world applications and their future. Their teachers report that participation in this DoD program appears to create excitement within the students about their careers and future potential. Specifically, teachers attending the DoD STARBASE program report that the students[30]:

- Have an improved understanding of science (mean rating = 6.72).
- Have an improved appreciation of how math applies to situations (mean rating = 6.38).
- Have more interest in learning technology (mean rating = 6.48) and more interest in learning science (mean rating = 6.41).
- Understand better how STEM skills/abilities fit job requirements for certain career fields (mean rating = 6.44).

Based on analyses of the teacher survey and review of teacher comments, it is clear that teachers value the DoD STARBASE program's ability to provide awareness of and hands-on experience in STEM concepts. The survey data reveals that about 89 percent of all respondents say they plan to incorporate DoD STARBASE techniques in their classrooms, and 61 percent of first-time participants are "Extremely Likely" or "Very Likely" to suggest military or civilian career opportunities to their students. These results strongly suggest that many teachers will continue to support the mission of DoD STARBASE by introducing their students to STEM-related activities and potentially to DoD career paths.

[30] Likert scale based on response options from 1 (Disagree) to 7 (Agree).

EDUCATOR LETTER OF SUPPORT
PAULINE MILLS, EdD

> "In all my years as an educator, I have never witnessed such a powerful program to generate motivation and accelerate learning."
>
> - Pauline Mills, EdD

The DoD STARBASE program is a magnificent STEM experience for all students and a moral imperative for students from less-advantaged backgrounds. Our lower socioeconomic students cannot close the achievement gap until we close the opportunity gap. STARBASE Henderson, which recently opened in Nevada, provides students with real-world, authentic STEM experiences with rich and impactful opportunities that they urgently need to give them an equitable education and 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, prepare our students for the real world, and become successful and productive citizens. The STARBASE program opens up new horizons and great possibilities for their future careers with rigorous and relevant tasks that build grit and persistence mirroring the engineering design process. My students felt like real 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 needs to expand. The value of the program has far-reaching implications. This is 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 definitely the way of the future. Our kids are depending on you!

Continued thanks,

PAULINE MILLS, EdD
Principal (Retired), Bunker Elementary
Clark County School District
Henderson, NV

EDUCATOR SUPPORT

REBECCA NOWAK GIMENEZ

SCHOOL SCIENCE COORDINATOR ENSURES MILWAUKEE PUBLIC SCHOOL STUDENTS GET TO STARBASE

During the 2021-2022 school year, a severe bus driver shortage within the Milwaukee Public School (MPS) district initially made it look like they would not be able to attend STARBASE Milwaukee. "Nothing can be done," said school officials. "We simply don't have the drivers."

Science Coordinator, Rebecca Nowak-Gimenez, knew what STARBASE meant to MPS students and their entire district, which is the largest and most at-risk district in the state of Wisconsin. Normally her job is to champion the STARBASE program with MPS by coordinating and scheduling all the schools that attend STARBASE Wisconsin. This year, she took on an additional role—how to find a way to get MPS students to STARBASE.

Rebecca Nowak-Gimenez, Milwaukee Public Schools Science Coordinator

In addition to the shortage of drivers, pandemic protocols reduced the number of students allowed on each individual bus, which resulted in a change in bussing tiers. Nowak-Gimenez collaborated with members of the MPS science team, and together, they met with the MPS transportation team to brainstorm solutions for the 2022-23 school year. The solution required thinking outside of the box, and together the science/transportation team found a new bus company that could commit to earlier student pick-up times, therefore eliminating the need for the local bus company to wait until all students in MPS were dropped off at their primary school before students could be transported to STARBASE. They also took a comprehensive look at the participating schools and school locations, making adjustments to the bus and STARBASE schedule to have northern and southern schools participate on the same day, thereby increasing the reliability of bus availability.

Nowak-Gimenez knew how important STARBASE participation was to the students of the MPS district and went above and beyond her normal science coordinator duties to make things happen. In some cases, it takes a village to move mountains, and in this case, it took the science coordinator's deep belief in the benefit of STARBASE Wisconsin and the creative collaboration of the MPS transportation team to ensure local students did not miss their opportunity to excel. In fact, increased participation by MPS through this effort has allowed STARBASE Wisconsin to add a third classroom to accommodate the demand and spread more STEM education across the city of Milwaukee.

DoD STARBASE
A Department of Defense Youth Program

2022

Locations Directory

ALABAMA

MONTGOMERY

STARBASE Maxwell, Established 2004
SERVICE COMPONENT: Air Force
MILITARY LOCATION: Maxwell Air Force Base
CLASSROOMS AUTHORIZED: 4

SCHOOL DISTRICTS SERVED

Alabama Christian Academy
Elmore County Public Schools
DoDEA Southeast Region
Montgomery Public Schools

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

Montgomery Education Foundation

STARBASE Maxwell, located at Maxwell Air Force Base in Montgomery, Alabama, has been educating students since 2004. STARBASE Maxwell is sponsored by the 42nd Air Base Wing (ABW). Along with the support of personnel from the 42nd ABW, Air University, and the local community, STARBASE Maxwell continuously provides hands-on STEM education to the students in the River Region. Working with Montgomery, Autauga, and Elmore counties, STARBASE Maxwell is looking to serve even more schools as they expand from four to five classrooms in the 2022-2023 school year.

During the past year, COVID-19 initially imposed several challenges that STARBASE Maxwell had to overcome. Once the Health Protection Condition (HPCON) was reduced below B+, STARBASE Maxwell ramped up to 30 students in our 4-academy model and during one week in May, conducted a 5-academy model with 30 students in each classroom. As a direct result, STARBASE Maxwell graduated 1,700+ students through the 25-hour curriculum, ran 10 STARBASE 2.0 after-school programs, and hosted multiple summer camps and other supplemental programs that served an additional 201 students. STARBASE Maxwell looks forward to a "normal" 2022-2023 school year where students can fully engage in the wonderful STEM world from the entire River Region.

CONTACT INFORMATION

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ARIZONA

TUCSON

STARBASE Arizona, Established 2006
SERVICE COMPONENT: Air Force
MILITARY LOCATION: Davis-Monthan Air Force Base
CLASSROOMS AUTHORIZED: 1

SCHOOL DISTRICTS SERVED

Amphitheater Unified School District
Tucson Unified School District
Vail Unified School District

Since 2006, Davis-Monthan Air Force Base has been the home to STARBASE Arizona. The city of Tucson is known for stellar sunsets, hot temperatures, and of course, the mighty A-10. Despite a few hurdles COVID handed their way, STARBASE Arizona was proud to have provided mind-engaging STEM instruction in their classroom to nearly 800 students from three school districts. A fall and summer camp were also implemented for military dependents. This particular year was groundbreaking, as STARBASE Arizona piloted the STARBASE Advanced 2.0 Program in two middle schools!

The relationship their program has with the military community continues to be unwavering. Not only did personnel come to the classroom to brief students on their careers and how each one relates to STEM, but they also opened up their squadrons and hosted tours for each class who attended the program. One student voiced how he did not know there were so many different career fields and how STEM is used each and every day.

The reward of seeing the students engage in STARBASE with such excitement has been priceless for the dedicated STARBASE Arizona staff. They strive for STARBASE Arizona students to be successful and reach for the unreachable.

CONTACT INFORMATION

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ARKANSAS

JACKSON

STARBASE Arkansas, Established 2022
SERVICE COMPONENT: Air Force
MILITARY LOCATION: Little Rock Air Force Base
CLASSROOMS AUTHORIZED: 2

SCHOOL DISTRICTS SERVED

Beebe School District
Cabot Public Schools
Jacksonville North Pulaski School District
Little Rock School District
North Little Rock School District
Pulaski County Special School District
Vilonia School District

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

Forge Institute

STARBASE Arkansas is sponsored by the 19th Airlift Wing located at Little Rock AFB and powered by the Forge Institute, a local non-profit supported by the State of Arkansas. The program had its start with a STEM festival on Little Rock AFB showcasing how airmen and soldiers use STEM daily to complete their mission. Eight units, including one from the National Guard Bureau's Professional Education Center at Camp Robinson, came together to demonstrate advanced STEM equipment used in missions for students. More than 400 students from central Arkansas were in attendance, with school administrators receiving a first look at the campus and classrooms.

The program launched on October 31, 2022, with a focus on inspiring students in central Arkansas. STARBASE Arkansas has prioritized building partnerships on military installations and within the local community. The program conducts outreach events with the Arkansas Regional Innovation Hub, and a collaboration with the Museum of Discovery (Arkansas' STEM Center) is currently in progress. Through purposeful collaboration, STARBASE Arkansas can achieve the shared goal of encouraging youth to reach their full potential.

STARBASE Arkansas is a significant component of the state's goal of developing a trusted workforce pipeline to meet the future demand for technology-based careers within the state.

CONTACT INFORMATION

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CALIFORNIA

EDWARDS

STARBASE Edwards, Established 2019
SERVICE COMPONENT: Air Force
MILITARY LOCATION: Edwards Air Force Base
CLASSROOMS AUTHORIZED: 1

SCHOOL DISTRICTS SERVED

Eastside School District
Lancaster School District
Mojave Unified School District
Muroc School District
Palmdale School District
Southern Kern Unified School District
Tehachapi Unified School District

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

STARBASE Edwards, Inc.

In FY21, STARBASE Edwards launched and piloted a STARBASE Advanced 2.0 after-school program dedicated to supporting girls from Eastern Kern County called Mighty in STEM Sisters (MiSS). The mission of the program was to inspire and enhance STEM engagement among girls from traditionally underserved populations, including military-connected students. Through an inclusive STEM program (Rocketry and Aerospace Education), STEM outreach partnerships and mentors from all segments of society will empower students to be innovative, competitive, and accelerate change. The pilot program was a success. Based on the pre- and post-rocketry assessment data, there was a significant improvement in knowledge by 37 percent of students.

STARBASE Edward's basic program was also a success. They were able to host 34 classes from 13 schools and graduate 985 students. In April 2022, STARBASE Edwards launched their first STEMposium event in which they collaborated with various mission partners such as NASA, Bakersfield College, 412th FSS, 812th CES/CED, and many other organizations to enrich and expose their community to DoD STARBASE Edwards STEM initiatives.

DoD STARBASE EDWARDS

CONTACT INFORMATION

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CALIFORNIA

LOMPOC

STARBASE Vandenberg, Established 2020
SERVICE COMPONENT: Space Force
MILITARY LOCATION: Vandenberg Space Force Base
CLASSROOMS AUTHORIZED: 2

SCHOOL DISTRICTS SERVED

College Elementary School District
Lompoc Unified School District
Manzanita Public Charter School
Santa Maria Bonita School District
Vandenberg Homeschool Group

STARBASE Vandenberg is proudly located in Central California, steps from the Pacific Ocean. Opening its doors mid-pandemic, STARBASE Vandenberg has served approximately 5000 students to date. Aside from the regular school-year STARBASE sessions, they also hosted a "Survival with STEM" Summer session and worked with Lomopoc Unified School District and the YMCA to provide STEM lessons to the summer school and after-school programs in Lompoc.

Being located on a Space Force Base gives students the unique opportunity to view launches, interact with Guardians, and to learn how STEM could be utilized for potential career opportunities. At STARBASE Vandenberg, they are looking forward to continuing to serve students in their community, securing partnerships with local businesses for added support, and expanding the area they serve to include more schools and districts from the surrounding areas.

Recently, STARBASE Vandenberg had the opportunity to welcome Congressman Salud Carbajal to tour the facilities. Congressman Carbajal also gave a graduation speech to students completing the program. Other guests of note include a helicopter pilot and mechanical engineer for Google, SpaceX, JPL, and NASA.

CONTACT INFORMATION

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CALIFORNIA

LOS ALAMITOS

STARBASE Los Alamitos, Established 2013
SERVICE COMPONENT: Army National Guard
MILITARY LOCATION: Joint Forces Training Base Los Alamitos
CLASSROOMS AUTHORIZED: 3

SCHOOL DISTRICTS SERVED

Cypress Unified School District
Fullerton Unified School District
Los Angeles Unified School District
Santa Ana Unified School District

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

STARBASE Los Alamitos State Military Nonprofit

"In the past ten years, STARBASE Los Alamitos has made a lasting impact on students of all ages." STARBASE Los Alamitos is starting to hear back from STARBASE students that are majoring in mechanical engineering in college and are obtaining their dream jobs by speaking about the team work they learned at STARBASE in their interviews. They also have a chance to watch some of their instructors that were majoring in aerospace graduate and land jobs at Boeing, Northrup, and Opti Knowledge and then come back and help their rocket teams.

The STARBASE Los Alamitos partnerships with University of Southern California and with the Army Research Lab have all been successes, and hearing both partners speak about how much they enjoyed working with them has been wonderful. Both faculty and students stated that the year they partnered with STARBASE Los Alamitos was their best year.

The fact that they have had students stay with them from 5th grade through 12th grade on their STARBASE Advanced teams and then come back and volunteer speaks for itself. They are well on their way to establishing this site as a premier STEM location in an area that is filled with STEM programs.

CONTACT INFORMATION

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CALIFORNIA

PORTERVILLE

STARBASE Porterville, Anticipated 2023

SERVICE COMPONENT: Army National Guard

MILITARY LOCATION: Porterville Youth Academy

CLASSROOMS AUTHORIZED: 1

ANTICIPATED SCHOOL DISTRICTS SERVED

Porterville Unified School District

One of two new California STARBASE programs, sponsored and administered by the California National Guard, STARBASE Porterville will aim to expose participants to technological environments, provide positive role models, nurture a network of collaborators, and build mutual goodwill within the community, all while improving STEM knowledge, critical thinking, and problem-solving skills of underserved and underrepresented fifth-grade students from Tulare County. STARBASE Porterville will also serve as an outreach program to raise STEM education awareness within Tulare County and increase interest in STEM careers. The new program will strive to be a conduit of support that promotes the talents and contributions of volunteers, teachers, parents, community leaders, civilian and Guard professionals across the state of California.

Certified instructors and full-time program staff will lead STARBASE Porterville's classroom instruction and hands-on activities. In addition, military and civilian professionals will support STARBASE Porterville voluntarily within STEM career fields, providing guest instruction, mentorship, tours, and demonstrations.

The STARBASE Porterville program will include opportunities for the professional development of teachers to assist in strengthening their STEM instructional skills. Teachers will be trained and empowered to reinforce and build upon the STARBASE curriculum within their classrooms. This training will be immersive in that educators will learn by contributing to STARBASE classroom instruction and hands-on activities. STARBASE Porterville will also offer supplementary training courses, lesson plans, and a resource library for teachers and students to promote a STEM continuum of learning.

CONTACT INFORMATION

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CALIFORNIA

SACRAMENTO

STARBASE Sacramento, Established 1994
SERVICE COMPONENT: Army National Guard
MILITARY LOCATION: Okinawa Street Armory
CLASSROOMS AUTHORIZED: 2

SCHOOL DISTRICTS SERVED

Delta Elementary Charter District
Elk Grove Unified School District
Robla Unified School District
Sacramento City Unified School District
San Juan School District

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

STARBASE Sacramento Academy, Inc.

STARBASE Sacramento has been a STEM partner in the Sacramento area for over 25 years, providing a hands-on, minds-on program that provides STEM education to all students. Located at the Okinawa Armory in Sacramento, STARBASE Sacramento offers students opportunities to see the many STEM-related military careers firsthand and learn about what it takes to become proficient within various STEM fields. This year, STARBASE Sacramento has seen over 2,000 students, with the majority coming from Title 1 schools.

CONTACT INFORMATION

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CALIFORNIA

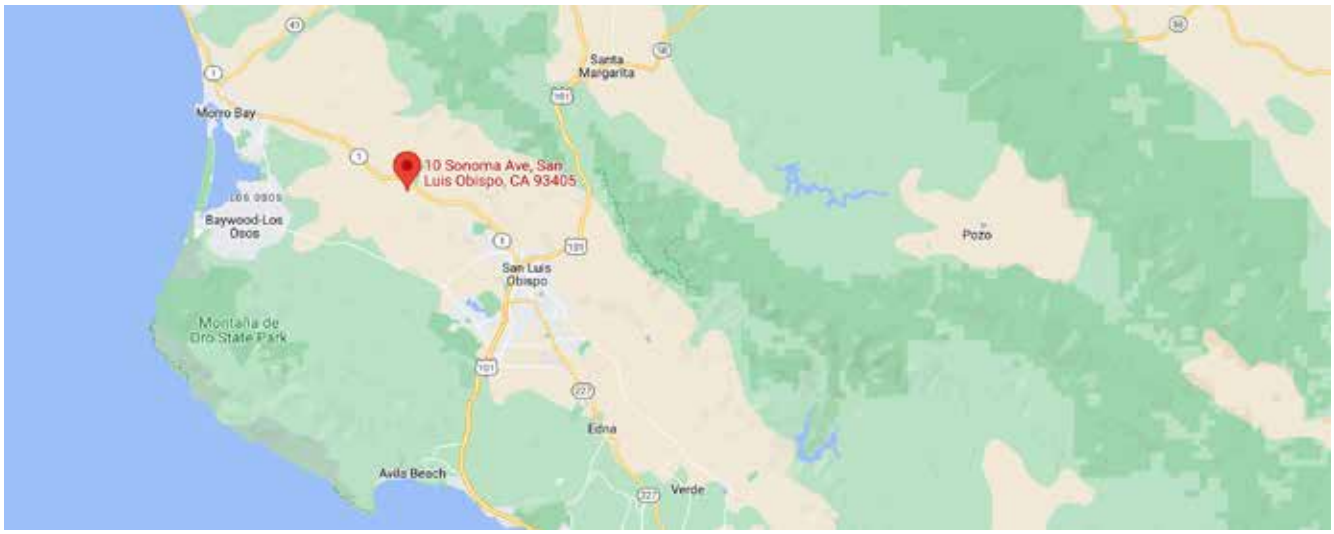
SAN LUIS OBISPO

STARBASE San Luis Obispo, Anticipated 2023

SERVICE COMPONENT: Army National Guard

MILITARY LOCATION: Camp San Luis Obispo

CLASSROOMS AUTHORIZED: 2



ANTICIPATED SCHOOL DISTRICTS SERVED

San Luis Obispo County Schools

The California National Guard (CANG) has a long and proud history of supporting the state and has maintained a healthy, positive relationship within the communities it serves. The CANG has strong and lasting bonds with the San Luis Obispo region, anchored on Camp San Luis Obispo, which is the historic home of the California National Guard.

The County of San Luis Obispo encompasses approximately 3,300 square miles and 100 miles of coastline; agriculture, tourism, and education (California Polytechnic State University) are the main industries. For these reasons, San Luis Obispo has been qualified as an ideal site for DoD STARBASE.

One of two new California STARBASE programs, sponsored and administered by the California National Guard, STARBASE San Luis Obispo, will aim to expose students to technological environments, provide positive role models, nurture a network of collaborators, and build mutual goodwill within the community, all while improving STEM knowledge, critical thinking, and problem-solving skills of underserved and underrepresented fifth-graders from community schools. STARBASE San Luis Obispo will also serve as an outreach program to raise STEM education awareness within San Luis Obispo County and increase interest in STEM careers. This new program will strive to be a conduit of support that promotes the talents and contributions of volunteers, teachers, parents, community leaders, civilian and Guard professionals across the state of California.

CONTACT INFORMATION

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COLORADO

COLORADO SPRINGS

STARBASE Peterson, Established 2014
SERVICE COMPONENT: Space Force
MILITARY LOCATION: Peterson Space Force Base
CLASSROOMS AUTHORIZED: 2

SCHOOL DISTRICTS SERVED

Calhan School District Rural Joint No. 1
Cheyenne Mountain School District 12
Colorado Charter School Institute
Colorado Springs School District 11
El Paso County Colorado School District 49
Ellicott School District 22
Fountain-Fort Carson School District 8
Harrison School District 2
Miami-Yoder Joint District 60
Peyton School District 23
Widefield School District 3
Private and Homeschool Groups

STARBASE Peterson is located on Peterson Space Force Base (SFB) in Colorado Springs. Established in 2014, STARBASE Peterson is fortunate to be located alongside U.S. Space Force, Space Operations Command, and NORAD/NORTHCOM, among other air and space defense units. Colorado Springs also is home to the United States Air Force Academy and the annual Space Symposium, attended by thousands of representatives from military and civilian space agencies and technological industry from around the world. Colorado Springs is lucky to have such major STEM influences on the local community.

STARBASE Peterson has returned to fully operational classrooms. Students participate in hands-on/minds-on lessons as well as meeting members of the base community and learning how their everyday lives are impacted by the space-based missions of the various units on Peterson SFB. Through visits to the Peterson Air and Space Museum, where docents with firsthand experience share their stories, STARBASE students learn about the history of Peterson's space-based missions. STARBASE Peterson offers a variety of summer outreach opportunities ranging from part-day STEM camps for younger elementary-age students through rocketry camps for high school students. In addition to camps, STARBASE works with other community partners through homeschool events at the local library district, STEM nights for elementary and middle schools, and other volunteer efforts that further the expansion of STEM education in the community.

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CONNECTICUT

HARTFORD

STARBASE Windsor Locks, Established 2000
SERVICE COMPONENT: Air National Guard
MILITARY LOCATION: Windsor Locks Readiness Center
CLASSROOMS AUTHORIZED: 2

SCHOOL DISTRICTS SERVED

Capital Region Education Council
East Granby Public Schools
Granby Public Schools
Hartford School District
Jumoke Academy District
Windsor Locks School District
Windsor Parochial Schools

Established in 2000, STARBASE Windsor Locks has become a mainstay in sound STEM education for a number of communities in the Greater Hartford Area. Serving nearly 15,000 students since its founding, STARBASE Windsor Locks is focused on student-centered, hands-on immersive education to engage students and teachers alike. Supported by the Connecticut Air National Guard and housed at the Windsor Locks Readiness Center, STARBASE Windsor Locks has promoted growth of the program and partnerships with groups like the CT Civil Air Patrol to further engage CT youth in STEM activities.

STARBASE Windsor Locks continues to innovate new ways of approaching student learning in and out of the classroom. Through the development of initiatives such as the YouTube Series "Ask STARBASE," STARBASE Windsor Locks is always looking for new methods of student engagement.

CONTACT INFORMATION

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CONNECTICUT

WATERBURY

STARBASE Waterbury, Established 2003
SERVICE COMPONENT: Air National Guard
MILITARY LOCATION: Naugatuck Valley Community College
CLASSROOMS AUTHORIZED: 1

SCHOOL DISTRICTS SERVED

Brass City Charter School District
Waterbury Public Schools
Independent Private Schools

Since 2003, STARBASE Waterbury has served more than 14,000 students in the Waterbury Area. Housed at Naugatuck Valley Community College, STARBASE Waterbury focuses on using an immersive, hands-on, student-centered approach to engaging youth in STEM.

STARBASE Waterbury also collaborates with groups like the CT National Guard, Groton Naval Base, and the Civil Air Patrol to bring STEM topics into the real world. STARBASE Waterbury strives to be innovative and inspiring to students and teachers alike.

Through initiatives like the YouTube Series "Ask STARBASE," STARBASE Waterbury is working to engage students as much as possible, both in and out of the classroom. STARBASE Waterbury works to empower students to take control of their educational path by stoking the fires of imagination and passion in all the students that they work with and encounter.

CONTACT INFORMATION

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FLORIDA

COCOA BEACH

STARBASE Patrick, Established 2020
SERVICE COMPONENT: Space Force
MILITARY LOCATION: Patrick Space Force Base
CLASSROOMS AUTHORIZED: 2

SCHOOL DISTRICTS SERVED

Brevard Public Schools
Osceola Public Schools

SUPPORTING NOT-FOR-PROFIT ORGANIZATIONS

The Aldrin Family Foundation
Hope Through Education

STARBASE Patrick opened in 2020 at the start of the COVID pandemic in Satellite Beach, Florida. It is affiliated with Patrick Space Force Base, home to the Space Launch Delta 45. STARBASE Patrick offers students opportunities to learn about space exploration and see and feel the ground shake from live rocket launches right off their loading dock.

With the addition of their interactive Mars room and the Space Launch Delta Command Center, STARBASE Patrick students will experience virtual reality and simulations like never before. With amazing military volunteers who excite their students and community partnerships that bring real-world applications to their fingertips, they are sure to ignite students' interest in a STEM career.

CONTACT INFORMATION

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FLORIDA

JACKSONVILLE

STARBASE Florida, Established 1994
SERVICE COMPONENT: Air National Guard
MILITARY LOCATION: Jacksonville Air National Guard Base
CLASSROOMS AUTHORIZED: 2

SCHOOL DISTRICTS SERVED

Duval County Public Schools
Independent Private Schools

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

STARBASE Florida Inc.

STARBASE Florida has been a partner with the Florida Air National Guard and the Duval County Public Schools (DCPS) for over 28 years. Located at the 125th Fighter Wing in Jacksonville, Florida, STARBASE Florida has influenced over 43,400 students across 153 schools.

As a two classroom program, the STARBASE Florida program enriches the minds of at-risk youth using STEM-based initiatives. Through the mind-blowing engineering, robotics, and science activities, DCPS, the St Augustine Diocese, and the surrounding communities see the program as a pivotal piece of their struggling schools' rise from 'Good' to 'Great' status.

CONTACT INFORMATION

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FLORIDA

ORLANDO

STARBASE Central Florida, Established 2022

SERVICE COMPONENT: Navy

MILITARY LOCATION: Naval Support Activity (NSA) Orlando

CLASSROOMS AUTHORIZED: 1

SCHOOL DISTRICTS SERVED

Orange County Public Schools

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

The National Center for Simulation

STARBASE Central Florida (SBCFL) is making its debut as an innovative STEM partner in the greater Orlando area, providing a rigorous, hands-on program that impacts students learning and attitude long after their attendance.

Located in Partnership III building shared with the Naval Air Warfare Center Training Systems Division, STARBASE Central Florida teachers and staff are eager to share the wonderful world of modeling and simulation (M&S) with fifth-grade students and their teachers. The program is designed to excite, engage, and enhance STEM education, specifically integrating content knowledge, skills, and application from a M&S workforce development perspective.

At SBCFL, students and teachers "turn their brains on" to engage in serious play challenges designed to enhance STEM knowledge, processes, and practices from multiple industry perspectives with mentorship from industry, government, and academia. The SBCFL practices a team-teach model that introduces fifth-grade teachers to authentic applications of STEM and gives them a chance to evaluate their students through observations on how well their students can apply understanding of STEM standards taught in the classroom.

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FLORIDA
PENSACOLA

STARBASE Pensacola, Established 2022
SERVICE COMPONENT: Navy
MILITARY LOCATION: Naval Air Station Pensacola
CLASSROOMS AUTHORIZED: 2

SCHOOL DISTRICTS SERVED

Escambia County School District

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

Naval Aviation Museum Foundation

STARBASE Pensacola, housed in a simulated Navy Aircraft Carrier, embarked on its journey March 1, 2022, complete with Ready Room, Joint Intel, and Operations Center. Located on NAS Pensacola and home of the U.S. Navy Blue Angels Flight Demonstration Squadron, the STARBASE Pensacola program provides an impressive, engaging, hands-on, minds-on program benefiting the underserved and underprivileged students of Northwest Florida.

Being in the "Cradle of Naval Aviation" affords the program the ability to bring STEM-related career speakers from Naval and Marine aviation, Navy medicine, and other civilian careers on and off the base. Their outreach to the Pensacola community is expanding to offer STEM assistance in the local science fairs and STEM family nights throughout the school year.

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GEORGIA

MARIETTA

Peach State STARBASE, Established 2001
SERVICE COMPONENT: Army National Guard
MILITARY LOCATION: Clay National Guard Center
CLASSROOMS AUTHORIZED: 2

SCHOOL DISTRICTS SERVED

Cobb County School District
Marietta City Schools
Independent Private School & Homeschool Groups

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

Peach State STARBASE Foundation, Inc.

Peach State STARBASE has been in operation for 21 years and has graduated over 15,000 students from both its basic STARBASE and STARBASE Advanced 2.0 programs. Through that time, they have become a highly sought-after partner in alternative STEM education among the metro Atlanta school systems. Peach State STARBASE has become particularly noted for its unique aerial robotics based STARBASE Advanced 2.0 and summer camp programs, including a popular ground and air drone training institute for participating teachers each June.

The Georgia National Guard provides superb facilities and logistical support to house these programs at the Clay National Guard Center. The Georgia Army National Guard's 78th Aviation Troop Command and 201st Regional Support Group both provide invaluable direct manpower assistance, and the U.S. Air Force Reserve's 94th Airlift Wing and its component commands have provided overwhelming assistance with both academic year and summer programs.

GEORGIA NATIONAL GUARD

CONTACT INFORMATION

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GEORGIA
SAVANNAH

STARBASE Savannah, Established 2012
SERVICE COMPONENT: Army
MILITARY LOCATION: Hunter Army Airfield
CLASSROOMS AUTHORIZED: 2

SCHOOL DISTRICTS SERVED

Candler County Public Schools
Savannah-Chatham County Public Schools

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

STARBASE Savannah Foundation

STARBASE Savannah is a program that has made young people want to learn more about science, technology, engineering, and mathematics. Some students have come into the program with a "no learn attitude," but once they enter the building and begin to participate in the activities, they can't stop talking about what they are learning.

STARBASE Savannah is located on Hunter Army Airfield and is proudly the first STARBASE on an Army installation. STARBASE Savannah has been serving local private schools and the Savannah-Chatham School district since their doors first opened in 2012. STARBASE Savannah is looking forward to their major technology upgrade in FY23 and broadening their partnerships with other local school districts and community partners.

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GEORGIA

WARNER ROBINS

STARBASE Robins, Established 1996
SERVICE COMPONENT: Air Force Reserve
MILITARY LOCATION: Warner Robins Air Force Base
CLASSROOMS AUTHORIZED: 4

SCHOOL DISTRICTS SERVED

Bibb County School District
Dooly County School System
Houston County Schools
Twiggs County Public Schools

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

Museum of Aviation Foundation

STARBASE Robins celebrated its 25th anniversary of serving the Middle Georgia Area in 2021. Located at the beautiful Museum of Aviation at Robins AFB, they share an excellent partnership with their surrounding school districts, universities, and businesses. STARBASE Robins appreciates the strong support of their principals, teachers, parents, students, and superintendents.

This last year, they were back in action at their facilities, trying to return to pre-COVID numbers and saw 73 academies and approximately 1600 students for their fifth-grade program. They also expanded their partnerships with an alliance between STARBASE Robins; Azalea Regional Library System, which includes the Hancock County Library; and Hancock County 4-H. Their partnership, which began in 2020 right before the pandemic, finally produced the first Full STEAM Ahead Summer Academy. Their STARBASE Advanced 3.0 partnership with Broward County Florida Public Schools JROTC also had its beginnings in 2020 and finally came to fruition this past summer.

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GUAM
BARRIGADA

STARBASE Guam, Established 2021
SERVICE COMPONENT: Army National Guard
MILITARY LOCATION: Guam National Guard Readiness Center
CLASSROOMS AUTHORIZED: 2

SCHOOL DISTRICTS SERVED

Guam Department of Education

Hosted by the Guam Army National Guard, STARBASE Guam opened its doors to its first cohort on October 11, 2021. Since then, they have served over 1,400 students who received 25 hours of stimulating and rigorous curriculum and instruction that promotes metacognitive thinking through inquiry-based learning in Science, Technology, Engineering, and Mathematics (STEM). They have fostered positive relationships with students, teachers, administrators, and all other stakeholders in an effort to build a strengthened STEM community and to awaken the potential of students to thrive in a 21st-century world.

The mission of the program focuses on providing students with opportunities to make real-world connections in an integrated curricular setting. Some honorable mentions over the last year include hosting STEM Day with local organization and military partners to bring tactile experiences outside the academy walls, as well as a proclamation signing that declared October 2022 as STARBASE Month. Additionally, they have conducted outreach with high school students from schools across the island who competed in Switzerland in the 2022 First Global Challenge, which is a competition that highlights global issues such as carbon emissions, and brings the advancements of robotics into play by inducing higher-order thinking that prompts students to solve both local and worldwide threats through innovative means.

STARBASE Guam looks forward to their growth as an academy, but more importantly, the growth of all the generations they will have the privilege of guiding.

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DoD STARBASE A Department of Defense Youth Program HAWAI'I

HAWAII

KEA'AU

STARBASE Hawaii, Established 2008
SERVICE COMPONENT: Air National Guard
MILITARY LOCATION: Kea'au Armory
CLASSROOMS AUTHORIZED: 1

SCHOOL DISTRICTS SERVED

Hawaii Department of Education

STARBASE Hawaii brings a dynamic Science, Technology, Engineering, and Mathematics (STEM) outreach to life on the windward side of Hawaii island by inspiring students with a balanced blend of interactive, hands-on, and classroom talk-story and lessons. The program's aim is to foster a spirit of inquiry, promote logical reasoning, foster critical thinking, and build collaboration skills for students to become future thinkers, problem solvers, innovators, and leaders in an increasingly technological future, as well as working to prevent the "brain drain" that has been plaguing Hawaii for a half century.

STARBASE Hawaii serves a primary demographic that is almost entirely comprised of Title 1 schools and offers the opportunity to create passion about STEM in underserved communities, in order to develop the next generation of STEM leaders and innovators. In addition to their traditional demographic, STARBASE Hawaii has partnered with the National Guard Youth Challenge Academy at Hilo and continues to offer both the traditional 25-hour curriculum and expanded robotics workshops.

STARBASE Hawaii has also partnered with Kea'au Middle School to support their VEX robotics team as a starting point for a more hands-on STARBASE Advanced 2.0 program. Students must develop their STEM capabilities if Hawaii is going to be competitive in an increasingly technological world. STARBASE Hawaii stands ready to guide students in a march to a future governed by technology and to help guide their island students to understand both the benefits and challenges of globalization and a knowledge-based economy.

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IDAHO

BOISE

STARBASE Idaho, Established 2017
SERVICE COMPONENT: Air National Guard
MILITARY LOCATION: Gowen Field Air National Guard Base
CLASSROOMS AUTHORIZED: 3

SCHOOL DISTRICTS SERVED

Boise School District
Caldwell School District
Kuna School District
Middleton School District
Nampa School District
Wilder School District

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

Idaho Youth Challenge Academy Inc.

STARBASE Idaho has enriched the STEM education of more than 7,000 students through its various programming, since opening its doors in 2017. Located on Gowen Field, students have the opportunity to see both Air and Army National Guardsmen in action in their STEM careers, during their scheduled academies. This year, the program completed its first year as a 3-classroom location, as well as expanding its STARBASE Advanced 2.0 program from one site to three.

STARBASE Idaho's 2.0 Robotics Team from Middleton earned the CORE Values Award at their regional FIRST LEGO League competition for their teamwork and excellence in innovation. The program also piloted three new themed camps for its summer programming: CSI Forensics, Search and Rescue, and Mission to Mars Engineering, and they also expanded their outreach and supplemental activities by developing new partnerships with the Treasure Valley YMCA, enabling the program to reach students of all ages in new schools and districts. STARBASE Idaho is looking forward to the continued expansion of its STARBASE Advanced 2.0 program in 2022-23 school year and continuing to strengthen and develop its relationships with its community partners.

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INDIANA

FORT WAYNE

STARBASE Indiana-Fort Wayne, Established 2012
SERVICE COMPONENT: Air National Guard
MILITARY LOCATION: Fort Wayne Air National Guard Base
CLASSROOMS AUTHORIZED: 2

SCHOOL DISTRICTS SERVED

East Allen County Schools
Fort Wayne - South Bend Diocese
Fort Wayne Community Schools
Fort Wayne Lutheran Schools
Huntington Community School Corporation
Lutheran Schools Partnership
Independent Private Schools

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

STARBASE Indiana Inc.

STARBASE Indiana-Fort Wayne was founded at the 122nd Fighter Wing, Fort Wayne Air National Guard Base. They welcomed their first class on February 14, 2012, and their second classroom opened in the fall of 2015. They have been serving two classes from around Northeastern Indiana concurrently ever since.

They see approximately 64 different 5th-grade classes a year with additional STARBASE Advanced 2.0 afterschool programs for the 6th-8th grade. In addition, they offer students outreach opportunities through the four weeks of summer programs that take place in locations throughout the greater Fort Wayne area.

Last year, they organized the STEM portion for the Fort Wayne Air Show that brought in over 70,000 people.

CONTACT INFORMATION

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INDIANA

GARY

STARBASE Indiana-Gary, Established 2018
SERVICE COMPONENT: Army National Guard
MILITARY LOCATION: Gary Indiana National Guard Armory
CLASSROOMS AUTHORIZED: 2

SCHOOL DISTRICTS SERVED

Gary Community School Corporation
Lake Station Community Schools
River Forest Community School Corporation
School City East Chicago
Independent Private & Homeschool Groups

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

STARBASE Indiana Inc.

STARBASE Indiana-Gary was excited to celebrate four years in the DoD STARBASE family this past year. Founded at the Indiana National Guard Armory, with support from the 113th Engineer Battalion, STARBASE Gary continues to build and strengthen partnerships with local public, charter, private, and home schoolers. In the upcoming year, they will have their first elementary school attending their program from our bordering state of Illinois. They are hopeful that many other Illinois schools will follow.

This past year, they sustained and forged many new partnerships with other STEM organizations, universities, and companies. This was indicated at their 2nd annual Full STEAM Ahead community event as 28 STEM partners joined them as presenters to over 100 attendees from neighboring communities.

STARBASE Indiana-Gary enjoys participating on STEM Curriculum Committees with schools in their area and supporting their area schools in their quest to become STEM certified schools, and they equally enjoy STEM partnerships with Fortune 500 Company Erie Insurance and Teachers Credit Union who have provided both funding and employees to volunteer in our daily programming to support the DoD STARBASE mission. STARBASE Indiana-Gary is committed to continually seek opportunities to share, ignite, and build excitement around STEM.

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INDIANA

INDIANAPOLIS

STARBASE Indiana-Indianapolis, Established 2015
SERVICE COMPONENT: Army National Guard
MILITARY LOCATION: Indiana Joint Force Headquarters Stout Field
CLASSROOMS AUTHORIZED: 2

SCHOOL DISTRICTS SERVED

Franklin Township Community School Corporation
Indianapolis Public School
MSD Decatur Township
MSD Wayne Township
Independent Private & Homeschool Groups

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

STARBASE Indiana Inc.

DoD STARBASE Indiana–Indianapolis opened in February 2015, located at the Indiana National Guard Joint Force Headquarters-Stout Field. Since opening its doors, STARBASE Indiana-Indianapolis has established relationships with school districts from the Greater Indianapolis area and surrounding townships, offering the basic STARBASE program to the local 5th-grade classes as well as providing after-school STARBASE Advanced 2.0 programs for middle school students. In addition, STARBASE Indiana-Indianapolis provides a range of high-quality programming directly to homeschool groups, military youth programs, and the wider community during the school year and summer camp sessions.

STARBASE Indiana-Indianapolis' team is actively engaged within the community, working with partners like Rolls Royce Heritage Museum, Celebrate Science, Wings Over Indy, Women & Hi Tech, and Ronald McDonald House, among others, to provide a wide variety of exciting STEM outreach activities and programs.

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INDIANA

SOUTH BEND

STARBASE Indiana-South Bend, Established 2016
SERVICE COMPONENT: Army National Guard
MILITARY LOCATION: South Bend Army National Guard Armory
CLASSROOMS AUTHORIZED: 2

SCHOOL DISTRICTS SERVED

New Prairie United School Corporation
School City of Mishawaka
South Bend Community School Corporation
Independent Private Schools

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

STARBASE Indiana Inc.

STARBASE Indiana, located in South Bend, opened in 2016. Their immediate impact with their inner-city school corporation led to opening a second classroom, doubling the student educational impact. In 2022, they continue to expand the program, not just with student numbers, but by increasing their geographical footprint. They have expanded their reach into the rural school corporations outside of the greater South Bend/Mishawaka community, including corporations from other counties of Northern Indiana. They also continue to push their boundaries, including marketing and engaging with school corporations across the state line into Michigan.

Like many other STARBASE locations, STARBASE Indiana-South Bend has had to bounce back post-COVID-19 and is now flourishing. They have gained lots of knowledge from the creative programming required during the pandemic. Their focus and goal of staying relevant with teachers and school administrators paid off as 2022 was a year full of basic programming, STARBASE Advanced 2.0 after-school offerings, community engagements, and summer STEM academies.

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KANSAS

KANSAS CITY

STARBASE Kansas City, Established 1999
SERVICE COMPONENT: Army National Guard
MILITARY LOCATION: Lenexa Armory
CLASSROOMS AUTHORIZED: 2

SCHOOL DISTRICTS SERVED

Baldwin City
Basehor Linwood School District
Easton Unified School District
Kansas City, Kansas Unified School District
Shawnee Mission School District
Turner Unified School District
Independent Private Schools & Homeschool Groups

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

Kansas STARBASE, Inc.

STARBASE Kansas City is proudly sponsored by the Kansas National Guard and supported by Kansas STARBASE Inc., serving the students in our area since 1999. The focus of STARBASE Kansas City is to increase students' knowledge, skills, and interest in the four disciplines of STEM through cross-disciplinary study, hands-on experiments, investigations, and real-world simulations that promote 21st-century innovative thought and problem solving. The STEM-inspired Kansas City team, along with their military and community mentors, provides experiential learning in which students work in teams to realize the importance of collaborating with others to solve problems.

STARBASE Kansas City once again collaborated with other STARBASE Kansas sites as well as two other locations to continue a STARBASE Advanced 3.0 program for JROTC cadets. Their site also continued their robust community outreach program promoting STEM engagement to students in the area. Their 2.0 Advanced program continues to move forward, and they are excited for next year's programming. They also partnered with an area university again, assisting teachers in renewing their state certification. STARBASE Kansas City looks forward to preparing future students to be the next generation of innovators.

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KANSAS
MANHATTAN

STARBASE Manhattan, Established 2012
SERVICE COMPONENT: Army National Guard
MILITARY LOCATION: Kansas National Guard Armory
CLASSROOMS AUTHORIZED: 1

SCHOOL DISTRICTS SERVED

Blue Valley
Chapman Public Schools
Clay Center School District
Geary County School District
Herington Schools
Kaw Valley School District
Manhattan/Ogden School District
Morris County School District
Prairie Hills School District
Rural Vista Unified School District
Vermillion School District
Wamego Schools
Private & Homeschool Groups

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

Kansas STARBASE, Inc.

DoD STARBASE Manhattan has served the "Little Apple" since 2012. They are hosted by the Command of the 130th Field Artillery Brigade of the Kansas National Guard. The signature hands-on, minds-on DoD Youth Outreach Program is celebrating 10 years of serving Manhattan, Junction City, Fort Riley, and many rural communities.

STARBASE Manhattan collaborates with volunteer speakers and tour guides from the 130th, Fort Riley, and Kansas State University to provide an amazing opportunity for students to make real-world connections to STEM topics and careers. In addition to the exemplary 25-hour STARBASE basic program, STARBASE Manhattan continues to provide the STARBASE Advanced 2.0 program at a local middle school. STARBASE Manhattan provides outreach in the form of robotics workshops and STEM activities to hundreds of additional students at local middle schools, BSA troops, Ft. Riley's Child & Youth Services program, etc. STARBASE Manhattan also played an integral role in the summer STARBASE Advanced 3.0 program with JROTC.

CONTACT INFORMATION

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KANSAS

SALINA

STARBASE Salina, Established 1998

SERVICE COMPONENT: Army National Guard

MILITARY LOCATION: Great Plains Joint Training Center

CLASSROOMS AUTHORIZED: 2

SCHOOL DISTRICTS SERVED

Canton-Galva Schools
Central Plains
Chapman Unified
Clifton–Clyde
Concordia Public Schools
Ell Saline Unified
Ellsworth-Kanapolis School District
Goessel Unified School District
Hillsboro Unified
Inman Public Schools
Lincoln Unified Schools
Little River-Windom
Marion-Florence
McPherson Public Schools
Moundridge Unified Schools
North Ottawa County
Salina Public Schools
Smoky Valley Public Schools
Solomon Unified Schools
Southeast of Saline
Southern Cloud
Sylvan Grove School District
Twin Valley
Independent Private Schools

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

Kansas STARBASE, Inc.

STARBASE Salina, located at the Great Plains Joint Training Center for the Army National Guard, has been serving area students for the past 24 years. With the emphasis on STEM Careers, STARBASE Salina operated a double classroom program in 2021 - 2022, serving twice as many schools. Students were introduced to military personnel through a Blackhawk, UH-60, presentation.

STARBASE Salina's advanced program also grew in 2022, with 2.0 afterschool robotics clubs in two locations. Both groups were able to participate in a regional robotics competition at the end of their club experience. STARBASE Salina was pleased to participate in the STARBASE Advanced 3.0 robotics program partnering with the Marine Corps JROTC.

STARBASE Salina looks forward to continuing to grow and expand STEM education in Central Kansas.

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KANSAS
TOPEKA

STARBASE Topeka, Established 1994
SERVICE COMPONENT: Army National Guard
MILITARY LOCATION: Armed Forces Reserve Center, Forbes Field
CLASSROOMS AUTHORIZED: 2

SCHOOL DISTRICTS SERVED

Atchison Co Public Schools
Burlingame Public Schools
Central Heights Public Schools
Holton Public Schools
Jackson Heights Public Schools
Jefferson West Public Schools
Kaw Valley Public Schools
Mission Valley Public Schools
Osage City Public Schools
Perry-Lecompton Public Schools
Royal Valley Public Schools
Santa Fe Trail Public Schools
Seaman Public Schools
Shawnee Heights Public Schools
Topeka Public Schools
Valley Falls Public Schools
Wabaunsee Public Schools
West Franklin Public Schools
Independent Private Schools

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

Kansas STARBASE, Inc.

STARBASE Topeka is now entering its 29th year of operation, located on Forbes Field at the Armed Forces Reserve Center and hosted by the Kansas Army National Guard 69th Troop Command. From its inception, STARBASE Topeka has consistently exceeded the program capacity for service.

During the past year, STARBASE Topeka had the privilege to motivate and inspire over 2,200 students in STEM-related topics and careers. Through the STARBASE Advanced 2.0 afterschool program, middle school students were able to explore robotics, rocketry, and the engineering design process. In the STARBASE Advanced 3.0 program, they were able to collaborate with several other STARBASE locations to teach the Engineering Design Process using robotics to JROTC cadets.

Moving forward, STARBASE Topeka will continue to seek out ways to educate, share, and build excitement around STEM for the youth of Kansas.

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KANSAS
WICHITA

STARBASE Wichita, Established 1993
SERVICE COMPONENT: Air National Guard
MILITARY LOCATION: McConnell Air Force Base
CLASSROOMS AUTHORIZED: 2

SCHOOL DISTRICTS SERVED

Andover School District
Augusta School District
Central Burden School District
Clearwater School District
Derby School District
Dexter School District
Eldorado School District
Haysville School District
Rose Hill School District
Wichita School District
Independent Private Schools & Homeschool Groups

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

Kansas STARBASE, Inc.

STARBASE Wichita has been working with Wichita and the surrounding area since 1993. Using a hands-on, minds-on approach, the staff is proud to impact the future of each and every student coming through the program. This past year, they have grown the program to include an additional classroom which has ensured more Title 1 schools are able to attend yearly. They have also expanded the Wichita site's footprint.

Being located on the flight line of the 184th and the 22nd Air Refueling Wing allows students, parent volunteers, and teachers a rare opportunity to experience Bernoulli's principles in action. Tours of both the active and National Guard side of the base allow students to see STEM in action and what can be expected as they move into a future career.

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Bayou State DoD STARBASE
A Department of Defense Youth Program

LOUISIANA
BATON ROUGE

Bayou State STARBASE, Established 2015
SERVICE COMPONENT: Army National Guard
MILITARY LOCATION: North Iberville Parish High School
CLASSROOMS AUTHORIZED: 1

SCHOOL DISTRICTS SERVED

East Baton Rouge Parish
Iberville Parish
Point Coupee Parish
West Baton Rouge Parish

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

Louisiana National Guard Foundation

Bayou State STARBASE opened as the third Louisiana National Guard (LANG) STARBASE program in 2015. It serves students from East Baton Rouge, West Baton Rouge, Pointe Coupee, and Iberville Parishes. It is sponsored by the LANG and supported by Iberville Parish Schools, who provide a facility for the program in the North Iberville Parish High School building. This unique STARBASE program typically conducts about 30 academies each year for students of the Greater Baton Rouge Area.

In 2021, the program expanded to include three STARBASE Advanced 2.0 programs which are conducted in partnering schools. Running one classroom, Bayou State STARBASE provides full academic programs from August through June and provides enrichment and outreach programs year-round.

CONTACT INFORMATION

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LOUISIANA

BOSSIER CITY

STARBASE Louisiana, Established 1999
SERVICE COMPONENT: Air Force Reserve
MILITARY LOCATION: Barksdale Air Force Base
CLASSROOMS AUTHORIZED: 3

SCHOOL DISTRICTS SERVED

Bossier Parish Schools
Caddo Parish Schools
Independent Private Schools

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

STARBASE Louisiana Inc.

STARBASE Louisiana's mission is to inspire students and ignite a passion for learning through collaborative STEM experiences to empower the future innovators of Northwest Louisiana. The program has served over 36,000 5th-grade students, as well as thousands of middle and high school students over the last 23 years. Throughout that time, STARBASE Louisiana has been on the forefront of grade 5-12 STEM education, striving to inspire students and ignite a passion for learning through collaborative STEM experiences. Sponsored by the 307th Bomb Wing of the Air Force Reserve Command and supported by STARBASE Louisiana Inc. (501c3), the program has grown from serving a single 5th-grade class a day in 1999, to serving three 5th-grade classes per day, as well as instructing 16 middle school chapters and six high school chapters in its STARBASE Advanced 2.0 programs.

2022 was another banner year for STARBASE Louisiana. Three of their high school teams qualified for the national competition for The American Rocketry Challenge (TARC). This was the second year for two of the teams and the very first year the other team ever participated in TARC. Of course, it takes a village, so the program would like to thank their key partners: Barksdale Air Force Base, Bossier Parish Schools, and STARBASE Louisiana Inc. These organizations enable STARBASE Louisiana to make a difference in their community each and every day.

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LOUISIANA

LEESVILLE

STARBASE Fort Polk, Anticipated 2023

SERVICE COMPONENT: Army

MILITARY LOCATION: Fort Polk

CLASSROOMS AUTHORIZED: 1

ANTICIPATED SCHOOL DISTRICTS

Vernon Parish School District

Louisiana's fifth and newest STARBASE program will be hosted at the Joint Readiness Training Center, United States Army Garrison Fort Polk located in Vernon Parish, Louisiana. The new site's 10,000 sq. ft-facility has unlimited potential for the future. Many plans are in the works and underway to truly transform the building into a kid-friendly science wonderland where curiosities, imagination, and excitement can run free and be at the heart of the program.

The brand new staff is busy learning the ins and outs of everything STARBASE, ordering materials and supplies, and delving into the curriculum by visiting other locations. STARBASE Fort Polk anticipates and looks forward to opening its doors to students in late Spring 2023 with a one classroom program. However, once they get everything down to a "science" and are able to effectively serve Vernon Parish students, their goal is to quickly transition to a two-classroom facility to extend invitations to learners in Beauregard Parish as well.

The challenging STARBASE curriculum will provide authentic instruction to local 5th graders, which will allow them to develop the necessary skills for critical thinking, teamwork, and problem-solving while using highly sophisticated technology. Through this exposure and with the presence of positive military and civilian role models, students will learn firsthand how science, technology, engineering, and mathematics are utilized in the real world, allowing them to make connections to possible careers for future aspirations. STARBASE Fort Polk wants every child who enters its doors to have a meaningful, hands-on learning experience that will create lasting, indelible memories and ignite a passion for all things related to STEM.

CONTACT INFORMATION

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LOUISIANA
NEW ORLEANS

STARBASE Jackson Barracks, Established 1999
SERVICE COMPONENT: Army National Guard
MILITARY LOCATION: Jackson Barracks
CLASSROOMS AUTHORIZED: 2

SCHOOL DISTRICTS SERVED

Jefferson Parish
Orleans Parish
St. Bernard Parish

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

Louisiana National Guard Foundation

Inspiring students and teachers in STEM education, STARBASE Jackson Barracks (JB) serves three school parishes in the New Orleans metro area. Located at Jackson Barracks, an Army National Guard base, the program receives a lot of support from military partners as guest speakers and mentors for visiting students.

STARBASE JB is a two-classroom program, which reaches 900-1200 students a year. The site also hosts a STARBASE Advanced 2.0 program with content ranging from robotics, drone piloting, and dragster racing. The Jackson Barracks team diversified during the pandemic to create an "On Wheels" program for local schools, which helped create lasting partnerships.

STARBASE JB also hosts summer camp academies for the community as well, as for military dependents each year. Community outreach extends to the local Cub Scout troop, including a Rocketry Day for members. STARBASE JB has also partnered with the local community college for speaking engagements and workshops.

The STARBASE JB team looks forward to another year of giving students hands-on experiences in science, technology, engineering, and mathematics.

CONTACT INFORMATION

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Pelican State DoD STARBASE
A Department of Defense Youth Program

LOUISIANA
PINEVILLE

Pelican State STARBASE, Established 2006
SERVICE COMPONENT: Army National Guard
MILITARY LOCATION: Camp Beauregard
CLASSROOMS AUTHORIZED: 1

SCHOOL DISTRICTS SERVED

Grant Parish
Rapides Parish
Independent Private Schools

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

Louisiana National Guard Foundation

Pelican State STARBASE has been proudly operating in the State of Louisiana since 1999. They were originally established in New Orleans, Louisiana and relocated to Camp Beauregard after Hurricane Katrina, where they have been devoted to students in the Central Louisiana Area for the past 16 years. Despite environmental and pandemic challenges, the program has continued to be the premier STEM provider for area schools and youth programs in Central Louisiana.

As a Louisiana National Guard Program at Camp Beauregard, Pelican State STARBASE is preparing for an upcoming relocation to Esler Regional Airport and eagerly anticipating the opportunity to serve twice as many young people.

CONTACT INFORMATION

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WEBSITE: www.pelicanstatestarbase.org

MASSACHUSETTS

BEDFORD

STARBASE Hanscom, Established 2012
SERVICE COMPONENT: Air Force
MILITARY LOCATION: Hanscom Air Force Base
CLASSROOMS AUTHORIZED: 1

SCHOOL DISTRICTS SERVED

Billerica Public Schools
Boston Public Schools
Fitchburg Public Schools
Leominster Public Schools
Lincoln Public Schools
Lowell Public Schools
Medford Public Schools
Peabody Public Schools

STARBASE Academy at Hanscom Air Force Base is a creative and reliable STEM education partner for students, teachers, and school districts in Massachusetts. Through collegial relationships and collaborative programs, the STARBASE Hanscom team brings together those in military service, STEM practitioners, educators, parents, teachers, and teachers in training. This community of practice extends the program's reach and deepens the impact of their rigorous and effective STEM education programs.

STARBASE Hanscom is grateful for all of those who contribute to the STARBASE mission, but this year, they were especially delighted to work with Bridgewater State University on a National Science Foundation-funded project that brought teachers in training to their classroom for education courses and an intensive internship experience. This experience was truly a model of effective collaboration with potential for lasting influence on STEM teacher education.

CONTACT INFORMATION

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DoD STARBASE ALPENA
A Department of Defense Youth Program

MICHIGAN

ALPENA

STARBASE Alpena, Established 2012
SERVICE COMPONENT: Air National Guard
MILITARY LOCATION: Alpena Combat Readiness Training Center
CLASSROOMS AUTHORIZED: 2

SCHOOL DISTRICTS SERVED

Alcona Community Schools
Alpena Public Schools
Atlanta Community Schools
Fairview Area School District
Hillman Community Schools
Posen Consolidated School District NO. 9
Rogers City Area Schools
Independent Private Schools

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

STARBASE, Inc.

STARBASE Alpena has been promoting STEM education in northern Michigan's Lower Peninsula for ten years. Proudly located at the Alpena Combat Readiness Training Center, this is a small location with a big impact in the area. The program serves schools within a 50-mile radius and occasionally even reaches schools up to 80 miles away.

Participants always want more and look forward to returning for STARBASE Advanced 2.0 and summer programs. These summer programs feature immersive problem-solving skills. One example includes a trebuchet with a 16-foot throwing arm that students build themselves. Under close supervision, they launch small watermelons at their own cardboard buildings. It's a show of force, which can only be matched by mass times acceleration.

CONTACT INFORMATION

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DoD STARBASE BATTLE CREEK
A Department of Defense Youth Program

MICHIGAN

BATTLE CREEK

STARBASE Battle Creek, Established 2006
SERVICE COMPONENT: Air National Guard
MILITARY LOCATION: Battle Creek Air National Guard Base
CLASSROOMS AUTHORIZED: 2

SCHOOL DISTRICTS SERVED

Battle Creek Public Schools
Bellevue Community Schools
Colon Community Schools
Delton Kellogg Schools
Galesburg-Augusta Community Schools
Hastings Area Schools
Hopkins Public Schools
Lakeview School District
Lawton Community Schools
Maple Valley Schools
Mar Lee Schools
Pennfield Schools
Thornapple Kellogg Schools
Independent Private Schools

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

STARBASE, Inc.

STARBASE Battle Creek has been a strong STEM influence in the Calhoun area for 16 years, helping to develop critical thinkers, foster curiosity, and provide hands-on, experimental learning. The program helps inspire a love for STEM in 14 districts and 18 schools. The STARBASE Battle Creek staff has engaged over 20,000 students with the support of their STEM partners and the 110th Wing Battle Creek Air National Guard Base.

CONTACT INFORMATION

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MICHIGAN

MOUNT CLEMENS

STARBASE One, Established 1993

SERVICE COMPONENT: Air National Guard

MILITARY LOCATION: Selfridge Air National Guard Base

CLASSROOMS AUTHORIZED: 2

SCHOOL DISTRICTS SERVED

Anchor Bay School District
Armada Area Schools
Charter - New Haven
Charter - Warren
Detroit Public Schools Community District
Ecorse Public Schools
L'Anse Creuse Public Schools
Lamphere Schools
New Haven Community Schools
Richmond Community Schools
River Rouge School District
South Lake School District
Independent Private Schools

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

STARBASE, Inc.

STARBASE One has the distinction of being the first STARBASE. The program began in 1991 as Project STARS under a W.K. Kellogg grant, and with the support of 127th Wing at Selfridge Air National Guard Base near Detroit, Michigan, STARBASE One transitioned to DoD funding in 1993, launching the STARBASE program across the United States.

From its humble beginnings in a WWII-era barrack slated for demolition, STARBASE One now offers a 17,000-square-foot facility with an immersive educational playground, including a full-scale space shuttle nose simulator and a simulated Mars surface for robotics challenges. For over 31 years, STARBASE One has remained a proud pillar and leader of STEM education in the Detroit Tri-County area.

CONTACT INFORMATION

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MINNESOTA
DULUTH

STARBASE Minnesota-Duluth, Established 2017
SERVICE COMPONENT: Air National Guard
MILITARY LOCATION: Duluth Air National Guard Base
CLASSROOMS AUTHORIZED: 4

SCHOOL DISTRICTS SERVED

Barnum Public Schools
Carlton Public Schools
Chisholm Public Schools
Cloquet Public Schools
Duluth Edison Charter Schools
Duluth Parochial Schools
Duluth Public School District
Esko Public School District
Hermantown Public School District
Hibbing Public School District
Hinckley-Finlayson Public School District
International Falls School District
Mesabi East School District
Moose Lake School District
Mountain Iron Buhl Public School District
North Shore Community School District
Proctor Public School District
Rock Ridge Public Schools
St. Louis County School District
Wrenschall Public School District
Independent Private Schools

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

STARBASE Minnesota, Inc.

STARBASE Minnesota-Duluth, sponsored by the 148th Fighter Wing in Duluth, MN, has been innovatively offering a robust curriculum to students all over Northeastern Minnesota since 2017. With a recent expansion, the Duluth program now serves over 2,400 students each school year with 75 percent coming from Title 1 schools. An additional 300 students participate in the STARBASE Explorers summer program, including local youth organizations such as Neighborhood Youth Services and Family Freedom Center.

Located in a STEM-rich region featuring aviation, information technology, manufacturing, military, energy, and so much more, STARBASE Minnesota-Duluth has developed a deep network of STEM industry partners. Students explore a variety of these regional careers and make real-world connections for their futures.

CONTACT INFORMATION

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WEBSITE: www.STARBASEmn.org

MINNESOTA

ST. PAUL

STARBASE Minnesota-St. Paul, Established 1993
SERVICE COMPONENT: Air National Guard
MILITARY LOCATION: Minneapolis–St. Paul Joint Air Reserve Station
CLASSROOMS AUTHORIZED: 3

SCHOOL DISTRICTS SERVED

Anoka-Hennepin School District
Cannon Falls Public School District
Eden Prairie Public Schools
Hopkins Public School District
Minneapolis Public School District
North St. Paul-Maplewood Oakdale School District
Osseo School District
South Washington County Public Schools
St. Paul Public Schools
Independent Private Schools

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

STARBASE Minnesota, Inc.

Since 1993, STARBASE Minnesota-St. Paul has educated and inspired over 80,000 Twin Cities youth in STEM. Additional supplementary programming and resources puts STEM in the hands of another 30,000 fifth-graders and their teachers across Minnesota. Located at the 133rd Airlift Wing, which provides state-of-the-art facilities, access to an exciting, immersive environment with advanced technologies, and over 200 military and corporate volunteers participating, STARBASE Minnesota-St. Paul serves over 3,500 students each year.

In addition to the military, STARBASE Minnesota-St. Paul partners with local STEM corporations with a global reach, universities, government, and other organizations in the advancement of STEM. STARBASE Minnesota-St. Paul has a strong track record of engaging the community in its mission and contributing to a STEM-skilled workforce, robust economy, and stronger communities. They received the Minnesota High Tech Association's Tekne Award for Community Impact in 2018.

CONTACT INFORMATION

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MONTANA

GREAT FALLS

STARBASE Great Falls, Established 2011
SERVICE COMPONENT: Air National Guard
MILITARY LOCATION: Great Falls Air National Guard Base
CLASSROOMS AUTHORIZED: 1

SCHOOL DISTRICTS SERVED

Great Falls Public School District
Highwood Public School District
Stanford Public School District
Independent Private Schools & Homeschool Groups

The Montana Air National Guard hosts the STARBASE program in Great Falls at the 120th Airlift Wing. Since its inception in 2011, the program has served over 9,500 Montana youth. All fifth-grade students in the Great Falls Public School District attend STARBASE Great Falls for the 5-day basic program where they participate in quality, hands-on STEM activities and experience real STEM occupations and opportunities on the Guard base. Private schools, homeschool families, and rural schools in the surrounding area are invited to supplemental programming in the form of camps, day-trips to the STARBASE Great Falls classroom, and the STARBASE Advanced 2.0 after-school program.

The STARBASE Great Falls crew also travels to Montana Reservations to deliver day camps to elementary-aged Native American youth. STARBASE Great Falls graduates consistently share that, because of STARBASE, they have an increased awareness of civilian and military STEM opportunities and bolstered confidence and resilience to pursue and achieve their STEM career goals. STARBASE Great Falls is excited to continue to expand their reach and impact to benefit Montana's youth and communities.

CONTACT INFORMATION

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MONTANA

HELENA

STARBASE Fort Harrison, Established 2007
SERVICE COMPONENT: Army National Guard
MILITARY LOCATION: Ft William Henry Harrison Army National Guard Base
CLASSROOMS AUTHORIZED: 1

SCHOOL DISTRICTS SERVED

East Helena Public School District
Helena Public School District
Independent Private Schools

STARBASE Fort Harrison (SBFH) was founded in 2007 and is located on the Fort William Henry Harrison Army National Guard base, which is just west of Helena, Montana. STARBASE Fort Harrison has educated over 12,000 students from 20 schools and eight school districts since it was founded.

The STARBASE Fort Harrison program returned to STARBASE Advanced 2.0 programming in the 2021-2022 school year with clubs operating at three different middle schools. Additionally, SBFH, along with STARBASE Great Falls, underwent a rebranding to unite under the STARBASE Montana organization. STARBASE Montana published a new and improved website, along with Instagram and Facebook pages, to better connect with the local community.

SBFH also partnered with a local organization, the Helena Indian Alliance, to provide summer camp programming to tribal-affiliated youth. They also piloted a new summer camp program, termed the Summer Academy, to serve local students who were not able to attend STARBASE during the school year. As always, SBFH continued to offer summer programming for military-affiliated children as a way to give back to the families that sacrifice so much to serve our state and nation.

CONTACT INFORMATION

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NEVADA

HENDERSON

STARBASE Henderson, Established 2022
SERVICE COMPONENT: Army National Guard
MILITARY LOCATION: Henderson Armory
CLASSROOMS AUTHORIZED: 1

SCHOOL DISTRICTS SERVED

Clark County School District

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

Battle Born Youth Challenge Non Profit

STARBASE Henderson staff was hard at work during the summer of 2022—unpacking boxes, ordering supplies, putting together furniture, and planning the curriculum and activities they would soon implement with 5th-grade students from the Clark County School District (CCSD). STARBASE Henderson welcomed their first group of 5th-grade students in August 2022, and they have been going non-stop ever since.

STARBASE Henderson strives to expose underserved youth to technological environments, provide positive role models, and nurture a network of collaborators, as well as build mutual goodwill within the community. STARBASE Henderson focuses on improving the STEM knowledge, critical thinking, and problem-solving skills of disadvantaged fifth graders from local Title One schools through 25 hours of hands-on, minds-on instruction. STARBASE Henderson also aims to raise STEM education awareness within CCSD and increase interest in STEM careers among the students.

STARBASE Henderson, housed in the Henderson National Guard Armory, and sponsored by the Nevada National Guard, is excited to be one of three DoD STARBASE programs in the state. The program is anxious to grow as a STEM partner in the community and increase their capacity to impact more students in the future.

CONTACT INFORMATION

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NEVADA

LAS VEGAS

STARBASE Nellis, Established 2012
SERVICE COMPONENT: Air Force Reserve
MILITARY LOCATION: Nellis Air Force Base
CLASSROOMS AUTHORIZED: 2

SCHOOL DISTRICTS SERVED

Clark County School District
Independent Private Schools

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

Nexus Hi-Quality Education

STARBASE Nellis is one of three DoD STARBASE programs in the state of Nevada that seeks to inspire students in science, technology, engineering, and mathematics by providing rewarding and memorable learning experiences. Using the unparalleled technological environment found on Nellis Air Force Base (AFB) as a backdrop, STARBASE Nellis engages children in an educational adventure unlike anything they have ever experienced.

Located at the home of the United States Air Force Thunderbirds, STARBASE Nellis provides 25 hours of hands-on, minds-on activities to students from the Clark County School District, the fifth-largest district in the nation. They recently expanded their program into a two-classroom academy to extend their sphere of influence to more 5th-grade students in the Las Vegas area. Sponsored and supported by the Air Force Reserve, STARBASE Nellis is proud to be a leader in STEM educational opportunities.

CONTACT INFORMATION

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NEVADA

RENO

STARBASE High Sierra, Established 2022
SERVICE COMPONENT: Air National Guard
MILITARY LOCATION: Nevada Air National Guard Base
CLASSROOMS AUTHORIZED: 1

SCHOOL DISTRICTS SERVED

Washoe County School District
Independent Private Schools

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

Battle Born Youth Challenge Non Profit

In the upcoming year, STARBASE High Sierra plans to focus on improving the STEM knowledge, critical thinking, and problem-solving skills of disenfranchised, underserved fifth graders from local Tier One schools. The program will host between 26 and 30 weeks of interactive instruction, hands-on activities and specialized on-base tours. STARBASE High Sierra will also serve as an outreach program to raise STEM education awareness within the Washoe County School District (WCSD) and increase interest in STEM careers.

STARBASE High Sierra plans to seamlessly blend the STARBASE goals and objectives with the Nevada Department of Education (NDE) Statewide Plan for the Improvement of Pupils (STIP) and the WCSD Envision 2020 Strategic Plan. This will be done through culturally-responsive teaching and be a conduit of support that promotes the talents and contributions of volunteers, teachers, parents, community leaders, civilian and Guard professionals district and statewide.

STARBASE High Sierra will also be available to fifth graders in the county's charter schools and members of Boys & Girls Clubs of Truckee Meadows. The STARBASE curriculum supports Next Generation Science Standards (NGSS) Grade Level Expectations, as well as meeting or exceeding established National Standards. Licensed teachers and full-time program staff lead STARBASE High Sierra classroom instruction and hands-on activities. Additionally, military and civilian professionals within STEM career fields will support STARBASE High Sierra on a voluntary basis, providing guest instruction, mentorship, tours, and demonstrations.

CONTACT INFORMATION

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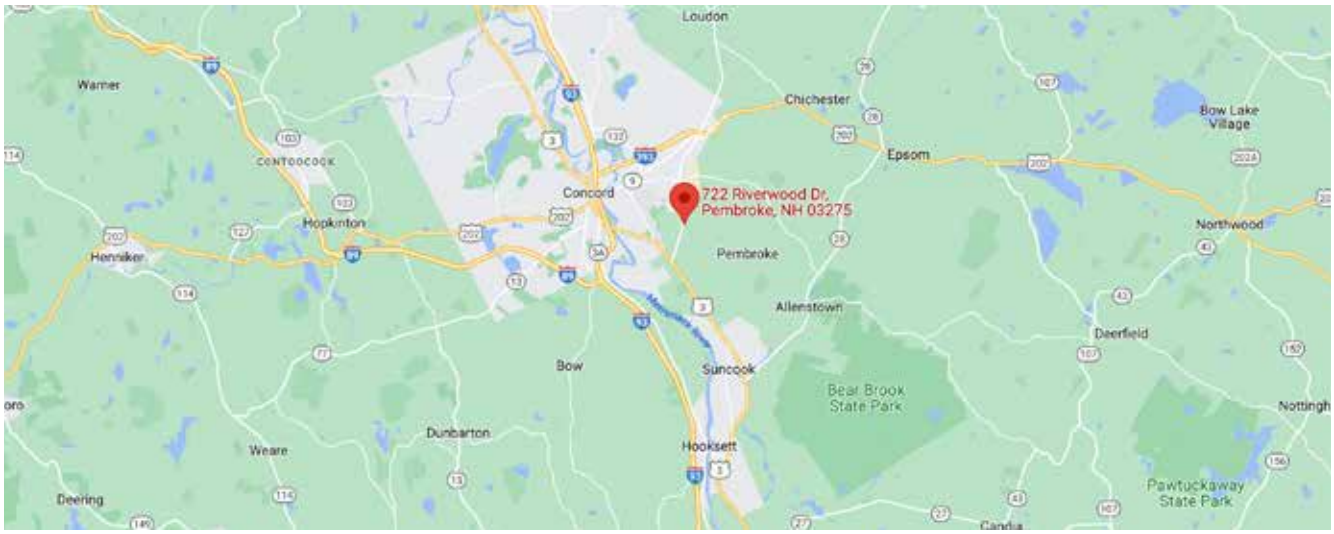
NEW HAMPSHIRE

CONCORD

STARBASE New Hampshire, Anticipated 2023
SERVICE COMPONENT: Army National Guard
MILITARY LOCATION: Edward Cross Training Complex
CLASSROOMS AUTHORIZED: 1



ANTICIPATED SCHOOL DISTRICTS SERVED

Merrimack County School Districts

The New Hampshire National Guard (NHNG) is proud to announce the launch of the state's first DoD STARBASE Program, housed at the NHNG's Edward Cross Training Complex in the city of Pembrook. The complex is home to the NHARNG Regional Training Institute and 54th Troop Command. This location will provide an exceptional location for the STARBASE Academy. It is uniquely suited to offer a wide variety of science, technology, engineering, and mathematics (STEM) opportunities in the field of aviation.

The NHNG has forged strong and lasting bonds with civic and industrial leaders and local community governments throughout the state that has been reciprocated with an outpouring of hometown hospitality and support. DoD STARBASE is a program that will strive to strengthen those bonds while enhancing STEM education in the community.

The state of New Hampshire continues to evolve to meet the current workforce needs in STEM fields. The increased reliance on STEM careers produces unique challenges with amplified complexities. However, with these challenges, come opportunities to develop innovative solutions that target the future of STEM—our students. DoD STARBASE New Hampshire will equip students with a solid foundation in real-world problem solving, hands-on experimentation, critical thinking, creativity, and confidence to better understand and meet these complex demands.

CONTACT INFORMATION

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NEW JERSEY

TRENTON

STARBASE Joint Base McGuire-Dix-Lakehurst, Established 2022
SERVICE COMPONENT: Air Force
MILITARY LOCATION: Joint Base McGuire-Dix-Lakehurst
CLASSROOMS AUTHORIZED: 1

SCHOOL DISTRICTS SERVED

New Hanover Township School
Pemberton Township School District

STARBASE Joint Base McGuire-Dix-Lakehurst (JBMDL) is the nation's first STARBASE on a tri-service joint base. The program began welcoming students in May 2022. The program currently utilizes one classroom with the intent to establish two additional classrooms in the near future. STARBASE JBMDL will host over 1,000 students during the 2022-23 school year.

STARBASE JBMDL is the third initiative of the JBMDL Executive STEM Council, a newly-created group hosted by the 87th Air Base Wing that incorporates key mission partners who are working to create an ecosystem to develop the country's future workforce. The program is surrounded by a densely-populated and diverse community that is in need of STEM-based programs, such as STARBASE, that address the wide disparity in access to educational facilities and instruction.

The program's presence on an active military base has afforded students the opportunity to tour military facilities and jobs such as, Bioenvironmental Engineering, Explosive Ordnance Disposal, and Air Traffic Control, as well as civilian positions in and around the base.

CONTACT INFORMATION

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NEW MEXICO

ALBUQUERQUE

STARBASE New Mexico, Established 2003
SERVICE COMPONENT: Air Force
MILITARY LOCATION: Kirtland Air Force Base
CLASSROOMS AUTHORIZED: 3

SCHOOL DISTRICTS SERVED

Albuqerque Public Schools
Archdiocese of Santa Fe
Belen Consolidated Schools
Grants-Cibola County Schools
Los Lunas Public Schools
Moriarty-Edgewood School District
Santa Fe Public Schools
Independent Private Schools & Homeschool Groups

Since its inception in 2003, DoD STARBASE New Mexico (NM) has grown from a one-classroom program to a three-classrooms, Level III "Exemplary" STARBASE program. Located on Kirtland Air Force Base in Albuquerque, STARBASE NM has served over 15,000 students mostly from Title I schools.

DoD STARBASE NM has a proud partnership with Kirtland AFB, the Air Force Research Laboratory, and strong relationships with the community. In 2015, the University of New Mexico Center for Education Policy Research conducted a study that reported DoD STARBASE NM students achieved gains in both mathematics and language arts that persisted through middle and high school.

DoD STARBASE NM added its first STARBASE Advanced 2.0 program in 2012 and has competed in The American Rocketry Challenge (TARC) National Finals twice. STARBASE NM 2.0 has expanded to two schools and added a STARBASE Advanced 3.0 program partnering with a local high school JROTC program.

CONTACT INFORMATION

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NEW YORK

FORT DRUM

STARBASE Fort Drum, Established 2022
SERVICE COMPONENT: Army
MILITARY LOCATION: Fort Drum
CLASSROOMS AUTHORIZED: 2

SCHOOL DISTRICTS SERVED

Beaver River Central School District
Belleville-Henderson Central School District
Carthage Central School District
Copenhagen Central School District
Gouverneur Central School District
Indian River Central School District
Lafargeville Central School District
Sackets Harbor Central School District
South Jefferson Central School District
Thousand Island Central School District
Watertown City School District

STARBASE Fort Drum is located on United States Army Base, Fort Drum, in Northern New York in the foothills of the Adirondack Mountains and the St. Lawrence River Valley. The new, two-classroom program, opened their doors in July 2022 and welcomed their first scholars on September 12, 2022. They have 68 classes scheduled for this academic year, serving 14 different school districts and 1 home-school group.

Since opening, the staff has hosted almost 400 students. While at the program, scholars had the opportunity to meet and learn from the 760th Explosive Ordnance Disposal (EOD) Company, tour the Mountain Peak Command Post as it was being set up, and visit the airfield to learn about different aircraft on Fort Drum. They also had the opportunity to visit with the Assistant Secretary of the Army for Installations, Energy, and Environment, Rachel Jacobson, while she was visiting Fort Drum in October. These collaborations are important because students are able to see the "why" in their studies.

They are currently building their summer curriculum and are looking forward to building additional relationships within Fort Drum and local communities. Of course, the best part of their day is welcoming students and seeing the excitement in their eyes as they fully immerse themselves in learning.

CONTACT INFORMATION

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NORTH CAROLINA

CHARLOTTE

STARBASE Charlotte, Established 1993
SERVICE COMPONENT: Air National Guard
MILITARY LOCATION: Charlotte Air National Guard Base
CLASSROOMS AUTHORIZED: 2

SCHOOL DISTRICTS SERVED

Charlotte Mecklenburg Schools
Cleveland County Schools
Gaston County Schools
Lincoln County Schools
Madison County Schools
Yadkin County Schools
Yancey County Schools

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

STARBASE North Carolina Inc.

Next year, STARBASE Charlotte will be celebrating its 30th anniversary of teaching STEM to mostly Title 1 schools in the surrounding community. The program's classrooms are on the NC Air National Guard Base, hosted by the 145th Airlift Wing, which flies the mighty C-17 aircraft.

This school year, the program staff was excited to start with normal operations, and the schools coming to classrooms on base with the required masking mandate in place. As the year progressed, the base increased its health protection level, and the staff again went back on the road for two months with "STARBASE-on-Wheels." They finished the year without masks, with students back in their classrooms, and smiles on their faces. STARBASE Charlotte was also able to have summer camps again with their "Guard kids."

As of the close of this year, STARBASE Charlotte has graduated 51,901 students, with this year's required 60 classes reaching 1,310 students.

CONTACT INFORMATION

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NORTH CAROLINA

WILMINGTON

STARBASE Wilmington, Established 2004
SERVICE COMPONENT: Army National Guard
MILITARY LOCATION: Carolina Beach Road Readiness Center
CLASSROOMS AUTHORIZED: 2

SCHOOL DISTRICTS SERVED

American Leadership Academy Coastal
Brunswick County Schools
New Hanover County Schools

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

STARBASE North Carolina Inc.

This is the 18th year that the STARBASE program has taught STEM to the Wilmington community, serving mostly Title 1 schools. It was also a big year for the program because the STARBASE Fort Fisher program has relocated to the Carolina Beach Road Readiness Center in Wilmington. The building has been totally renovated, and they are so happy with their new classrooms and offices. They receive wonderful support from the NC Army National Guard staff and have officially changed their name to STARBASE Wilmington.

At the close of this year, STARBASE Wilmington has graduated 30,357 students. This was another "STARBASE-on-Wheels" year due to COVID restrictions, which also delayed the plans to move into a new program location. Once STARBASE Wilmington was given permission to re-enter their schools, they adapted to the guidelines to keep students safe while giving them the best STARBASE experience. The program successfully taught the required 60 classes reaching 1,394 students.

CONTACT INFORMATION

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NORTH DAKOTA

MINOT

STARBASE North Dakota, Established 2015
SERVICE COMPONENT: Air Force
MILITARY LOCATION: Minot Air Force Base
CLASSROOMS AUTHORIZED: 1

SCHOOL DISTRICTS SERVED

Minot Public Schools
South Prairie School

STARBASE North Dakota is located on Minot Air Force Base and is hosted by the 5th Bomb Wing. The program opened in January 2015 and is located on base at the North Plains Elementary School.

Students who attend STARBASE North Dakota have the unique opportunity to visit the only DoD installation that has both B-52 bomber aircraft and a fleet of 150 Minuteman III intercontinental ballistic missiles (ICBM's). As such, students participating in the STARBASE program get to visit work centers with active-duty Air Force members who actively use STEM in exciting career fields. Student STEM tours typically include the B-52H Stratofortress Weapons System Trainer and the Missile Procedures Trainer. Through these tours and conversations with the military personnel who work the programs, students get a glimpse into the diverse and incredible technology possibilities available with any STEM career.

During the 2021-22 school year, the program was honored to graduate their 200th fifth-grade class, and their outreach programs reached over 800 students and family members.

CONTACT INFORMATION

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OHIO

DAYTON

STARBASE Wright-Patt, Established 2004
SERVICE COMPONENT: Air Force
MILITARY LOCATION: Wright Patterson Air Force Base
CLASSROOMS AUTHORIZED: 4

SCHOOL DISTRICTS SERVED

Beavercreek City Schools
Fairborn City Schools
Huber Heights City Schools
Kettering City Schools
Mad River Local
West Carrollton City School District
Yellow Springs Local
Independent Private Schools

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

Ohio Educational Outreach Foundation

Since its inception in 2004, STARBASE Wright-Patt continues to grow in many ways. From a modest start, they have evolved into a four-classroom operation that commands a waiting list in normal, non-pandemic years, serving an average of 2500 students. Although outreach opportunities have been stalled in the area due to COVID-19 restrictions, STARBASE Wright-Patt has remained involved as much as possible and has retained its Level III exemplary DoD STARBASE designation.

In addition to outstanding support from its many Wright-Patt Air Force Base partnerships, STARBASE Wright-Patt has built and maintained strong support in the educational community. Partnering with Beavercreek City schools with a STARBASE Advanced 2.0 program in each of its middle schools has built a strong line of continued STEM/WPAFB support for many students. Likewise, the program's partnerships with the University of Dayton and Sinclair Community College provide much needed outreach events, such as First Four STEM Hoopla and Sinclair's TechFest.

As we all come out of pandemic restrictions, STARBASE Wright-Patt looks forward to building even more partnerships with WPAFB and the surrounding industry communities.

CONTACT INFORMATION

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OKLAHOMA

ELK CITY

STARBASE Oklahoma-Burns Flat, Established 2006
SERVICE COMPONENT: Air National Guard

MILITARY LOCATION: Western Technology Center
CLASSROOMS AUTHORIZED: 1

SCHOOL DISTRICTS SERVED

Arapaho-Butler Public Schools
Burns Flat-Dill City Public Schools
Canute Public Schools
Erick Public Schools
Leedey Public Schools
Mammon Public Schools
Merritt Public Schools
Mtn View Gotebo Public Schools
Sentinel Public Schools
Sweetwater Public Schools

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

STARBASE Oklahoma Inc.

STARBASE Oklahoma-Burns Flat is located right next to the "Clinton Sherman Industrial Airpark" licensed space port, which features the third-longest civilian runway in North America. The program is housed in the Western Technology Center, located on the former site of the Clinton Sherman Air Force Base (1954-1969), which provides the huge advantage of being in close proximity to The Oklahoma Air & Space Port. The Space Port is a public-use airport and industrial airpark that has facilities in place for aerospace testing, research and development, flights, and launches. It is one of 12 space ports in the nation, and the only one with an FAA-approved spaceflight corridor not in restricted airspace or Military Operation Areas.

STARBASE Burns Flat provides excellent STEM education to students in western rural Oklahoma. Formerly a satellite location, the site now hosts one full-time classroom. The program provides an opportunity for students in the Oklahoma rural west to receive a STEM foundation that will help them in their scholastic career. Formerly located in Canute, the STARBASE Advanced 2.0 after-school club is now hosted by Burns Flat.

CONTACT INFORMATION

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OKLAHOMA

LAWTON

STARBASE Oklahoma-Fort Sill, Established 2006
SERVICE COMPONENT: Air National Guard
MILITARY LOCATION: Fort Sill
CLASSROOMS AUTHORIZED: 2

SCHOOL DISTRICTS SERVED

Boone Apache Public Schools
Central High Public Schools
Chattanooga Public Schools
Comanche Public Schools
Cyril Public Schools
Duncan Public Schools
Empire Public Schools
Fletcher Public Schools
Flower Mound Public Schools
Geronimo Public Schools
Lawton Public Schools
Sterling Public Schools
Temple Public Schools
Independent Private Schools

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

STARBASE Oklahoma Inc.

STARBASE Oklahoma-Fort Sill is housed in two newly renovated classrooms located in Lawton Oklahoma. The program was "STARBASE-on-Wheels" and was recently relocated in the spring of 2022. The two new classrooms on Fort Sill offer a great learning space for the students.

The program offers an enriching STEM program to Lawton and surrounding-area students in a military environment. Students can learn firsthand about all the programs and support that Fort Sill provides for the U.S. Army. Fort Sill has a rich history and is the home of the Army's Artillery Schools.

The programs are not just limited to the U.S. Army's Artillery, however; guests from Fire & Safety, Military Police, and Air Defense have all visited the STARBASE Fort Sill classrooms and demonstrated how STEM plays a crucial role in their respective fields.

STARBASE Oklahoma Fort Sill also has excellent STARBASE Advanced 2.0 clubs exploring rocketry, energy, and the engineering design process.

CONTACT INFORMATION

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OKLAHOMA

OKLAHOMA CITY

STARBASE Oklahoma-Tinker, Established 2006
SERVICE COMPONENT: Air National Guard
MILITARY LOCATION: Tinker Air Force Base
CLASSROOMS AUTHORIZED: 2

SCHOOL DISTRICTS SERVED

Crooked Oak Public Schools
Crutcho Public Schools
Edmond Public Schools
McLoud Public Schools
Mid-Del Public Schools
Moore Public Schools
Independent Private Schools

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

STARBASE Oklahoma Inc.

STARBASE Oklahoma-Tinker, located in Oklahoma City, Oklahoma provides a great STEM program to the students in the Mid-Del and surrounding school districts. Currently located on Tinker Air Force Base (AFB) in the Tinker Youth Center, the students are surrounded by examples of military aerospace innovation.

Tinker AFB is home to the 72nd Air Base Wing and houses several different types of aircraft, some of which are displayed during air shows and annual events that STARBASE students are invited to take part in.

STARBASE Tinker will soon have a new home with the Oklahoma Air National Guard on Will Rogers AFB, but the relationship with Tinker AFB will be continued in the form of summer camps and special events. The move is expected to happen in January 2023.

STARBASE Tinker has two STARBASE Advanced 2.0 programs hosted in Midwest City, Oklahoma. The clubs focus on aerospace and rocketry.

CONTACT INFORMATION

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DIRECTOR: James Skrapka
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OKLAHOMA

TULSA

STARBASE Oklahoma-Tulsa, Established 1993
SERVICE COMPONENT: Air National Guard
MILITARY LOCATION: Tulsa Air National Guard Base
CLASSROOMS AUTHORIZED: 2

SCHOOL DISTRICTS SERVED

Afton Public Schools
Anderson Public Schools
Beggs Public Schools
Caney Valley Public Schools
Hominy Public Schools
Osage Hills Public Schools
Pawhuska Public Schools
Porter Public Schools
Pryor Public Schools
Sand Springs Public Schools
Union Public Schools
Verdigris Public Schools
Woodall Public Schools
Independent Private Schools

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

STARBASE Oklahoma Inc.

Established in 1993, STARBASE Oklahoma-Tulsa is the headquarters for the STARBASE Oklahoma program. STARBASE Oklahoma-Tulsa is located on the Tulsa Air National Guard Air Force Base, home to the 138th Fighter Wing. The 138th Fighter Wing maintains F-16 Fighting Falcon combat forces ready for mobilization and deployment, as needed to support national security objectives.

The Tulsa Air National Guard provides two state-of-the-art classrooms for students in Tulsa and the surrounding areas. The proximity of the classroom to all the Air National Guard resources makes the location an excellent military aerospace learning environment. The STARBASE Oklahoma-Tulsa career day allows for student access to various areas housing military aircraft and support sections throughout the base. Military visitors to the STARBASE classroom have included pilots, firemen, and mechanics.

STARBASE Oklahoma-Tulsa hosts two STARBASE Advanced 2.0 after-school clubs exploring the engineering design process, rocketry, wind and mechanical energy, and much more.

CONTACT INFORMATION

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OREGON

KLAMATH FALLS

STARBASE Kingsley, Established 1993
SERVICE COMPONENT: Air National Guard
MILITARY LOCATION: Kingsley Field
CLASSROOMS AUTHORIZED: 1

SCHOOL DISTRICTS SERVED

Klamath County School District
Klamath Falls City Schools
Independent Private Schools

STARBASE Kingsley began serving students in 1993 and was the first of four STARBASE Oregon Programs. Once again this year, they had the privilege of inviting every public 5th-grade class in the Klamath Basin to experience the magic and wonder of hands-on STEM.

The STARBASE Kingsley program is sponsored by the 173rd Fighter Wing, Kingsley Field Air National Guard Base. Every visiting STARBASE student is currently provided the opportunity to visit the F-15 Maintenance Hangar. Their host organization is home to the sole pilot training program for both F-15 C & D model aircraft.

Additionally, the STARBASE Kingsley Team offered a number of summer STEM-Ed programs to local youth and assisted local high schools with VEX Robotics Tournaments.

CONTACT INFORMATION

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OREGON
PORTLAND

STARBASE Portland, Established 1993
SERVICE COMPONENT: Air National Guard
MILITARY LOCATION: Portland Air National Guard Base
CLASSROOMS AUTHORIZED: 2

SCHOOL DISTRICTS SERVED

Beaverton School District
Canby School District
North Clackamas School District 12
Parkrose School District
Portland Public Schools
Reynolds School District
Independent Private Schools

STARBASE Portland stood up in late 1993 as the second STARBASE site in the state. The Portland metro area is extremely diverse with 172 Title I 5th-grade classes within a 30-minute travel radius. STARBASE Portland has steadily increased the capacity of classes served over the last eight years from 42 in 2012 to 60 in 2020, in an effort to reach as many Oregon youth as possible.

The Portland Air National Guard Base is the air defense base for the Pacific Northwest and home to the F-15. Every visiting STARBASE student is provided the opportunity to visit the F-15 hangar and explore. In previous years, the Portland STARBASE Advanced 2.0 club has offered students the opportunity to build and program a LEGO robot to be used in a battle bot arena on graduation day.

In 2014, STARBASE Portland developed and piloted the "iPads as Student Log-Books" program with the intention of offering the STARBASE Oregon students a learning environment that is technologically relevant and preparatory. The Portland staff went on to offer the training to other STARBASE directors and instructors, beginning in 2016, and assisting in the growth of the STARBASE iPad program at a national level.

CONTACT INFORMATION

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OREGON

UMATILLA

STARBASE Camp Umatilla, Established 2021
SERVICE COMPONENT: Army National Guard
MILITARY LOCATION: Camp Umatilla Armed Forces Training Center
CLASSROOMS AUTHORIZED: 2

SCHOOL DISTRICTS SERVED

Hermiston School District
Stanfield School District
Umatilla School District

STARBASE Camp Umatilla, soon to be STARBASE Rees, is the newest STARBASE Oregon academy and opened in May 2021. The academy is hosted by the Camp Umatilla Armed Forces Training Center in the beautiful Northeast Columbia River Basin. This STARBASE program is providing Camp Umatilla with new opportunities for collaboration and further strengthening relationships with the local communities.

Camp Umatilla is neighbor to the Confederated Tribes of the Umatilla Indian Reservation with over 3,100 tribal members. One third of the members are children who will eventually attend STARBASE. The location offers unique STEM opportunities to STARBASE students, as Camp Umatilla shares airspace with the Pendleton Unmanned Aerial System Test Range. This area is also attracting unmanned aerial system companies from around the world that are a source of STEM mentors and potential future employment opportunities for STARBASE students.

Camp Umatilla is officially changing its name to 'Raymond R. Rees Training Center' in September 2022, honoring Major General Raymond F. Rees for his incredible service to our nation.

CONTACT INFORMATION

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OREGON

WARRENTON

STARBASE Camp Rilea, Established 2019
SERVICE COMPONENT: Army National Guard
MILITARY LOCATION: Camp Rilea Armed Forces Training Center
CLASSROOMS AUTHORIZED: 1

SCHOOL DISTRICTS SERVED

Astoria School District
Jewell School District
Knappa School District
Seaside School District
Warrenton-Hammond School District

Camp Rilea's Armed Forces Training Center is home to STARBASE Oregon's third STARBASE Program. The facility annexed a piece of property with a schoolhouse on it and then completely renovated the building for STARBASE Camp Rilea. The program began welcoming students in March 2019 and serves all of the 5th-grade students in the area. Camp Rilea will be looking to expand their offerings to children in southwest Washington this coming school year.

STARBASE Camp Rilea continues to provide yearly trainings to STARBASE personnel around the country for the now-approved "STARBITS" lesson. This year, STARBASE Camp Rilea offered a robust summer program and began an outreach program to the "Kindergarten Cop" school, Astor Elementary. STARBASE Camp Rilea is currently in talks to begin their STARBASE Advanced 2.0 program in the 2022-2023 school year.

CONTACT INFORMATION

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PUERTO RICO

CAROLINA

STARBASE Puerto Rico, Established 1995
SERVICE COMPONENT: Air National Guard
MILITARY LOCATION: Muñiz Air National Guard Base
CLASSROOMS AUTHORIZED: 2

SCHOOL DISTRICTS SERVED

Barranquitas
Bayamón
Bayamón1
Caguas
Carolina
Cidra
Guayama
Humacao
Rio Grande
San Juan
Trujillo Alto
Independent Private Schools

STARBASE Puerto Rico has been located with the 156th Wing at Muñiz ANG Base since 1995. The program has had the privilege of serving over 31,000 participants who speak Spanish as their first language. This STARBASE program is the only site on the island which is divided in five educational regions and numerous districts, and it is the only STARBASE in the nation that teaches the curriculum in Spanish.

STARBASE Puerto Rico's facility includes two classrooms and a computer lab with two 3D printers. The program offers participants the opportunity to meet military members from the Air National Guard whose careers actively involve STEM.

CONTACT INFORMATION

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SOUTH CAROLINA

COLUMBIA

STARBASE Swamp Fox, Established 2003
SERVICE COMPONENT: Air National Guard
MILITARY LOCATION: McEntire Joint National Guard Base
CLASSROOMS AUTHORIZED: 2

SCHOOL DISTRICTS SERVED

Kershaw County School District
Lexington County School District 2
Lexington School District 1
Lexington-Richland School District 5
Richland School District 2
Sumter County School District
Independent Private Schools

The 2021-2022 school year continued to offer many challenges due to the continuation of the COVID-19 pandemic. However, the STARBASE Swamp Fox team, supported by personnel at McEntire Joint National Guard Base (JNGB) and the SC Military Department, overcame many obstacles and enjoyed a tremendously successful year once again.

Reacting to school districts' off-campus COVID restrictions, the Swamp Fox team, enabled by DoD STARBASE, literally rolled out the "STARBASE-on-Wheels" option for schools that were not allowed to attend classes at McEntire JNGB. Flexibility was the key word as scheduled participating schools continued to be constantly disrupted by changes from their governing school districts. However, in spite of all of this, the STARBASE team was able to conduct 55 sessions of the 63 originally scheduled classes.

In addition to the basic STARBASE program, a complete STARBASE 2.0 program was conducted with a homeschool group when the originally scheduled public school canceled their club program for the year due to COVID. The year was also highlighted by the planning and execution of new supplemental programs. In addition to providing two summer camps for SC National Guard and SC Military Department dependents, STARBASE Swamp Fox partnered with two schools to provide selected lesson plans and activities on their campuses for their summer STEM camps. This community-based collaboration was well received by school officials as well as the members of the communities being served.

Lastly, STARBASE Swamp Fox continued to tell the DoD STARBASE story by attending and setting up exhibits at outreach events such as Shaw AFB's Air Exposition STEM Day and a local community fall festival. An exhibit and activity demonstration was also presented for a neighboring elementary school's STEM night.

School year 2021-2022 definitely presented some unique challenges, but due to the dedication of the STARBASE Swamp Fox staff, the state's support team, and assistance from the National Guard Bureau and DoD, over 1,200 students were able to be positively engaged by the STARBASE program this year.

CONTACT INFORMATION

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SOUTH DAKOTA

RAPID CITY

STARBASE Rapid City, Established 2002
SERVICE COMPONENT: Army National Guard
MILITARY LOCATION: Camp Rapid
CLASSROOMS AUTHORIZED: 1

SCHOOL DISTRICTS SERVED

Douglas School District 51-1
Meade School District 46-1
Rapid City Area Schools 51-4

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

STARBASE of South Dakota, Inc.

STARBASE Rapid City was established in 2002 and is hosted by the South Dakota Air National Guard on Camp Rapid in Rapid City, South Dakota. Their basic STARBASE program hosts an average of 800 local students each year. In addition, they provide two and three-day modified STARBASE sessions for schools on their waiting list, in order to serve the maximum number of Rapid City students each year.

STARBASE Rapid City also has an established STARBASE Advanced 2.0 after-school program that focuses on robotics and computer-aided design with a little physics on the side. Over the years, the program has grown a strong relationship with local engineering companies, such as, Caterpillar and VRC Metal Systems. These companies provide engineers to volunteer at the 2.0 clubs where they mentor students in the computer aided design software. Each student designs their own CO_2 car, prints it on a 3D printer, then races it while evaluating its force, mass, acceleration, and design.

STARBASE Rapid City staff members also participate in a variety of community and school activities such as STEM nights, science fairs, and career days. They work in tandem with their STARBASE NOVA Honor Program that serves rural and Native American students.

CONTACT INFORMATION

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SOUTH DAKOTA

RAPID CITY

STARBASE NOVA Honor, Established 2008
SERVICE COMPONENT: Army National Guard
MILITARY LOCATION: Camp Rapid
CLASSROOMS AUTHORIZED: 1

SCHOOL DISTRICTS SERVED

Cheyenne Eagle Butte School
Custer School District 16-1
Edgemont School District 23-1
Haakon School District 27-1
Harding County Schools 31-1
Hill City School District 51-2
Hot Springs School District 23-2
Kadoka Area School District 35-2
Lead/Deadwood School District
Lyman County School District 42-1
Meade School District 46-1
New Underwood School District 51-3
Newell School District 09-2
St. Joseph's Indian School
Stanley County Public Schools 57-1
Takini School District
Timber Lake School District 20-3

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

STARBASE of South Dakota, Inc.

STARBASE NOVA Honor was established in 2008. Instructors are typically on the road traveling to schools with a pull-behind trailer four to five days a week during the school year, delivering the STARBASE program to 5th graders in rural schools and on Native American Indian Reservations, including the Pine Ridge Indian Reservation, which has the highest poverty rate in the nation. When travel is allowed by the schools, the students take a one-day field trip to either the South Dakota Air and Space Museum at Ellsworth Air Force Base or the Sanford Research Lab in Lead, South Dakota, where military members and/or STEM professionals offer their time as tour guides or guest speakers.

CONTACT INFORMATION

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SOUTH DAKOTA

SIOUX FALLS

STARBASE Sioux Falls, Established 1994
SERVICE COMPONENT: Air National Guard
MILITARY LOCATION: Joe Foss Field
CLASSROOMS AUTHORIZED: 1

SCHOOL DISTRICTS SERVED

Sioux Falls School District 49-5

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

STARBASE of South Dakota, Inc.

STARBASE Sioux Falls has continued to serve 5th-grade students in the Sioux Falls area for 28 years. This is all made possible with the support of so many: the Sioux Falls School District 49-5, other local school districts, Schulte Subaru of Sioux Falls, SDN Communications, Caterpillar of Rapid City and so many others, as well as all local school administrators and teachers.

Along with providing the five-day STARBASE experience to 31 classes, STARBASE Sioux Falls also provided a two-day program to 13 classes on the waiting list. A full STARBASE Advanced 2.0 program for students at Whittier Middle School was a huge success as well.

CONTACT INFORMATION

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SOUTH DAKOTA

SIOUX FALLS

STARBASE NOVA Courage, Established 1999
SERVICE COMPONENT: Air National Guard
MILITARY LOCATION: Joe Foss Field/Sioux Falls Armory
CLASSROOMS AUTHORIZED: 1

SCHOOL DISTRICTS SERVED

Andes Central School District 11-1
Armour School District 21-1
Avon School District 04-1
Big Stone City School District 25-1
De Smet School District 38-2
Huron School District 02-2
Iroquois School District 02-3
Rosholt School District 54-4
Sisseton School District 54-2
Summit School District 54-6
Tripp-Delmont School District
Wagner Community School District 11-4
Waubay School District 18-3
Webster Area 18-5
Wilmot School District 54-7
Wolsey Wessington School District 02-6

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

STARBASE of South Dakota, Inc.

STARBASE NOVA Courage teachers continue to travel the roads of South Dakota bringing hands-on STEM lessons to Native American Indian Reservation and rural schools. With schools two to two and a half hours from Sioux Falls, some teachers and administrators are making a significant commitment to bring their students to experience the Air Guard base in Sioux Falls. At the 114th Fighter Wing, they experience the excitement and technology involved in life on a base with F-16 jets.

CONTACT INFORMATION

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WEBSITE: www.sdstarbase.org

TEXAS

AUSTIN

STARBASE Austin, Established 2012
SERVICE COMPONENT: Army National Guard
MILITARY LOCATION: Camp Mabry
CLASSROOMS AUTHORIZED: 2

SCHOOL DISTRICTS SERVED

Austin Independent School District
Del Valle Independent School District
Hutto Independent School District
Lockhart Independent School District
Pflugerville Independent School District
Round Rock Independent School District
Independent Private Schools

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

Texas STARBASE Inc.

Hosted by the Texas Military Department at Camp Mabry, STARBASE Austin challenges K-12 students to participate in hands-on, minds-on STEM activities and to investigate how STEM could be used in potential military or civilian careers.

Through partnerships with local school districts, STEM partners, and military members, the Austin STARBASE Advanced 2.0 program brings opportunities to underserved students and local community members. This past year, the program participants at one middle school got to display their achievements at South by Southwest E-D-U (SXSW EDU) after working with STEM partners to strengthen their robotic engineering and coding skills.

STARBASE Austin also worked with the Girl Scouts of Central Texas to present a program about the James Webb Space Telescope to local community members. They look forward to the upcoming year and hope to strengthen their partnerships with schools and STEM partners.

CONTACT INFORMATION

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TEXAS HOUSTON

Texas STARBASE Houston, Established 1994
SERVICE COMPONENT: Air National Guard
MILITARY LOCATION: Ellington Field Joint Reserve Base
CLASSROOMS AUTHORIZED: 2

SCHOOL DISTRICTS SERVED

Clear Creek Independent School District Charter School
Galena Park Independent School District
Houston Independent School District
Humble Independent School District
La Porte Independent School District
Pasadena Independent School District
Sheldon Independent School District
Independent Private Schools & Homeschool Groups

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

Texas STARBASE Inc.

Texas STARBASE Houston has been serving students in the surrounding area since September 1994. STARBASE is located with the 147th Attack Wing at Ellington Field in Houston. STARBASE expanded to a double site program and runs classes out of two facilities side-by-side.

After 28 years in operation, STARBASE Houston has served over 28,700 students from 153 schools, representing 26 school districts. STARBASE Houston also conducts a STARBASE Advanced 2.0 after-school program, and classes are taught at local participating schools.

CONTACT INFORMATION

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TEXAS

SAN ANGELO

STARBASE Goodfellow, Established 2017
SERVICE COMPONENT: Air Force
MILITARY LOCATION: Goodfellow Air Force Base
CLASSROOMS AUTHORIZED: 2

SCHOOL DISTRICTS SERVED

Bronte Independent School District
Christoval Independent School District
Grape Creek Independent School District
Miles Independent School District
San Angelo Independent School District
Texas Leadership of San Angelo
Wall Independent School District
Independent Private Schools & Homeschool Groups

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

San Angelo Museum of Fine Arts

Since its inception in September 2017, STARBASE Goodfellow and its partners have served Goodfellow Air Force Base and the surrounding Concho Valley Area. Joint-service military members, DoD civilians from the base, and professor volunteers from Howard College and Angelo State University serve as coaches throughout the regular school year and in our summer programs by sharing their science, technology, engineering, and mathematics (STEM) knowledge and expertise or providing base tours to students while at the same time showcasing their career fields.

STARBASE Goodfellow's staff inspire students and visiting teachers alike by using hands-on, minds-on learning techniques that raise the interest and improve the knowledge and skills in the areas of STEM during their regular program, summer camps, and outreach events. STARBASE Goodfellow is now in its fifth academic year of operations and will be able to educate and inspire even more youth in San Angelo and Tom Green County as they introduce drones in their upcoming STARBASE Advanced 2.0 program targeting 6th to 8th grade schools.

CONTACT INFORMATION

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DoD STARBASE KELLY TEXAS

SAN ANTONIO

STARBASE Kelly, Established 1995
SERVICE COMPONENT: Air Force Reserve
MILITARY LOCATION: Joint Base San Antonio-Lackland
CLASSROOMS AUTHORIZED: 1

SCHOOL DISTRICTS SERVED

East Central Independent School District
Southwest Independent School District
Independent Private Schools

Located in the 433rd Airlift Wing on Lackland AFB in the heart of beautiful San Antonio, Texas, STARBASE Kelly has been igniting excitement in the hearts and minds of students since the mid-1990's. Dedicated to the enduring themes of excellence and service of the Air Force, STARBASE Kelly has continued to push ahead through the trials of the pandemic to fulfill, with fidelity, the core of the DoD STARBASE program: inspiring the next generation.

By partnering with many local industry, non-profit, and informal educational partners, the program expanded their reach to new heights. They can't wait to see just how high they can fly next year.

CONTACT INFORMATION

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JBSA-Lackland, TX 78236
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EMAIL: SB.Kelly@dodstarbase.org

UTAH

LAYTON

STARBASE Hill, Established 2011
SERVICE COMPONENT: Air Force
MILITARY LOCATION: Hill Air Force Base
CLASSROOMS AUTHORIZED: 3

SCHOOL DISTRICTS SERVED

Davis School District
Ogden School District
Weber School District
Independent Private Schools

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

Davis Education Foundation

The STARBASE Hill program first opened its doors on Hill Air Force Base (HAFB) in the fall of 2011 and has maintained a reputation as a premier STEM academy for the students of Utah. An educational titan on HAFB amongst the Air Force goliaths known as the Ogden Air Logistics Center and the 75th Air Base Wing, STARBASE Hill extends STEM activities and military immersion to more than 2,500 students annually in northern Utah.

With the academy successes, the STARBASE Hill STARBASE Advanced 2.0 program completed 17 after-school clubs, enthusing more than 200 students in STEM extension courses. After two short school years, STARBASE Hill's outreach has extended from one school district to five school districts beginning in the school year 2022-2023.

CONTACT INFORMATION

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Hill Air Force Base, UT 84056
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VERMONT
RUTLAND

STARBASE Rutland, Established 2002
SERVICE COMPONENT: Air National Guard
MILITARY LOCATION: Vermont Armed Forces Reserve Center
CLASSROOMS AUTHORIZED: 1

SCHOOL DISTRICTS SERVED

Battenkill Valley Supervisory Union
Bennington-Rutland Supervisory Union
Greater Rutland County Supervisory Union
Mills River Unified Union School District
Rutland City School District
Rutland Northeast Supervisory Union
Slate Valley Unified School District
Southwest Vermont Supervisory Union
Two Rivers Supervisory Union
White River Unified School District
Windham Central Supervisory Union
Windsor Central Supervisory Union
Independent Private Schools

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

STARBASE Vermont, Inc.

STARBASE Vermont's Rutland site has been at the forefront of STEM education with Southern Vermont Schools for more than 20 years. Sponsored by the 158th Fighter Wing of the Vermont Air National Guard and supported by the STARBASE Vermont, Inc. (501c3) non-profit, the Rutland site reaches students throughout southern Vermont.

STARBASE Rutland uses hands-on, minds-on learning to raise the interest and improve the knowledge and skills of at-risk youth in science, technology, engineering, and mathematics. The program inspires students and ignites a passion for learning that is empowering the innovators of tomorrow.

CONTACT INFORMATION

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WEBSITE: www.starbasevt.org

VERMONT

SOUTH BURLINGTON

STARBASE South Burlington, Established 1993
SERVICE COMPONENT: Air National Guard
MILITARY LOCATION: Vermont Air National Guard Base
CLASSROOMS AUTHORIZED: 2

SCHOOL DISTRICTS SERVED

Addison Northwest Supervisory Union
Burlington School District
Champlain Valley School District
Franklin West Supervisory Union
Missisiquoi Valley School District
South Burlington School District
Winooski School District
Independent Private Schools

SUPPORTING NOT-FOR-PROFIT ORGANIZATION

STARBASE Vermont, Inc.

STARBASE Vermont's South Burlington site has been at the forefront of STEM education for more than 29 years. Sponsored by the 158th Fighter Wing of the Vermont Air National Guard and supported by the STARBASE Vermont, Inc. (501c3) non-profit, the South Burlington site reaches students throughout northern Vermont.

STARBASE South Burlington uses hands-on, minds-on learning to raise the interest and improve the knowledge and skills of at-risk youth in science, technology, engineering, and mathematics. The program inspires students and ignites a passion for learning that is empowering the innovators of tomorrow.

CONTACT INFORMATION

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WEBSITE: www.starbasevt.org

VIRGINIA

WINCHESTER

Winchester STARBASE Academy, Established 2012
SERVICE COMPONENT: Army National Guard
MILITARY LOCATION: Winchester Readiness Center
CLASSROOMS AUTHORIZED: 2

SCHOOL DISTRICTS SERVED

Clarke County Public Schools
Frederick County Public Schools
Winchester Public Schools
Independent Private Schools & Homeschool Groups

The Winchester STARBASE Academy just completed ten fantastic years of inspiring upper elementary students of the Shenandoah Valley region. Encouraging a future in a STEM career field is a priority. This is accomplished by allowing students to explore a myriad of exciting possibilities with every hands-on, inquiry-based lesson.

Located at the Winchester Readiness Center, a variety of soldiers from the 116th Infantry Regiment talk with the students about military careers, the history of the unit, and the importance of STEM for the future. A large number of STEM community members visit the Winchester STARBASE Academy and share their careers with the students. These guest speakers include a nurse, software programmer, anti-terrorism expert, civil engineers, podiatrist, K-9 officers, physical therapist, STEM Flights, local airport personnel, and a chemist. It is through this strong community support that we are able to successfully encourage the students of our region.

In addition to working with upper elementary students, the Winchester STARBASE Academy also ran a STARBASE Advanced 2.0 program at James Wood Middle School, a STARBASE Advanced 3.0 program with JROTC cadets, and held professional development classes with elementary education students at Shenandoah University this year. The Winchester STARBASE Academy is working diligently to encourage, engage, and inspire students of all ages.

CONTACT INFORMATION

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Winchester, VA 22602
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WEST VIRGINIA
CHARLESTON

West Virginia STARBASE Academy, Established 2001
SERVICE COMPONENT: Air National Guard
MILITARY LOCATION: McLaughlin Air National Guard Base
CLASSROOMS AUTHORIZED: 3

SCHOOL DISTRICTS SERVED

Kanawha County School District

The West Virginia STARBASE Academy is hosted by the West Virginia National Guard, located at Joint Base West Virginia in Charleston. They have two classrooms located and supported on the McLaughlin Air National Guard Base, and a third classroom is located and supported by the West Virginia Army National Guard. A need for more space allowed the program to enhance our relationship with the West Virginia Army National Guard.

The program has served Kanawha County Schools for over two decades with instruction provided to Putnam County since 2016. With the implementation of the third classroom, they were able to reach all 5th grade students within Kanawha County Schools. This includes both public and private schools. The pandemic presented a host of challenges for the program to overcome, and staff learned new instructional styles, resources, and protocols to continue effective learning.

During the 2021-2022 school year, West Virginia STARBASE Charleston was able to accomplish a variety of new achievements. They conducted their first STARBASE Advanced 2.0 drone club at Hayes Middle School. The club consisted of two drone teams: the Goal Diggers and Robo BeeGees. Both teams made it to the Robotic Aerial Drone Competition (RADC) World Championship in Dallas, Texas. There, the Robo BeeGees team won the 2022 Flight Plan award.

Other education partnerships included Mountaineer ChalleNGe Academy-South. This partnership afforded the program another opportunity to teach their curriculum with the cadets of two graduating classes. With the use of the standard program, supplemental programs, and outreach, the West Virginia STARBASE Academy provided STEM instruction for 4,752 students within the 2021-2022 school year.

CONTACT INFORMATION

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TELEPHONE: 304.341.6440
DIRECTOR: Kayla Bossie
EMAIL: SB.WV-Charleston@dodstarbase.org

WEST VIRGINIA
MARTINSBURG

STARBASE Martinsburg, Established 2003
SERVICE COMPONENT: Air National Guard
MILITARY LOCATION: Shepherd Field Air National Guard Base
CLASSROOMS AUTHORIZED: 3

SCHOOL DISTRICTS SERVED

Berkeley County Public Schools
Greencastle-Antrim School District
Jefferson County Public Schools
Independent Private Schools

STARBASE Martinsburg has been igniting student STEM passions in the eastern panhandle of West Virginia since 2003. Located at the 167th Airlift Wing in Martinsburg, WV, STARBASE Martinsburg strives to connect with and positively impact every single student that walks through the door.

The STARBASE site in Martinsburg simultaneously runs three classes daily to provide the 25-hour curriculum to every 5th-grade student in the surrounding school districts, usually over 2,000 students each year. STARBASE Martinsburg also provides an after-school program, STARBASE Advanced, to area middle schools. This coach-based program is designed to further flame the initial spark that the standard 25-hour program ignites with hands-on STEM activities and challenges.

STARBASE Martinsburg's newest adventure, STARBASE Advanced 3.0, reaches into high school. This is an exciting opportunity to foster that STEM spark even further into students' education. This year, the Martinsburg location was able to participate in a world-wide virtual Cyber Camp in partnership with other STARBASE sites across the United States. This camp delivered robotics, coding, and the engineering design process to Marine Corps JROTC students.

This upcoming school year STARBASE Martinsburg will celebrate its 20th year in operation. Oh, the amazing places DoD STARBASE will continue to go!

CONTACT INFORMATION

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WISCONSIN

MILWAUKEE

STARBASE Wisconsin, Established 2011
SERVICE COMPONENT: Air National Guard
MILITARY LOCATION: US Army Reserve Center
CLASSROOMS AUTHORIZED: 2

SCHOOL DISTRICTS SERVED

Milwaukee Public Schools

STARBASE Wisconsin is proudly sponsored by the Wisconsin Air National Guard and supported by the 128th Air Refueling Squadron and U.S. Army Reserve Training Center in Milwaukee, serving the students in Milwaukee Public Schools since 2011. STARBASE Wisconsin is dedicated to their mission of reaching underrepresented students through an interactive hands-on science program. Their goal is to increase students' knowledge, skills, and interest in the four disciplines of STEM through experiments, investigations, and real-world applications, stimulating young minds to explore the vast STEM careers that will transform our world.

They were proud to resurrect and expand their STARBASE Advanced 2.0 Aviation program in middle schools, following the COVID shutdown, bringing to light the aviation-rich opportunities Wisconsin has to offer. The program's partnership with the Wisconsin Bureau of Aeronautics-Aviation Careers Enhancement summer program continues, and their new summer Aviation and Robotics-centric program was a great success with students diving deeper into topics they didn't have time for during the school year.

STARBASE Wisconsin's community outreach program has expanded beyond the local scouting STEM programs to include the Southeast Wisconsin Girls in Aviation organization that holds aviation rallies several times a year, attracting an average of 50-60 female participants. Their aviation flight simulation program is a big hit among students of all ages. The staff looks forward to continuing their successes with Milwaukee students and expanding the program's outreach.

CONTACT INFORMATION

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WYOMING

CHEYENNE

STARBASE Wyoming, Established 1994
SERVICE COMPONENT: Air National Guard
MILITARY LOCATION: F.E. Warren Air Force Base
CLASSROOMS AUTHORIZED: 2

SCHOOL DISTRICTS SERVED

Laramie County School District #1
Laramie County School District #2
Homeschool Groups

Wyoming STARBASE Academy has been operated in partnership with the Wyoming National Guard and Wyoming Military Department since 1994. They are the one and only STARBASE program in the state, and they are located in Cheyenne, the capital of Wyoming.

This unique program has brought science, technology, engineering and mathematics (STEM) to every 5th-grader within two different school districts, serving an average of 1,400 students annually. The STARBASE staff is actively collaborating with schools and the community to provide challenging but fun "hands-on, mind-on" activities in STEM.

Their program goal is to bring STEM career knowledge to student groups that have been historically underrepresented and to make STEM accessible for every student in their area.

CONTACT INFORMATION

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DoD STARBASE 2022
A Department of Defense Youth Program

Appendix

DoD STARBASE STUDENT POST ASSESSMENT 2021-2022

Click on the circle next to the answer you think is best.

1. Which one of Newton's Laws explains why it is important to wear a seat belt in a moving car?
   - ○ First Law of Motion - an object in motion will stay in motion unless acted upon by an outside force.
   - ○ Second Law of Motion - acceleration of an object increases as the amount of force increases.
   - ○ Third Law of Motion - for every action there is an equal and opposite reaction.
   - ○ Law of Gravity - an object attracts another object in direct proportion to their combined mass.

Click on the circle next to the answer you think is best.

2. What can you change about the air in the balloon if it remains tied and the temperature is constant?
   - ○ Shape
   - ○ Density
   - ○ Viscosity
   - ○ Amount of air

Click on the circle next to the answer you think is best.

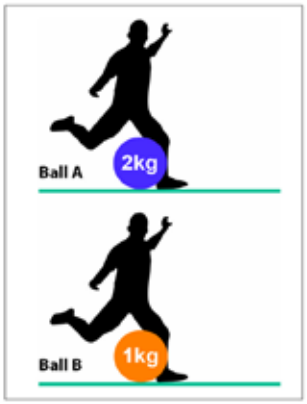
3. If it takes your robot 6 rotations to go the length of 1 meter, how many rotations should your robot be programmed to go a distance of 10 meters?
   - ○ 6,000
   - ○ 600
   - ○ 60
   - ○ 6

Click on the circle next to the answer you think is best.

4. An Engineering team meets for the first time. Which step of the Engineering Design Process will they do first?
   - ○ Make a list of requirements.
   - ○ Brainstorm solutions.
   - ○ Make a hypothesis.
   - ○ Define a problem.

DoD STARBASE STUDENT POST ASSESSMENT 2021-2022, CONTINUED

Click on the circle next to the answer you think is best.



5. What will happen if Ball A and Ball B are kicked with the same amount of force?
   - ○ Ball A will roll farther.
   - ○ Ball B will roll farther.
   - ○ They will roll the same distance.
   - ○ The distance cannot be predicted.

Click on the circle next to the answer you think is best.

6. Which of the following is a fluid?
   - ○ A jar of marbles
   - ○ A can of paint
   - ○ A bucket of sand
   - ○ A truckload of rocks

Click on the circle next to the answer you think is best.

7. Sodium and chloride bond to form salt (NaCl). What does this bonded substance represent?
   - ○ An element
   - ○ An atom
   - ○ A compound
   - ○ A cell

Click on the circle next to the answer you think is best.

8. What is the first step when using computer design software to build a model?
   - ○ Define a shape to extrude or revolve.
   - ○ Record the dimensions of the part.
   - ○ Communicate to the manufacturing engineers.
   - ○ Add colors to the design.

DoD STARBASE STUDENT POST ASSESSMENT 2021-2022, CONTINUED

Click on the circle next to the answer you think is best.

9. Fill in the blank by selecting one of the choices below. 6% is _____ 6/10

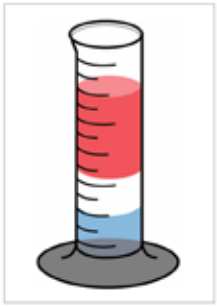
- ○ Greater than (>)
- ○ Less than (<)
- ○ Equal to (=)

Click on the circle next to the answer you think is best.

10. Which of the following describes a transfer of energy in a chemical reaction?

- ○ The noise a balloon makes when it is popped.
- ○ The pressure applied to a scissor handle when cutting paper.
- ○ The light made by a glow stick when bent and shaken.
- ○ The temperature change when freezing ice cream.

Click on the circle next to the answer you think is best.



11. Three different liquids were poured into a graduated cylinder. From the picture, what can you conclude about the densities of the liquids?

- ○ The blue liquid is the least dense.
- ○ The white liquid is the least dense.
- ○ The red liquid is the least dense.
- ○ They are all of equal density.

Click on the circle next to the answer you think is best.

12. When you sprain an ankle, you need to apply an activated cold compress to relieve the swelling. Which reaction does the activated cold compress produce?

- ○ Hydrophobic
- ○ Endothermic
- ○ Exothermic
- ○ Hydrophilic

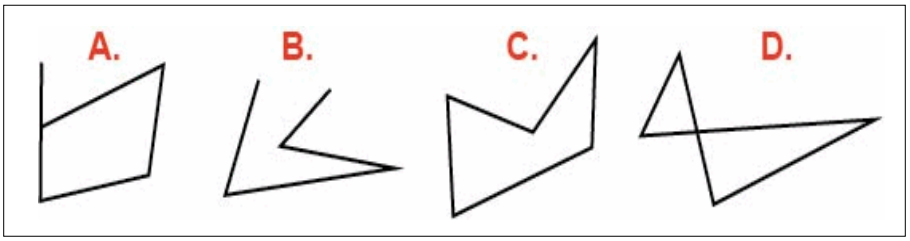
Click on the circle next to the answer you think is best.

13. Which of the following states of matter has the least amount of kinetic energy?

- ○ Solid
- ○ Liquid
- ○ Gas
- ○ Plasma

DoD STARBASE STUDENT POST ASSESSMENT 2021-2022, CONTINUED

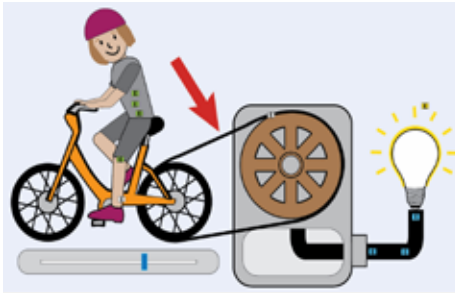
Click on the circle next to the answer you think is best.



14. When using CAD software, which sketch can be revolved or extruded to form a 3D shape?

- ○ A
- ○ B
- ○ C
- ○ D

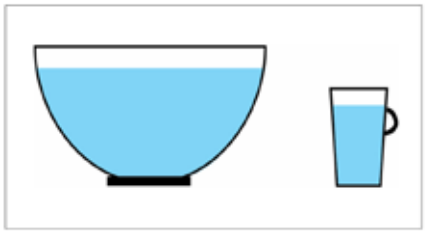
Click on the circle next to the answer you think is best.



15. Which form of energy is the arrow pointing to in the diagram?

- ○ Light energy
- ○ Chemical energy
- ○ Electrical energy
- ○ Mechanical energy

Click on the circle next to the answer you think is best.



16. A small cup and a large bowl are filled with water. What is the same about the water in each container?

- ○ Mass
- ○ Shape
- ○ Volume
- ○ Density

Click on the circle next to the answer you think is best.

17. Which of the following is an example of physical change?

- ○ Baking soda and vinegar mix and produce bubbles and foam.
- ○ Paper burns and produces smoke and ash.
- ○ A glass falls on the floor and shatters.
- ○ Batter is baked to make a cake.

Click on the circle next to the answer you think is best.

18. The make-up of air in our atmosphere is 78% nitrogen, 21% oxygen, and 1% other gases. Which type of graph would be the best to use to display this data?
- ○ Line Graph
- ○ Coordinate Plane
- ○ Bar Graph
- ○ Pie Graph

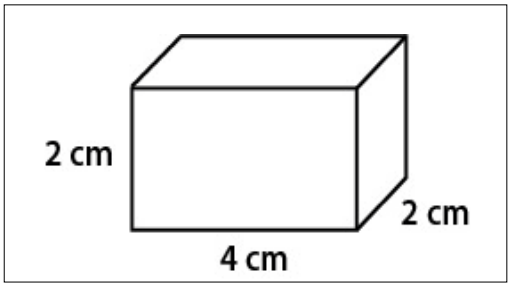
Click on the circle next to the answer you think is best.

19. You are using a ruler to measure the length of a shoebox. Which unit of measurement are you most likely to use?
- ○ Grams
- ○ Microns
- ○ Milliliters
- ○ Centimeters

Click on the circle next to the answer you think is best.

20. Which of the following are examples of new technologies that solve real problems in the world today?
- ○ A farmer using GPS to plant crops.
- ○ A doctor using a 3D printer model for practice before performing surgery.
- ○ Robots are used in places that are unsafe for humans.
- ○ All of the above.

Click on the circle next to the answer you think is best.



21. What is the volume of the box?
- ○ 6 cm^2
- ○ 8 cm^3
- ○ 16 cm^3
- ○ 8 cm^2

Glossary

Academy: See DoD STARBASE Academy.

American Indian or Alaska Native: A person having origins in any of the original peoples of North and South America (including Central America) who maintains cultural identification through tribal affiliation or community attachment.

Appropriations: An act of Congress that permits Federal agencies to incur obligations and to make payments out of the Treasury for specified purposes. An appropriations act is the most common means of providing budget authority.

Asian: A person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian Subcontinent, including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam.

At-Risk: Being "at-risk" means having one or more family background, or other factors, that have been found to predict a high rate of school failure at some time in the future. This "failure" generally refers to dropping out of high school before graduation but also can mean being retained within a grade from one year to the next. The risk factors include having a mother whose education is less than high school, living in a single-parent family, receiving welfare assistance, and living in a household where the primary language spoken is other than English.

At-Risk Youth: Youth at risk are those who have characteristics that increase their chances of dropping out or falling behind in school. These characteristics may include being from a single-parent household, having an older sibling who dropped out of high school, changing schools two or more times other than the normal progression (e.g., from elementary to middle school), having Cs or lower grades, being from a low socioeconomic status family, or repeating an earlier grade.

Black or African American: A person having origins in any of the black racial groups of Africa.

Class: Within the context of a DoD STARBASE Academy, a class is a grouping of students. This group may not necessarily have been a homogenous entity prior to DoD STARBASE instruction; it may be a temporary grouping only for the purposes of assembling for the 20-hour minimum period of DoD STARBASE instruction.

Classroom Contact Hour: A period of 60 minutes, plus or minus 5 minutes, in which a DoD STARBASE Academy instructor is actively involved with students or in which a military member is demonstrating, displaying, or teaching an application of science, technology, engineering, and mathematics to the students.

Classroom Teacher: Teacher from schools who participate in DoD STARBASE classes.

Coach: An experienced adult providing support, training, and guidance to a student in achieving a specific goal.

Computer-Aided Design (CAD): The use of computer systems to assist in the creation, modification, analysis, or optimization of a design. It is both a visual and symbol-based method of communication whose conventions are particular to a specific technical field.

Core Curriculum: The fixed course of study taught by all DoD STARBASE academies. (See DoD STARBASE Curriculum.)

Current Expenditures: Expenditures for operating DoD STARBASE Academies, excluding capital outlay. These expenditures include such items as staff salaries, facilities, staff travel, supplies, equipment, contract services, and public relations/outreach.

Demographics: See Ethnicity/Race.

Director: DoD STARBASE staff member responsible for the DoD STARBASE Academy.

Disability: Any of the disabilities classified in the U.S. Department of Education's Office of Special Education Programs (OSEP), which collects information on students with disabilities as part of the implementation of the Individuals with Disabilities Education Act (IDEA). Categories of disabilities include autism, deaf-blindness, developmental delay, emotional disturbance, hearing impairment, intellectual disability, multiple disabilities, orthopedic impairment, other health impairment, specific learning disabilities, speech or language impairments, traumatic brain injury, visual impairments, and preschool disability.

GLOSSARY, CONTINUED

DoD: Department of Defense.

DoD Components: DoD entities that have established or are in pursuit of establishing a DoD STARBASE Academy, including the military departments, defense agencies, and defense field activities.

DoD Instruction (DoDI): Document that implements policies, responsibilities, and procedures for executing the DoD STARBASE program.

DoD STARBASE Academy: A DoD educational program designed to improve the knowledge and skills of students in kindergarten through 12th grade in mathematics, science, and technology. It follows the academy model description in DoDI 1025.07.

DoD STARBASE Curriculum: DoD STARBASE core curriculum is comprised of the following areas:

SCIENCE
A. Science Fundamentals
B. Characteristic Properties
C. Motion & Force
D. Science Explorations

TECHNOLOGY
A. Applying Technology

ENGINEERING
A. Engineering Design Process
B. 3-D Computer Aided Design

MATHEMATICS
A. Number Relationships
B. Measurement
C. Geometry
D. Data Analysis

SCIENCE, TECHNOLOGY, ENGINEERING, & MATHEMATICS (STEM) CAREERS
A. STEM Careers on Military Facilities
B. Personal Investigations

DoD STARBASE Program: The DoD STARBASE program is authorized by Title 10 United State Code Section 2193b as a DoD science, technology, engineering, and mathematics education improvement program. The OASD/M&RA administers policy and oversight; the DoD components execute the program at DoD STARBASE academies. DoD STARBASE is funded by Congress as a Civil Military Program.

DoD STARBASE Site/Location: The location of a DoD STARBASE Academy where the program is taught.

DoD STARBASE Advanced 2.0 Program: A unique school-based program targeting at-risk 6th to 8th graders occurring outside of normal school hours. The program takes place in partnering schools expressing the desire for additional DoD STARBASE program resources.

DoD STARBASE Advanced 3.0 Program: A pilot program in development to encompass grades 9-12 outside of normal school hours while forming partnerships with JROTC cadets and high school students, with collaboration among STARBASE locations to fully extend the authority of Title 10 U.S. Code Section 2139b culminating in the STARBASE program's reach from kindergarten to high school.

DoE: Department of Education.

Driver: Drivers identify a set of related attitudinal clusters for the student population (i.e. when the driver is present, the set of attitudes will most likely be present, or in reverse, when the condition in the list of attitudes are present, the target "driver" attitude will also be present).

GLOSSARY, CONTINUED

Elementary School: A school with one or more of grades K–6 that does not have any grade higher than grade 8. For example, schools with grades K–6, 1–3, or 6–8 are classified as elementary.

Elementary/Secondary School: Elementary/secondary schools include regular schools (i.e., schools that are part of state and local school systems and private elementary/secondary schools, both religiously affiliated and nonsectarian); alternative schools; vocational education schools; and special education schools.

Engineering: The discipline dealing with the art or science of applying scientific knowledge to practical problems. Engineering is the use of scientific principles to design and build machines, structures, and other items, including bridges, tunnels, roads, vehicles, and buildings. The discipline of engineering encompasses a broad range of more specialized fields of engineering, each with a more specific emphasis on particular areas of applied mathematics, applied science, and types of application.

Enrollment: The total number of students registered at a DoD STARBASE Academy at a given time, generally in the fall of the year.

Ethnicity/Race: Categories developed in 1997 by the Office of Management and Budget (OMB) that are used to describe groups to which individuals belong, identify with, or belong in the eyes of the community. The categories do not denote scientific definitions of anthropological origins. The designations are used to categorize U.S. citizens, resident aliens, and other eligible non-citizens. Individuals are asked to first designate ethnicity as: Hispanic or Latino or Not Hispanic or Latino. Second, individuals are asked to indicate one or more races that apply among the following: American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian or Other Pacific Islander, White.

Expenditures: Charges incurred, whether paid or unpaid.

Expenditures Per Pupil: Charges incurred for a particular period of time divided by a student unit of measure, such as enrollment, average daily attendance, or average daily membership.

Fiscal Year (FY): The yearly accounting period for the federal government, which begins on October 1 and ends on the following September 30. The fiscal year is designated by the calendar year in which it ends; for example, fiscal year 2021 begins on October 1, 2020, and ends on September 30, 2021.

Free or Reduced-Price Lunch: See National School Lunch Program.

Gap Score: Difference between pre-program and post-program test scores.

Graduate: An individual who has received formal recognition for the successful completion of a prescribed program of studies.

High School: A secondary school offering the final years of high school study necessary for graduation, in which the lowest grade is not lower than grade 9. Usually includes grades 10, 11, and 12 or grades 9, 10, 11, and 12. Alternatively, according to the 2007–08 Schools and Staffing Survey, defined as a school with no grade lower than 7 and at least one grade higher than 8.

Hispanic or Latino: A person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin, regardless of race.

Inner City Location: Usually older, poorer, and more densely-populated central sections of a city.

Inquiry-Based Learning: A student-centered educational approach which focuses on using and learning content as a means to develop information-processing and problem-solving skills. In this approach the teacher acts as a facilitator. Students are involved in the building of knowledge through active involvement.

Instructor: DoD STARBASE educator.

Kindergarten: Includes transitional kindergarten, kindergarten, and pre-1st grade students.

Location: See DoD STARBASE Site/Location.

Mapping: The process of using maps to chart a course.

GLOSSARY, CONTINUED

Mathematics: The study of the measurement, properties, and relationships of quantities and sets, using numbers and symbols. A body of related courses concerned with knowledge of measurement, properties, and relations quantities, which can include theoretical or applied studies of arithmetic, algebra, geometry, trigonometry, statistics, and calculus.

Median: A number that half of the data is larger than it and a half is smaller. If the itemized data are listed in order of size, the median is the middle number in the list.

Middle School: A school with no grade lower than 5 and no grade higher than 8.

Minority: Racial and ethnic minority populations are defined as Asian American, Black or African American, Hispanic or Latino, Native Hawaiian and Other Pacific Islander, American Indian, and Alaska Native.

National School Lunch Program: Established by President Truman in 1946, the program is a federally-assisted meal program operated in public and private nonprofit schools and residential childcare centers. To be eligible for free lunch, a student must be from a household with an income at or below 130 percent of the federal poverty guideline; to be eligible for reduced-price lunch, a student must be from a household with an income between 130 percent and 185 percent of the federal poverty guideline.

Native American: See American Indian or Alaska Native.

Native Hawaiian or Other Pacific Islander: A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.

Navigation: The theory, practice, and technology of charting a course for a ship, aircraft, or a spaceship.

Not-For-Profit Organization: A legal entity recognized or chartered by a competent state authority and to which the Internal Revenue Service has given status as a 501(c) 3 tax-exempt educational organization.

OASD/M&RA: Office of the Assistant Secretary of Defense for Manpower and Reserve Affairs.

Onshape: A computer-aided design (CAD) software system delivered over the internet. The cloud-based application allows for solid modeling, assembly modeling, and drafting. The Onshape CAD system allows multiple users to access and work on a single design concurrently over the cloud using any computer, tablet, or phone.

Operational Academies: An academy that is processing students.

Outreach: Providing services to any populations who might not otherwise have access to those services. A key component of outreach is that the groups providing it are not stationary, but mobile; in other words, they are meeting those in need of outreach services at the locations where those in need are located. In addition to delivering services, outreach has an educational role, raising the awareness of existing services. It includes identification of underserved population and referral to services.

Participant: A DoD STARBASE student. Participant may also refer to military command support units, the local sponsoring base command, community leaders, local community sponsoring committees, school systems, schools, teachers, military service volunteers, DoD STARBASE board members, staff, and parents.

Percentile (Score): A value on a scale of 0 to 100 that indicates the percent of a distribution that is equal to or below it.

Pre/Post Application: Prior to the start of the program and at the completion of the program.

Program Year: The DoD STARBASE program year is the same as the government fiscal year, October 1 – September 30.

Public School: A school that provides educational services for at least one of grades K–12 (or comparable ungraded levels), has one or more teachers to give instruction, has an assigned administrator, receives public funds as primary support, and is operated by an education or chartering agency. Public schools include regular, special education, vocational/technical, alternative, and charter schools. They also include schools in juvenile detention centers, schools located on military bases and operated by the Department of Defense, and Bureau of Indian Education-funded schools operated by local public school districts.

GLOSSARY, CONTINUED

Race/Ethnicity: Categories developed in 1997 by the Office of Management and Budget (OMB) that are used to describe groups to which individuals belong, identify with, or belong in the eyes of the community. The categories do not denote scientific definitions of anthropological origins. The designations are used to categorize U.S. citizens, resident aliens, and other eligible non-citizens. Individuals are asked to first designate ethnicity as: Hispanic or Latino or Not Hispanic or Latino. Second, individuals are asked to indicate one or more races that apply among the following: American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian or Other Pacific Islander, White.

Race/Ethnicity Unknown: The category used to report students or employees whose race and ethnicity are not known.

Rural Location: All population, housing, and territory not included within an urbanized area. Whatever is not urban is considered rural.

Salary: The total amount regularly paid or stipulated to be paid to an individual, before deductions, for personal services rendered while on the payroll of a business or organization.

Sample Population: A statistically significant representation of the total number of students tested each year.

School District: An education agency at the local level that exists primarily to operate public schools or to contract for public school services.

School Year (SY): The period of time during which a school system operates, typically beginning on July 1st and ending on June 30th of the following year.

Science: The body of related course concerned with knowledge of the physical and biological world and with the processes of discovering and validating this knowledge.

Secondary School: A school with one or more of grades 7-12 that does not have any grade lower than grade 7. For example, schools with grades 9-12, 7-9, 10-12, or 7-8 are classified as secondary.

Site: See DoD STARBASE Site/Location.

Socio-Economic Disadvantage(d): A term used to describe economically-deprived, poor, poverty-stricken, or disadvantaged individuals or groups. (See also Socioeconomic Status.)

Socio-Economic Status: A measure of an individual or family's relative economic and social ranking based on such factors as father's education level, mother's education level, father's occupation, mother's occupation, and family income.

STARBASE U: The DoD STARBASE online learning management system where resources and training materials are made available to program staff.

STEM: Science, Technology, Engineering, and Mathematics (STEM) fields of study that are considered to be of particular relevance to advanced societies.

STEM Careers: Account for over six percent of all U.S. jobs. The acronym refers to science, technology, engineering, and mathematics, and includes careers in physical and life sciences, computer science, mathematics, and engineering. Many employment experts include health professions, health technology, and social sciences under this umbrella as well.

Supplemental Programs: These are programs that for one reason or another (e.g. below minimum hours, do not cover the core curriculum areas, etc.) do not meet DoDI standards. They are often conducted during the summer months and may be designed to reach students that do not fall under the targeted "participant" schools or are in response to requests by members of the community to serve other groups of children. In many cases, supplemental programs are established in response to the demand created by the popularity and success of the DoD STARBASE program within the community.

GLOSSARY, CONTINUED

Teacher Certification: License granted by states for teachers to teach a given subject. These vary by state but generally include: obtaining a bachelor's degree; completing a teacher preparation program, which includes either an undergraduate, master's, or alternative program; getting state or national certification to teach by completing all requirements.

Technology: The sum of techniques, skills, methods, and processes used in the production of goods or services or in the accomplishment of objectives, such as scientific investigation. Technology can be the knowledge of techniques, processes, and the like, or it can be embedded in machines to allow for operation without detailed knowledge of their workings. Systems applying technology by taking an input, changing it according to the system's use, and then producing an outcome are referred to as technology systems or technological systems.

Title I Grant Program: The federal government provides grants to local education agencies to supplement state and local education funding based primarily on the number of children from low-income families in each local education agency. The program provides extra academic support and learning opportunities to help disadvantaged students catch up with their classmates or make significant academic progress.

Underrepresented/Underserved Students: Any student who belongs to a group that has been historically underrepresented in various contexts, and who lacks access to computers and the internet. Historically, this has included American youth from low-income families, live in rural communities, have limited education, or are members of racial groups or considered ethnic minorities.

Urban Area (UA): Consists of 50,000 or more people.

Urban Cluster (UC): Consists of at least 2,500 and less than 50,000 people.

Volunteer: A person who freely offers to take part in an enterprise or undertake a task.

White: A person having origins in any of the original peoples of Europe, the Middle East, or North Africa.

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www.DoDSTARBASE.org

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