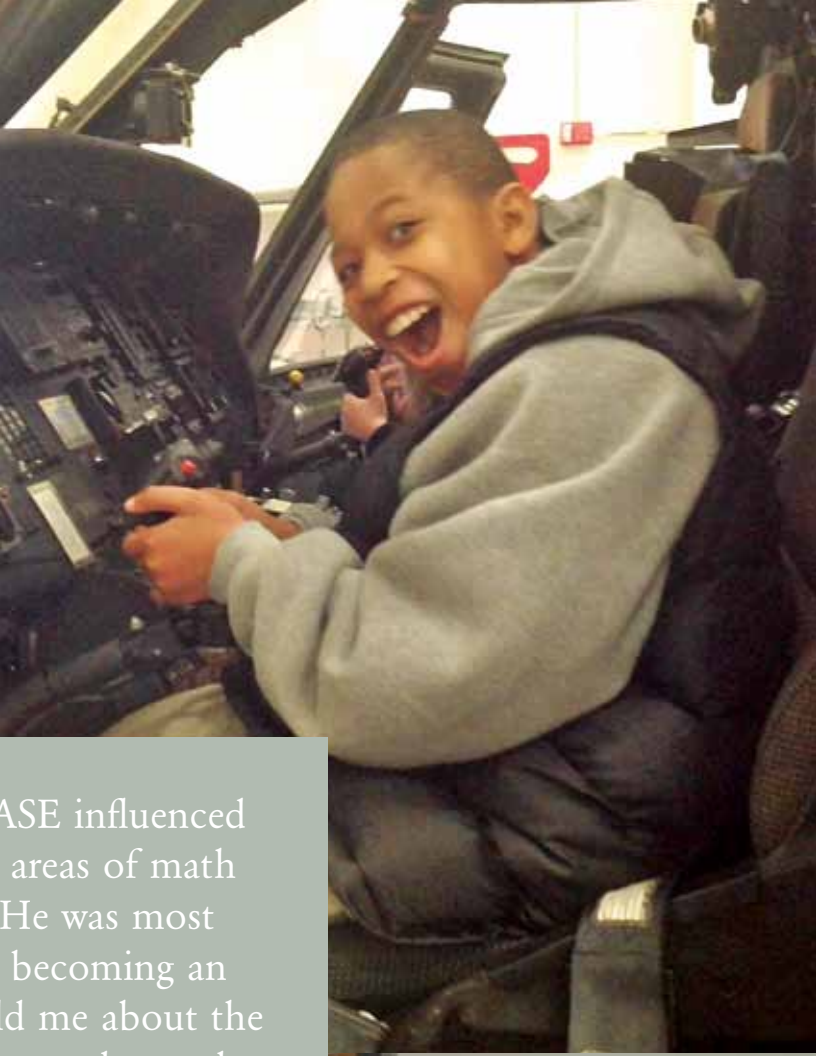


2015

ANNUAL REPORT

THE DEPARTMENT OF DEFENSE
IS MAKING A DIFFERENCE IN
STEM EDUCATION.





“DoD STARBASE influenced my son in the areas of math and science. He was most excited about becoming an engineer. He told me about the computer program he used to make 3D models and really liked it.”

Parent of a student at DoD STARBASE California, Sacramento, CA



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“After DoD STARBASE my students are making interdisciplinary connections in class, pointing out physical changes. They were exposed to various careers in STEM and look forward to working hard to become engineers.”

Leslie Villasenor, Teacher participating at DoD STARBASE, Los Alamitos, Los Alamitos, CA

Vision and Mission Statements of DoD STARBASE

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 at risk youth so that we may develop a highly educated and skilled American workforce who can meet the advance 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 instruction and activities that meet or exceed the National Standards.



A map of the United States with Alaska (AK) and Hawaii (HI) highlighted in pink. The rest of the United States is shown in light gray.



Native American outreach programs in Oklahoma and South Dakota

■ Number of Students since 1993	952,783
■ Number of students served in 2015.....	62,071
■ Cost of program.....	\$22,500,000
■ Average cost per academy.....	\$387,931

A photograph showing three young students, two girls and one boy, gathered around a table. They are looking intently at a laptop screen. On the table, next to the laptop, is a small white robot with black wheels and a sensor. The students are wearing casual clothing; one girl has a red flower in her hair, and another has a blue star tattoo on her hand. The background is slightly blurred, showing other people and what appears to be an outdoor or semi-outdoor setting.

“This program is a dream come true, because it is a group of people who value and respect a child’s natural curiosity. This program guides children through constructive discovery and inquiry....”

Connie McWorther, Teacher participating at DoD STARBASE Los Alamitos, Los Alamitos, CA

DoD STARBASE CURRICULUM

PHYSICS

- A. Newton's Three Laws of Motion
- B. Fluid Mechanics and Aerodynamics

CHEMISTRY SCIENCES

- A. Building Blocks of Matter
- B. Physical and Chemical Changes
- C. Atmospheric Properties

TECHNOLOGY

- A. Innovations
- B. Navigation and Mapping

ENGINEERING

- A. Engineering Design Process (EDP)
- B. 3-D Computer-Aided Design

MATHEMATICS OPERATIONS & APPLICATIONS

- A. Numbers and Number Relationships
- B. Measurement
- C. Geometry
- D. Data Analysis

STEM CAREERS

- A. STEM Careers on Military Facilities
- B. Personal Investigations



**David “Shawn” Canady
interning at Proterra,
an all-electric bus
manufacturing company**



“DoD STARBASE gives my students the ultimate STEM experience. Our fifth grade students look forward to this training every year because they are away from school and they go through the engineering design process all day. They experience success and failure but have the chance to re-design and test again. The staff that works with my students is very professional and caring.”

Jodi S. Clark, Principal with participating students at DoD STARBASE Robins, Warner Robins, GA

A Letter from DoD STARBASE Warner Robbins Graduate, David Shawn Canady

Dear STARBASE Warner Robbins,

I would like to personally give insight on how important DoD STARBASE was for the eventual development of my career path. I attended a local school in Macon, GA and went to DoD STARBASE once a day for about five weeks when I was in the 5th grade (1999-2000). While there, I remember learning about concepts of lift and drag and how it affects the aerodynamics of a wing. In addition to lectures, there were numerous times in which we were able to apply concepts into practical applications. The lessons supplemented the experiments, but also made you think. Critical thinking skills were important to accomplish tasks. One of the many experiments conducted was the creation of an ESTES rocket over the course of a couple of weeks and then firing it off at the completion of the course. I cannot explain how great it felt to be able to design and build something and watch it in action.

DoD STARBASE allowed for the development of my critical thinking, time management, and teamwork skills. The most important point of DoD STARBASE though, was first-hand insight on the Science, Technology, Engineering, and Mathematics (STEM) field.

In 2008, I enlisted in the United States Marine Corps as an "engineer and electrical equipment systems technician". During my four-year enlistment, I was stationed in North Carolina and Okinawa, Japan and deployed to the Philippines and Thailand. During my deployment in the Philippines, we were hit with a super-typhoon, known as Megi. It was during this incident, I assisted and provided for the Filipinos with water and electricity.

In 2011, mainland Japan was hit by a typhoon and we had nuclear reactors go down. As a result, I was a part of the relief effort to aid the Japanese and received a Humanitarian Service Medal for services. Later in 2011, while stationed in North Carolina, I was once again, assisting in the relief of communities when Hurricane Sandy landed. The skills I learned at DoD STARBASE lead to my ability to be so successful with these cases.

Since leaving the military in 2012, I have completed a cooperative education program with Georgia Transmission Corporation, an electrical transmission corporation that deals with high voltage transmission from generation to distribution. I am also currently an intern at Proterra, an all-electric bus manufacturing company. I currently go to school at Clemson University and major in Electrical Engineering.

Learning about STEM and STEM-related fields is of the utmost importance and must be instilled in young individuals. DoD STARBASE allows for students to learn more about fields that they may not have had an interest in prior. DoD STARBASE provides opportunities to students that they may not have.

Respectfully,
David Shawn Canady



David "Shawn" Canady currently attends Clemson University majoring in Electrical Engineering.

An Issue of National Importance & National Security

There is an urgent need to establish unparalleled student achievement in science, technology, engineering and mathematics (STEM) curricula at every level of education. From elementary-age students to the young scholars in our nation's high school advanced placement classes and beyond, we must work to make STEM education and careers a rewarding and attractive option to develop the talent and increase the prospective return on investment. American defense and homeland security industries face serious challenges in filling some of the best and most critical technical jobs in our country, and we are not producing enough graduates trained in STEM who qualify for security clearances. The problem presents a serious risk for our national security over the next decade as Baby Boomers retire without an employable talent pool or pipeline to replace them.

The DoD STARBASE program directly supports the Department of Defense Science, Technology, Engineering and Mathematics (STEM) FY2016 - FY2020 Strategic Plan's vision, mission and goals serving as a foundational awareness and workforce development program that highlights STEM awareness as a core component. It is one of the primary tools that the DoD has in its inventory to contribute to the ongoing, renewed national effort intended to close the serious achievement gap with competing nations and to perpetuate our long-term security and prosperity.

DoD STARBASE has a tremendous impact on America's youth nationwide as it improves their learning experience and desire to pursue careers in STEM. Their interests and knowledge in STEM are important to our nation's future as we need to build and sustain a highly educated and skilled workforce capable of meeting the advanced technological requirements of the Department of Defense. Evidence based evaluations of DoD STARBASE participants show significant improvement in the students' understanding, interest, and ability in math and science which has led to increased enthusiasm in pursuing further STEM education. The surveys also find that the vast majority of teachers believe that DoD STARBASE assists in meeting state education standards (for science and mathematics curriculum and testing) and that the teachers are more likely to adopt DoD STARBASE materials.

A rigorous study conducted by Wilder Research on activities at DoD STARBASE Minnesota suggests possible long-term program impacts on students' high school graduation, college enrollment, interest level in STEM areas, and technology in particular. Although students spend only a brief time at DoD STARBASE (25 contact hours), surveys completed by students and teachers both report increased levels of confidence and enthusiasm at the end of the program. Results also indicate that former students have very positive feelings about the program and the military even a decade later.

DoD STARBASE is an outstanding outreach program. It strengthens the relationships between the military, the community (including our industrial partners) and the school districts, while raising the interest of students traditionally underrepresented in STEM education programs and pursuing such careers. With 59 programs nationwide, DoD STARBASE program directors and their respective senior leadership are able to work directly with local and state leaders to execute our DoD STEM Strategy while addressing their educational gaps in STEM using a proven curriculum.

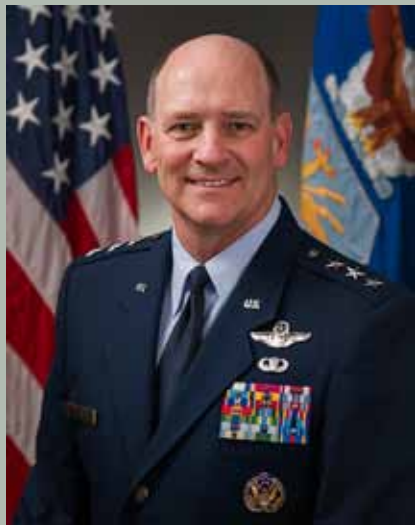
Since its inception in 1993, the DoD STARBASE program has served over 900,000 students from 400 school districts in over 40 states. Through continued annual analysis, evaluations and updates, DoD STARBASE can assist the DoD in achieving its goal of enhancing the efficiency and effectiveness of STEM education initiatives. As a foundational STEM program, DoD STARBASE has the great potential to increase the quantity and quality of scientists, technologists, engineers, and mathematicians graduating from our education system with an interest in supporting our national security. This annual report provides the analysis and information on the program's continued success during FY 2015.

“My son has been waiting since 2nd grade to attend DoD STARBASE. It finally happened this week, and I’m surprised he came home! A very big Thank You to all who made this one of the most memorable weeks “Mustard” has had! You are all inspiring the future and doing a great job!”

Parent of a student at DoD STARBASE Winchester, Winchester, VA



A Letter from Lieutenant General James Jackson, Chief of Air Force Reserve



Since 1996, Air Force Reserve Command has been a proud sponsor of DoD STARBASE Robins. This premier DoD educational program offers hands on activities that focus on science, technology, engineering and math (STEM) programs designed to foster innovation and encourage discovery in local youths. Students engage in hands-on activities that not only provide an enhanced STEM experience, but create a learning environment that supports Georgia Performance Standards. To date, DoD STARBASE Robins has provided STEM curriculum enrichment to over 20,000 students in Middle Georgia.

DoD STARBASE Robins' vision is to raise interest and improve knowledge and skills of STEM fields of study to disadvantaged and underrepresented students. Since its inception, average student program test scores have increased 22%. The implementation of DoD STARBASE 2.0 has provided afterschool instruction and mentorship for at risk students as they transition between elementary and middle school. DoD STARBASE 2.0 and the Afterschool Mentoring Clubs have also encouraged our military personnel to become involved in the community we serve.

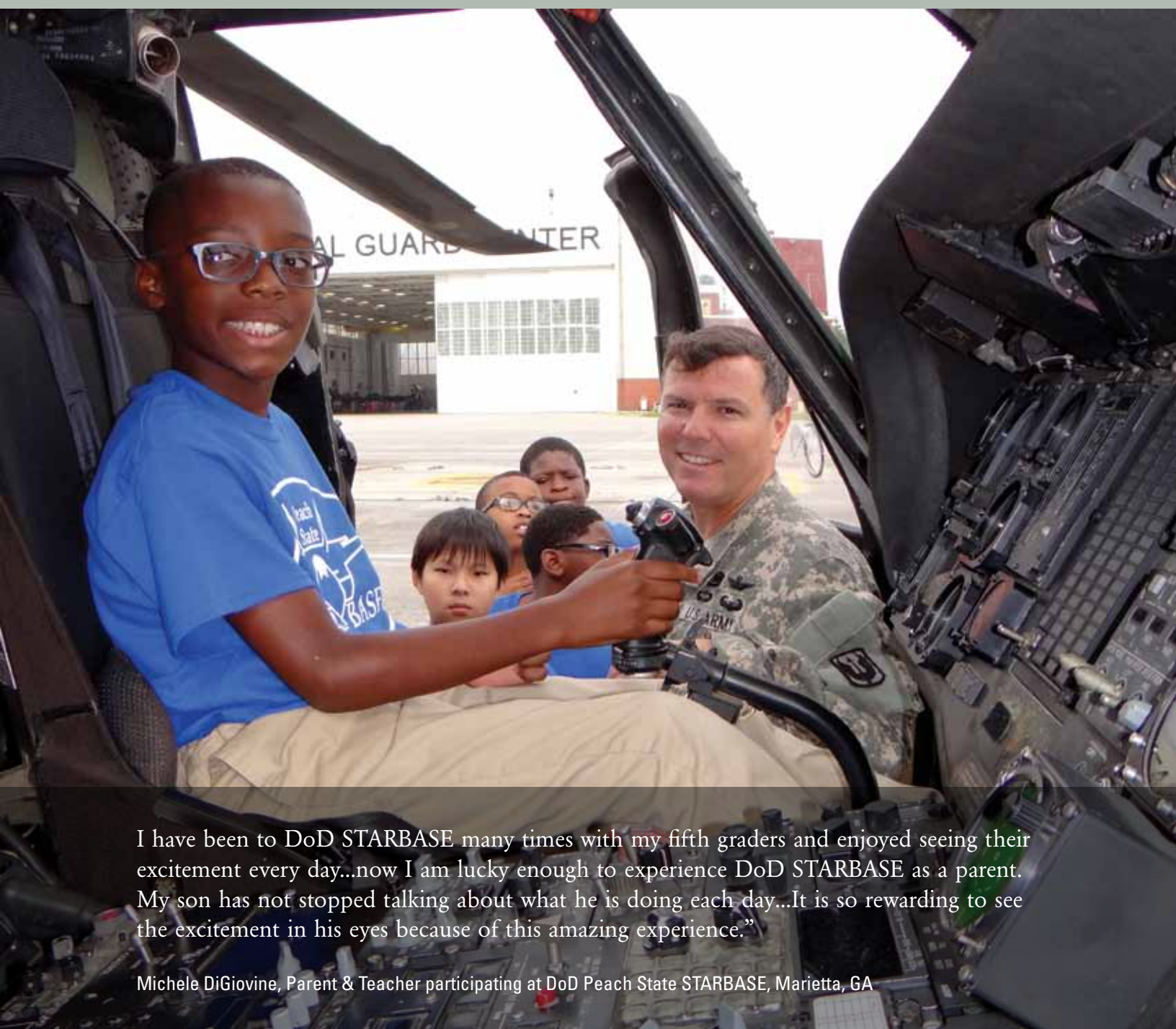
Although the focus of DoD STARBASE Robins is to offer state of the art STEM learning opportunities, it also includes curriculum that encourages personal growth among the participants. Students receive instruction in communication, problem solving, decision making and career goal setting, all of which are essential skills for future success. The faculty also challenges students to give back to their community by planning and implementing service projects in the local area.

One of the benefits of DoD STARBASE Robins is the network of partnerships with industry, government, school districts, and the military which has created a critical community of stakeholders to provide formal and informal STEM opportunities for our youth. It is essential to continue to support such innovative and effective STEM educational programs. It is my hope that DoD STARBASE will become the springboard for future innovators.

Sincerely,

A handwritten signature in black ink, which appears to read "James F. Jackson". The signature is stylized with a large, looping initial "J" and a long, horizontal stroke at the end.

Lt. General James Jackson
Chief of Air Force Reserve
Commander, AFRC



I have been to DoD STARBASE many times with my fifth graders and enjoyed seeing their excitement every day...now I am lucky enough to experience DoD STARBASE as a parent. My son has not stopped talking about what he is doing each day...It is so rewarding to see the excitement in his eyes because of this amazing experience."

Michele DiGiovine, Parent & Teacher participating at DoD Peach State STARBASE, Marietta, GA

“Providing more highly trained, highly skilled workers to Oklahoma business and industry is essential to boosting state prosperity and creating more jobs,”
—Gov. Mary Fallin

“The students are definitely exposed to many more concepts than they would receive with our regular classroom curriculum. It is so fun to see their faces light up when they make discoveries and science connections!”

Teacher participating at DoD STARBASE Oklahoma - Tulsa, Tulsa, OK



DoD STARBASE Oklahoma Receives Education Funding from Oklahoma's Aeronautics Commission

The Oklahoma Aeronautics Commission has approved \$28,500 in aerospace and aviation education funding that will be distributed to DoD STARBASE Oklahoma whose classrooms are located in Tulsa, Midwest City, Lawton, and Burns Flat. DoD STARBASE Oklahoma has been one of the Commission's biggest and longest-running recipients for education funding, garnering almost \$450,000 in grants and contracts since FY 2001.

The funding is part of more than \$200,000 the commission is providing over the next 12 months to programs statewide aimed at exposing more Oklahoma young people to STEM and careers in the aviation and aerospace industry. The Aeronautics Commission's aerospace and aviation education funding supports Gov. Mary Fallin's Oklahoma Works initiative that aims to address the skills gap in the state's workforce by increasing the number of students in the state with workforce credentials or associate degrees. "Providing more highly trained, highly skilled workers to Oklahoma business and industry is essential to boosting state prosperity and creating more jobs," Gov. Fallin said. "I am excited to see the Aeronautics Commission's support of Oklahoma Works and our efforts to get Oklahomans the skills and educational opportunities they need to find great careers."

Aeronautics Commission Director Vic Bird said, "It's no secret that our state's aerospace industry – one of our state's top economic engines – needs more skilled workers, especially as our workforce approaches retirement age. These worthwhile programs receiving state funding are doing their part to help make sure that that happens. So we are more than happy to join them in that endeavor." Aerospace and aviation education is one of the Aeronautics Commission's top priorities. Since FY 2001, it has provided \$2.3 million in aerospace and education funding to organizations and programs throughout the state. Just within the last 5 years alone, the Commission has awarded nearly \$1 million in education grants and contracts.

DoD STARBASE Oklahoma will receive \$28,500 in funding from the Commission that will be applied to the organization's STEM Above the Earth program, which serves 5,000 fifth through eighth grade students. According to DoD STARBASE Oklahoma Director Pamela Kirk, the education funds from the Aeronautics Commission will go toward the printing of activity logs for all fifth-grade students in the program and other items, including radio-controlled planes and rockets.



A Letter from L. John MacMartin, President of Minot Area Chamber of Commerce, North Dakota



Sometime in 2006, the spouses of both Wing Commanders at Minot Air Force Base requested a meeting with me and the Chair of the Board of the Chamber. Their topic of conversation was DoD STARBASE, and I quickly learned that DoD STARBASE was all about STEM programs.

DoD STARBASE is a program that hopefully would light a fire in the hearts and minds of the 5th grade students that took part in it. It could show them how science, technology, engineering and math were applicable in the everyday world. The fact that Minot Air Force Base was near the town and that the airmen would help to teach components of the classes was the icing on the cake.

The path to get Minot DoD STARBASE started was not without hurdles to overcome. Suffice to say that we leapt over each hurdle and soon the big day arrived. The entire Congressional Delegation was there, the Mayor, the Minot Superintendent of Schools, the Wing Commanders and their spouses and many other dignitaries. A ribbon was cut, and Minot had a DoD STARBASE program.

The Minot DoD STARBASE program has served 5th grade students within about an hour's drive from Minot Air Force Base, and it has been well received. The advent of the congressional continuing resolutions and the threatened shut down of the federal government did put a hiccup into the continuity of the DoD STARBASE here in Minot. The reality was we lost a year's worth of program operations and over 540 students missed a fabulous opportunity to be exposed to STEM through Minot DoD STARBASE. The new reality is that all parties to the program wanted to see it restarted and to succeed long term. I am pleased to report that DoD STARBASE in Minot is back up, running, and challenging the 5th grade youth of our area.

The Minot Area Chamber of Commerce is pleased to have been part of the start of the program and is even more pleased to have helped push to get the right answers to restart the program this year.

Sincerely,

A handwritten signature in black ink that reads "L. John MacMartin". The signature is written in a cursive, flowing style.

L. John MacMartin,
CCE President



“This is my first year bringing my students to DOD STARBASE; I am amazed by how much they learn in such a short time. I was impressed by the level of organization. Student engagement is off the charts!”

Ms. Potts, Teacher participating at DOD STARBASE North Dakota, Minot, ND

DoD STARBASE Collaborations, Creating Community Partners

Winchester DoD STARBASE Academy Builds Community Involvement

Community involvement has been paramount to the success of the Winchester DoD STARBASE program since they opened their doors in 2012. A vital part of youth education is to see the relevance of their education outside the walls of their classroom. While at Winchester DoD STARBASE, students have the opportunity to interact with guest speakers from a myriad of STEM backgrounds.

Medical careers, such as podiatry, veterinary, and radiology were highlighted during FY 2015. Dr. Lisa Zerull (PhD, RN) from Winchester Medical Center led students through a lesson about the importance of cardiovascular health, and then allowed them to explore the structure of pig hearts, which are comparable to the structure of a human heart. Dr. Zerull stated, "With DoD STARBASE, these impressionable young people receive a comprehensive program that reveals phenomenal career paths that students have never heard about and provide access to professionals and skilled persons like no other program."

Engineers were represented through the Army Corps of Engineers, Winchester City, and Alpha Corporation. Students learned the importance of caring for groundwater systems as well as how to design and build bridges, catapults, and towers. The use of forensic science and technology was emphasized by exposure to law enforcement careers. Police officers taught students how to dust for and lift fingerprints, what Kevlar is made of, how to use a radar device to clock a speeding car, and illustrated the sensitivity of a breathalyzer with hand sanitizer.



Lilly Schutz, a 5th grader from Gainesboro Elementary is learning how to fingerprint with guest speakers Detectives Smith and Barlow while attending DoD STARBASE Winchester.

Retired Air Force pilots taught students how to map four legs of a cross country flight using math to determine heading, distance, and flying time while explaining how STEM is used in the aerospace industry. "The impact that DoD STARBASE has on these future leaders is incredible and will pay great dividends" said Lt. Col. Charles Beck (USAF, Ret.) and volunteer from Northrup Grumman. Another Air Force retiree, Lt. Col. Sam Finch stated, "I feel it is essential for National Security that we have STEM programs to encourage and develop the next generation of scientists and engineers."

It is through this strong community support that children from the Winchester region are discovering the large variety of STEM careers that exist around our country and are available to them as part of a vibrant community.

Western Oklahoma Partnership Embraces the Future Generation

Burns Flat is a community of 2,063 residents, located off I-40 in western Oklahoma. What might be considered Burns Flat's newest "claim to fame" is the exciting partnership being formed by military, industry, hobbyist and educational entities to lend their own passions and expertise to their DoD STARBASE Oklahoma classroom. Leaders from the Oklahoma National Guard, Oklahoma Space Industry Development Authority (OSIDA), Western Technology Center (Burns Flat and Sayre campuses),

Canute Public Schools, Elk City Flying Aces Radio-Controlled Flying Club as well as the men and women of Altus AFB have come together to nurture the students who participate in the program.



Students from Burns Flat/Dill City Elementary learning about a C-130 during their week at DoD STARBASE Burns Flat.

The Oklahoma National Guard began hosting the DoD STARBASE program in 1993, and the Burns Flat location opened in 2006. In 2014, DoD STARBASE-OSIDA partnered with Altus AFB (some 55 miles down the road) to offer a culminating "6th Day" of program offering in the form of a military Career Day. Four to six times each school year, all the classes who have come to the Burns Flat DoD STARBASE classroom for the five days of DoD STARBASE curriculum will jump on school buses once again to tour "all things STEM". There, the students have an opportunity to visit with 50 or more airmen who have created hands-on displays to show the children what they do each day and how it relates to STEM; whether it's the environmental lady with her "skunk traps", logistics, surveyors, hazmat and firemen, cyberspace and base networking, or weather team, the students meet and talk with all of them. Outside, the civil engineers and their heavy equipment are on display,

Continued on next page

DoD STARBASE Collaborations, Creating Community Partners (Continued)

and pilots take these excited youngsters on tours of their aircraft.

Another partnership was launched in 2014-15 with Western Technology Center (WTC) – Burns Flat Campus. Under the leadership of Assistant Superintendent Penny Berry and Counselor Cheri Lu Gastineau, Western has reached out in marvelous ways to the children of DoD STARBASE Oklahoma. As Western learned more about the DoD STARBASE program, they wanted to become a supporter and did so by enhancing “5th Day Graduation” ceremonies. At the WTC auditorium, the WTC staff recognizes the DoD STARBASE students, their culinary program provides cookies and drinks, and students are taken on a tour of WTC STEM programs. At each of these “graduations”, a boy and girl “STEM Star” are recognized for their achievement during the DoD STARBASE classes. At year’s end, WTC invites these students, their families, their teachers and administrators to return for an evening’s “STEM Star Night” where students receive more formal recognition for their achievement in DoD STARBASE.

In addition to the 5th grade programming, DoD STARBASE Burns Flat staff sponsors one of the longest-running and most successful DoD STARBASE 2.0 after-school programs at Canute Middle School. Canute’s 2.0 STEM activities have included CO2 dragsters, water bottle rockets, solar-powered cars and will soon add LEGO Mindstorms robotics to its resume. Last spring, Canute students were able to construct radio-controlled airplanes and with the help of the Elk City Flying Aces Radio-Control Club, learned how to fly their craft. Very proudly—and with many, many thanks to the Flying Aces for their guidance—students experienced a near 100% success rate in flying AND landing safely. Twice a year, teachers and students from WTC STEM programs (Biomedical Technology at Burns Flat campus

and Criminal Forensics at Sayre campus) bring exciting and interesting hands-on activities to share with the students about their unique programs, allowing students to dissect sheep brains and dust for fingerprints while talking with professionals in these fields.

STEM Learning and Language Acquisition at DoD STARBASE Hanscom

For the past two years, DoD STARBASE Hanscom AFB provided summer STEM programming to English Language Learners (ELL) in response to the needs of Massachusetts school districts. The performance gap between ELL and native speakers of English is well-documented. Teachers qualified to teach English as a Second Language (ESL) and STEM are in short supply, and school districts are sometimes forced to prioritize language acquisition over STEM learning.

The DoD STARBASE Hanscom AFB summer program seeks to leverage both the language skills and STEM knowledge of ELL through engagement in STEM activities. Multilingual military volunteers from the base serve as inspirational speakers. For five challenging and fun days, students work together in teams and, with assistance from instructors, find a common vocabulary in STEM.

Students from the Leominster Public Schools attend DoD STARBASE during the year, and the ELL DoD STARBASE summer program provided them an additional means of supporting students in STEM along with a grant from Northrup Grumman to the Leominster Education Foundation. The grant defrayed the cost of transporting the students to the DoD STARBASE site at Hanscom AFB.



DoD STARBASE Hanscom's English Language Learners are busy engineering their bridge to test various mass capacity during a summer program supported by Northrup Grumman.

Continued on next page

DoD STARBASE Collaborations, Creating Community Partners (Continued)

DoD STARBASE Minnesota – Collaboration with Corporate Partners

The Twin Cities is home to nearly 20 Fortune 500 companies, including 3M, Ecolab, General Mills, St. Jude Medical and Xcel Energy, who, along with hundreds of other companies that make up the local economy, have their sights on the next generation of scientists, engineers and innovators. DoD STARBASE Minnesota partners with many of these corporations to bridge the excitement students experience at DoD STARBASE with actual careers in STEM industries that one day could be theirs.

In the 3M sponsored “Wings & Dreams” room, students peer into the cavities of the pig hearts as Stephanie Board, Senior Microbiologist at St. Jude Medical, discusses the anatomical challenges in designing solutions to treat conditions that affect the human heart.

In the “Rockets” classroom sponsored by BAE Systems, Ken Tillges, BAE Technical Imaging Specialist, fascinates students with a high speed camera that he uses to make engineering design decisions. Next door, fellow engineers Teren Van Zuilen and Chuck Madhav teach students about energy conversion using a potato that acts as a battery to power LED lights.

Xcel Energy volunteers conduct an interactive demo on how to harness energy from the wind and sun and distribute it to homes in the community. On the other side of the room, 3M Research Specialist Terri Shefelbine provides insight to the world of research and cross-linking polymers in the development of products. And, under the shadow of the Stratasyss-donated 3D rocket, with its 700 hours of layered plastic and Creo-designed parts, Amy Sissala, Stratasyss R & D



To simulate what happens in Seagate's clean room, Daniel Sullivan, from Seagate, had DoD STARBASE Minnesota students dress in clean suits before inspecting disk drives.

Applications Engineer, demonstrates applications of 3D printing on missions to space.

In FY 2015, over 100 local scientists and engineers from partnering STEM corporations volunteered over 250 hours to DoD STARBASE Minnesota. “I started volunteering for STARBASE because of how much fun it is sharing science with kids and getting them excited about potential career paths down the road”, said Max Gelderman, Senior Chemist at Ecolab. “I really enjoyed doing these experiments when I was younger, and it helped direct me towards my field of study.” As colleague and Senior Microbiologist, Amanda Wessinger added, “It's important for young people to be exposed to multiple aspects of STEM, especially to see real life scientists performing something they do in their every day job. It is good to help youth realize that

science can be fun and, especially, that women can be involved.”

In addition to time, talent and classroom sponsorship, many corporate partners have deepened their involvement even further by donating much needed products and services to DoD STARBASE Minnesota’s programs. Microsoft donated software, while Delta Air Lines printed flight logs. Others, like 3M, provided equipment and film for classroom walls. Quantum Technologies’ donated a high speed camera, and Stratasys’ provided 3D printing material. Boston Scientific sponsored the “Nanorobotics” classroom and has also been a significant financial contributor to DoD STARBASE Minnesota’s STEM Pathways program, which collaborates with five other Twin Cities’ STEM education organizations to promote long term STEM learning for a more illuminated path to future STEM careers.

DoD STARBASE Minnesota’s Board of Directors member Jeffrey Matthews, Executive Director of partner Cummings Power Global Engineering, stated, “Ensuring a robust pipeline of STEM talent at Cummins Power is critical to our future success. Programs like DoD STARBASE not only raise STEM awareness, but also ignite a passion for STEM in our country’s next generation of employees. I am a DoD STARBASE board member because I’ve seen first-hand the impact that this program has on our future.”

A close-up photograph of a student's hands working on a small electronic project. The student is holding a small circuit board with a coin cell battery and several discrete LEDs. The background is dark with blue and red ambient lighting, suggesting a workshop or lab setting. The student is wearing a grey t-shirt.

Led by Alex Dietz of St. Jude Medical, DoD STARBASE Minnesota students made their own color-changing LED throwie using coin cell batteries and discrete LEDs. They then reverse engineered an infinity mirror to see how their single LED throwie was multiplied using a mirror and a half mirror in a box, gaining a greater understanding of the principles of partial reflection.



Major General Timothy P. Williams, the Adjutant General of Virginia, visited John Kerry Elementary School students taking part in activities at the Winchester DoD STARBASE Academy, located at the Cherry-Beasley Readiness Center in Winchester, Va. The hands-on activities for the day included completing an electrical circuit, programing robots, and structural engineering.

A Letter from Major General Timothy P. Williams, The Adjutant General of Virginia

The Winchester DoD STARBASE Program has been a huge success and made an incredible impact on STEM education for students in the region. In the past year, the DoD STARBASE staff has exceeded the required 28 weeks of instruction and provided 35 weeks that reached more than 730 students. Of those students, more than 70% came from Title I schools with at-risk populations, English was the second language for 9% of the students and 51% of the students were female. Students who attend the Winchester DoD STARBASE Program average a 30-point increase between the pre-test on the first day and the post-test on fifth and final day of instruction.

The outreach program by the Winchester DoD STARBASE staff further increases the impact and has reached another 400 students. Our staff participates in STEM nights at school, conducts special single day training programs and teaches lessons at our own Youth Camp and Commonwealth ChalleNGe program for at-risk teens.

Our faculty has become widely recognized for their expertise in instruction methods and techniques for STEM education. They were invited to teach a professional development program on "Inquiry-based learning, science best practices" to elementary teachers in Clarke County, Va.

The faculty has also taken advantage of the many subject matter experts in the area and brought them in as guest speakers for each class. These guest speakers included a retired Air Force pilot, retired Air Force engineer, Army Corps of Engineers, a veterinarian, a doctor, a civil engineer, a police detective and health care representatives. The program also has formed a great partnership with the Virginia National Guard Soldiers at the Cherry-Beasley Readiness Center where they teach the DoD STARBASE classes. Soldiers provide facilities tours, talk about their military service and the types of careers offered by the military.

I could not be more proud of the quality of instruction, the professionalism of the staff and their dedication to promoting STEM education to the students in the area. I hope every effort is made to continue to fund this program for many years to come.

Sincerely,



Timothy P. Williams

Major General, The Adjutant General of Virginia



A Letter from Dr. Jada Pitman, Executive Director Student & Outreach Services, Southwest Independent School District



It is with deep gratitude that I thank DoD STARBASE Kelly for the reverberating positive impact they have on thousands of students in Southwest Independent School District (SWISD). Our partnership with DoD STARBASE Kelly started in February 1993 when it was introduced at Sky Harbour Elementary School. Since then, several other campuses within SWISD have participated. Historically, 134 classes have participated in DoD STARBASE Kelly. Each class consists of 25 students, which means the impact is wide and greatly valued, influencing more than 3,350 students.

DoD STARBASE learning is high interest, hands on engagement led by teachers and staff who have genuine interest in leading science, technology, engineering and math (STEM) learning, inquiry, understanding, and enjoyment. These lessons cannot happen in a regular elementary classroom due to location, experiment possibilities, access to equipment, programs, and personnel (former astronauts, pilots, etc.). Aspirations are ignited for what students want to do and who they want to become as adults.

This year we had a former DoD STARBASE student from 1998 participating with her class. She is a teacher working alongside the DoD STARBASE staff guiding her students and continuing the high impact of a quality STEM program that leaves indelible marks.

DoD STARBASE Kelly continues to change the face and future of our nation through awakening STEM leadership within the young. Our students are pursuing higher education and careers in the sciences. DoD STARBASE Kelly is a spark that ignites motivation, successes, and plans for tomorrow.

On behalf of our students, teachers, and staff, thank you for bringing this quality program to SWISD. We are blessed by many years and many lives this program has molded and improved. Thank you for both your insight and foresight.

It is our greatest hope that we can continue to lead our students into a positive and productive future.

Sincerely,

A handwritten signature in black ink, appearing to read "J.L. Pitman".

J.L. Pitman, Ed.D.

Executive Director Student & Outreach Services
Southwest Independent School District

A handwritten signature in black ink, appearing to read "Lloyd Verstuyft".

Lloyd Verstuyft, Ed.D.

Superintendent Southwest Independent
School District



“DoD STARBASE is a wonderful experience for my students; it provides them the opportunity to learn about STEM in a fun, hands-on environment. My students are always excited to tell others back at school what they have learned.”

Stacey Brandes, Teacher participating at DoD STARBASE Vermont- Burlington, Burlington, VT



DoD STARBASE Collaborations with Pre-Service Teachers Helps Build STEM Pipeline



Brianna makes science fun by modeling relaxed engagement with students from Detroit.



DoD STARBASE One and Oakland University:

As a leading expert in STEM education, DoD STARBASE One at Michigan's Selfridge Air National Guard Base pioneered a new community partnership in 2014 with nearby Oakland University's School of Education. Mark Muzzin, Deputy Director at DoD STARBASE One, spearheaded the partnership, realizing that DoD STARBASE can utilize its more than 22 years of expertise to increase the STEM teaching capacity of future educators. According to Oakland University, only 10% of their elementary teaching graduates over the past three years have pursued and earned a science teaching endorsement. This clearly supports the alarming call of a national shortage of STEM-qualified teachers which is substantiated by participating DoD STARBASE teachers who as often do not possess the confidence, time, or materials to teach science and STEM-related subjects. It seemed only natural then to leverage the pedagogical strengths of DoD STARBASE with the need to increase STEM literacy by empowering the next generation of teachers.

The unique format of DoD STARBASE provides the capacity to demystify and build confidence with STEM instruction and classroom management. It affords an opportunity for authentic, testable teaching experiences in small group settings with repeatable lessons in team-based, co-teaching environments that encourage aspiring teachers to experiment, apply, and reflect on teaching strategies. The novel environment at DoD STARBASE is also inspiring to new teachers, and is a chance to learn real-world teaching in a state-of-the-art facility.

During her four-day DoD STARBASE experience, Oakland University student, Brianna Lewicki, worked with and taught chromatography 14 times to small groups of six to eight students. The repetitive structure allowed Brianna to first observe a DoD STARBASE instructor, then co-teach with the instructor, and conclude with teaching lessons on her own, receiving direct, observable, constructive feedback and coaching from the DoD STARBASE instructor. She could practice teaching STEM subjects in short bursts while being able to redesign her instructional

Continued on next page

DoD STARBASE Collaborations with Pre-Service Teachers Helps Build STEM Pipeline (Continued)



Brianna models and allows for independent practice as students create chromatograms.

methods through each repetition. This encouraged her to experiment and learn from mistakes in the same way attending DoD STARBASE fifth graders learn through problem solving and critical thinking. Education majors, like Brianna, gain tangible strategies and classroom management tools they can apply to teaching STEM concepts—but even more important, their experience imbues them with confidence as STEM instructors.

I am more confident now that I know how to adapt to the children's needs. Each group is slightly different but the lesson is the same so I enjoy having the opportunity to tweak my teaching.

Brianna

As with all healthy relationships, the benefits flow in both directions. Oakland University students bring new

energy and ideas with them, infusing fresh air and alternate perspectives. Furthermore, as coaches, it is vital for DoD STARBASE instructors to think critically about every aspect of a lesson and their interactions with and between Oakland students and attending fifth graders. It centers the staff's intention as well as attention, and it creates an opportunity to see the DoD STARBASE lessons through a different lens as a focused observer. This new perspective helps generate subtle, new approaches that strengthen the lessons and their outcomes.

This is only the beginning of the partnership between DoD STARBASE and Oakland University's School of Education. Both sides have a commitment to strengthen and grow the unique and immersive DoD STARBASE/Oakland University educational outreach initiative

as they meet the call of the Federal STEM Education Strategic Plan to prepare excellent K-12 STEM teachers by 2020. No doubt, with its rich history in STEM education, DoD STARBASE is here to not only meet this call to action, but to exceed it.

Noyce Science Teacher Intern at DoD STARBASE Hanscom AFB:

For the past two years, DoD STARBASE Hanscom AFB has served as one of eight internship sites for the Robert Noyce Science Teacher Scholars (STS) Program at Bridgewater State University (BSU). The program encourages talented STEM students and professionals to pursue teaching careers in elementary and secondary schools.

Amanda Lane, BSU student, selected DoD STARBASE Hanscom AFB as the site for her four week internship in 2015. Amanda had the opportunity to observe STEM teaching, assist with STEM activities and ask questions about STEM learning. DoD STARBASE instructors provided mentoring and guidance on STEM content and teaching pedagogy.

Interns, such as Amanda, are eligible for scholarships to support their final two years in school—allowing them time to complete STEM courses and obtain teaching credentials. The scholarships fully cover tuition, fees and books for the academic year. After graduation, scholarship recipients attend a mentoring program that provides ongoing support for first year teachers.



A student from Longsjo Middle School testing his straw rocket at DoD STARBASE Hanscom.

A Letter from Gus Hargett, Major General, USA, (Ret.) President of the National Guard Association of the United States



On behalf of the more than 45,000 members of the National Guard Association of the United States (NGAUS) and the nearly 500,000 soldiers and airmen of the National Guard, I am proud to endorse the Department of Defense STARBASE program.

During our 2015 national conference in Nashville, our membership endorsed by resolution the DoD STARBASE program and its continued funding. DoD STARBASE provides elementary students with real-world applications of math and science through experiential learning, simulations, and experiments in aviation and space-related fields.

DoD STARBASE has a proven track record, teaching children how to set and achieve goals, take positive action in their lives, and build strong self-esteem. It provides to thousands of students opportunities, experiences and knowledge in areas that they might never be exposed to otherwise.

Members of the National Guard that serve as volunteers, teachers and mentors in the many DoD STARBASE programs across the country are very proud of the opportunity DoD STARBASE provides them to help children and their communities.

This partnership between our citizen soldiers and airmen and those young students is one strong example of what our country can do for its children. With the use of minimal federal dollars, the results far outweigh the costs. NGAUS will continue to work hard to see that this program gets the support it needs.

Sincerely,

A handwritten signature in black ink, appearing to read "Gus Hargett". The signature is stylized with a large, sweeping "G" and a long, horizontal stroke extending to the right.

Gus Hargett
Major General, USA, (Ret.)



2015

DoD STARBASE ASSESSMENT



“I’m very impressed with what is happening at DoD STARBASE and so grateful my daughter has this opportunity. I love the intentional approach to learning and enjoy seeing the military personnel serve and interact with the students.”

Candace H., Parent of a student at DoD STARBASE
Minnesota, Minneapolis, MN

2015 Assessment

Executive Summary

Section 2193b of the title 10, United States code, authorizes the DoD STARBASE program. The authorizing legislation requires the Secretary of Defense to submit an annual report to Congress on the conduct and effectiveness of the program.

The FY 2015 assessment process obtained information via knowledge and attitudinal tests, structured interviews, questionnaires, program visits, and conversations with program participants. Assessments, interviews, and/or questionnaires were received from 1,254 students, 1,668 teachers, and all DoD STARBASE directors. A brief overview of the assessment highlights some of the key findings of the analysis.

Highlights

STUDENT ASSESSMENT

- The academy participation rate in the annual Student Assessment survey was 96%.
- 1,254 students were included in the study, an increase of 13.4% over the previous year.
- Most respondents were in the fifth grade (94%) and between 10–11 years old (93%).
- There were equal proportions (50%) of girls to boys.
- 84% of the attitudinal items improved significantly pre- to post-program; some of the largest shifts occurred in attitudes about STEM, the military, and future careers.
- Performance on knowledge items increased significantly (26%) from pre- to post-program.
- Physics showed the largest curriculum area improvement (increase of 46% in overall points for proper answers).
- Chemistry also showed strong gains, with a 39% improvement.
- Math scores improved substantially, with a 22% gain.
- Military Attitudes—Those entering the program with low military attitudes had lower program knowledge scores, lower knowledge gain scores, and less favorable attitudes for both the pre- and post-program than those entering the program with high military attitudes.
- Knowledge and Experience—Students with prior knowledge of, and experience with, DoD STARBASE responded more favorably to more attitudinal items than those with no prior knowledge or experience.
- Performance—Students identified as high performers scored higher on the pre- and post-knowledge assessment as well as on pre- and post-attitude survey, compared to their lower performing counterparts. The largest gap was on the knowledge assessment where:
 - high performers improved by 8.5 points from pre- to post-program assessment, while
 - low performers improved by 4.3 points pre- to post-program.

- Gender—Although boys' attitude scores were significantly more positive than girls' on the pre-program assessment, the gap was reduced by 20% in the post-program assessment. Boys and girls did not significantly differ on 22 of the 31 post-program items measuring favorable attitudes toward STEM and the DoD STARBASE program, although boys displayed more positive attitudes than girls on 14 of those items. Similarly, boys' scores on the pre-program knowledge assessment also significantly exceeded that of girls, but girls showed strong gains during the program and that difference was insignificant by the post-program assessment of knowledge.
- Age—Increased student age correlates positively with liking science and technology and favorable attitudes toward the military. Older students might thus serve as positive role models for younger students, and therefore might be encouraged to participate in collaborative learning with them.

TEACHER ASSESSMENT

- 88% (1,475) of the teachers reported that they are more aware of career opportunities (both uniformed and non-uniformed civilian) within the Department of Defense because of their participation in the DoD STARBASE program.
- 99% (1,658) of the teachers will recommend DoD STARBASE to other teachers, principals, or school educators.
- A 26% increase in recommending the DoD or the military as a career option to students occurred after participating in the DoD STARBASE program (67% Very or Extremely Likely post-program versus 41% Very or Extremely Likely pre-program).
- Teachers reporting higher levels of support (e.g., resources provided by DoD STARBASE) responded more favorably to the attitudinal items as compared to those indicating having less support.
- The majority of teachers (81%) did not major or minor in a STEM-related discipline and reported less confidence in teaching STEM-related topics compared to teachers with a STEM-related major or minor.

DIRECTORS' QUESTIONNAIRE

DoD STARBASE Program

- DoD STARBASE programs are located at a variety of military installations including: Air Force (8 locations), Air Force Reserve (4 locations), Army (1 location), National Guard (45 locations), and Marine Corps (1 location) sites.
- The DoD STARBASE program conducted 2,623 classes serving 1,096 schools across the country in 366 school districts. Of the schools participating in the program, 72% were Title 1 eligible schools.
- The majority of the DoD STARBASE locations (88%) serve school districts within a 50-mile radius of their program site.

Executive Summary (Continued)

- Over 62,000 students attended the five-day program in FY 2015. The majority of DoD STARBASE students (88%) are fifth graders.
- Males outnumber female students 51% to 49% respectively.
- The average instructor to student ratio for FY 2015 was 1:14.
- The average class size for FY 2015 was 24 students.
- The non-Hispanic or Latino, Black or African American, and White student populations are the predominate participant groups at 80%, 19%, and 57% respectively.
- The percentage of American Indian or Alaskan Native, Black or African American, and Hawaiian Native or Pacific Islander participant population is higher at DoD STARBASE than at U.S. public schools.
- Contractor affiliations made up the majority (53%) of the DoD STARBASE employment relationships followed by state and federal affiliations at 46% and 1%, respectively.
- In an effort to serve more students, 49 locations have made modifications to the prototype staffing model (a director, a deputy director/instructor, an instructor, and an office manager/administrative assistant) to include additional instructional and classroom support staff.
- There was a 16% increase in the number of employees from FY 2014.
- The overall turnover rate for FY 2015 is 21%, including 55 staff departures.
 - The majority (33 departures) were at the instructor level. Office Managers were the next highest with seven departures followed by teaching assistants at five departures.
 - Directors reported that of those staff members who left the program, 17% indicated the reason for their decision to leave DoD STARBASE was because of a better opportunity at another academic institution. Others stated program funding uncertainty (15%), personal reasons (13%), and better financial opportunities (11%) for their decision to leave.
 - Of these positions, 10 remained unfilled at the end of FY 2015.
- The DoD STARBASE locations documented a total 8,051 volunteers who contributed a total of 188,846 hours to the program during FY 2015.
- Many DoD STARBASE locations (60%) reported they have relationships with nearby teacher colleges or training programs where student teachers may obtain practicum hours at DoD STARBASE. At the STARBASE locations that offer teacher training, 70% of the teachers may use this training towards their certification requirements.
- 72% of the DoD STARBASE locations report that they have relationships with other outreach programs in their area including: FIRST LEGO League, Civil Air Patrol, Girl Scouts and Boy Scouts.
- The average operating cost per location was \$387,931.

DoD STARBASE 2.0 Program

- In FY 2015, 20 DoD STARBASE locations in 19 states reported coordinating a total of 41 DoD STARBASE 2.0 programs with five additional DoD STARBASE locations coordinating new 2.0 programs.
- 31 school districts and 40 schools partnered with DoD STARBASE to operate 60 - 2.0 clubs.
- The greatest numbers of 2.0 programs (20 programs and 32 clubs) were sponsored by the National Guard, where the majority of the DoD STARBASE programs are also located.
- The average student retention rate within the 2.0 program was 79%. Of the students who did not complete the program, 33% were females and 67% were males. Directors reported several reasons why students discontinued the program. Moving, time conflicts, and lack of interest in the chosen curriculum are the main reasons why students drop from the program.
- Former DoD STARBASE students made up 60% of the DoD STARBASE 2.0 program participants.
- The 2.0 program participants included 33% females and 67% males.
- The average student attendance at 2.0 club meetings was 14 students.
- There was a 1:4 mentor to student ratio within the 2.0 program.
- The students are mostly 6th and 7th graders (40.1% and 27.1%, respectively) although some are from other grades.
- Most groups of students historically underrepresented in STEM fields (Hispanics and Latinos, American Indian or Alaska Native, and Black or African American) are represented at DoD STARBASE 2.0 which may be due to the positive experience these students encountered at DoD STARBASE, as indicated by attitudinal tests.
- Most mentors are military (36%) or other DoD affiliated professionals (23%).
- Most (50%) of the 20 DoD STARBASE locations coordinating a 2.0 program received funding from both federal and private funds. Four locations reported they do not receive any funds whatsoever to operate a 2.0 program.

Each section of the following report provides an assessment of the program's progress and describes the unanticipated and/or unresolved issues that emerge in program operations. The report is organized as follows:

- **DoD STARBASE Program Overview** (See page 36)
- **DoD STARBASE 2.0 Program Elements** (See page 47)
- **Program Oversight** (See page 53)
- **Fiscal Analysis** (See page 57)
- **Assessment Results** (See page 59)
- **Considerations for the 2016 Program Year** (See page 106)
- **Appendices** (See page 109)

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 for Manpower & Reserve Affairs (OASD/M&RA). A Congressional Appropriation to the DoD funds the operation of DoD STARBASE. Synergy between the local military base, schools, and surrounding communities enhance and strengthen the program.

During FY 2015 the DoD STARBASE program conducted 2,623 classes serving 1,096 schools across the country in 366 school districts. Over 62,000 students attended the five-day program in FY 2015. These statistics have increased significantly from FY 2014 with a 24% increase in the number of students served, a 20% increase in the number of schools, a 26% increase in classes, and a 19% increase in the number of districts participating in a DoD STARBASE program.

During the summer months many DoD STARBASE locations also offer a variety of supplemental programs to area youth in grades K–12. The number of locations offering supplemental programs increased by 34% from FY 2014 with 38 DoD STARBASE locations offering some type of supplemental program. Supplemental programs provided in FY 2015 include: aerospace education, robotics instruction, and engineering instruction. The number of students served by supplemental programs increased from FY 2014 by 50% to 12,418 youths in FY 2015.

THE MILITARY

The military hosts and supports DoD STARBASE programs¹. Programs are located at various military installations including: Air Force (8 locations), Air Force Reserve (4 locations), Army (1 location), National Guard (45 locations), and Marine Corps (1 location).

The majority of the DoD STARBASE locations (88%) serve school districts within a 50-mile radius of the programs' duty station. Locations that extend beyond a 50-mile radius generally have made special accommodations to reach more students such as those in the Native American outreach programs. DoD has a wealth of expertise in STEM education and provides the DoD STARBASE locations access to resources and services that most school systems cannot offer. OASD (M&RA) provides state of the art equipment and technology, but military bases provide classroom space, utilities, and security. The base may also provide additional equipment, janitorial services, maintenance, travel services, and IT support. DoD STARBASE operates at the discretion of the base commander who may view this program as a venue for military personnel to positively interface with their community. Military personnel are encouraged to volunteer their time to the program as mentors, expert speakers, tour guides, and other support activities.

Military volunteers inspire students and community engagement in STEM education. They may serve as guest lecturers to explain the use of STEM in different careers and/or act as base tour guides highlighting the application

¹ Most of the 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. Bayou State STARBASE, in Rosedale, Louisiana is currently located at the original Iberville High School because there is not a military installation within 50 miles of a population of Title I students.

of STEM concepts in their missions and giving students access to military facilities and operations. Military volunteers provide unique, informative, and highly varied experiences for the students, which provide an exciting, stimulating environment to enhance their STEM experience.

Students may discuss how chemical fires are extinguished, learn how the injured are transported, and explore the cockpit of an F-18 or the interior of a C-130. The only constant is the excitement the student experiences in the presence of a military volunteer. As volunteers, these hard-working, highly disciplined men and women command respect and honor in their presence and serve as a very powerful force to inspire students to set goals for their own lives. Participating classroom teachers are also inspired and encouraged by the involvement of military volunteers in the DoD STARBASE program.

THE SCHOOL DISTRICT

Students from local school districts surrounding the host military installation participate in the DoD STARBASE program. DoD STARBASE locations may schedule schools to attend the 25 hour program over five consecutive days or on a weekly basis over five consecutive weeks. About half (52%) of the DoD STARBASE locations use the weekly schedule and 43% of the locations use a consecutive day schedule². In FY 2015, 366 school districts participated in the DoD STARBASE program which is an increase of 19% over FY 2014. Participating schools include schools from Title 1 eligible, public, private, urban, and rural districts (see Table 1).

Table 1:
DoD STARBASE 2015 Participating School Demographics³

School Type	Number of Schools	Percentage of Total Schools
Title 1 Eligible	803	73
Public	930	85
Private	117	11
Urban	821	75
Rural	275	25
Total Schools	1,096	100

Many elementary teachers do not have the time, educational background, and/or resources to cover STEM topics appropriately and simply cannot match the DoD STARBASE experience. School districts enter a formal agreement with the military base hosting the program which may include commitments on availability of students, targeting at-risk children, transportation, student lunches, a designated time of instruction, and providing teachers as monitors. As a result, the school's curriculum is enhanced, and students are better prepared for standardized state testing.

² The remaining 5% use some other schedule.

³ Numbers shown are for five-day programs and do not include other programs. Some schools may be counted in more than one category. 49 schools were not classified as Public or Private.

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, and/or raising financial support. 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 promote student interest in STEM, facilitate a well-trained STEM workforce, and a STEM-literate public, thereby enhancing the future of their communities.

The Program Elements of DoD STARBASE

Department of Defense Instruction (DoDI) 1025.7 outlines the guidelines and directives for the DoD STARBASE program. The DoDI covers operational requirements such as budget, desired grade level, class size, scheduling hours, curriculum topics and activities, the desired demographics, documentation requirements, testing, and program location. If a DoD STARBASE director wishes to deviate from the DoDI requirements, he/she must submit a written request to OASD/M&RA.

DoD STARBASE STUDENTS

GRADE LEVEL

The DoD STARBASE program is authorized to serve students in kindergarten through grade twelve. Because of the dramatic decline in math and science performance by U.S. students after the fourth grade, the DoD STARBASE curriculum and standards are developed for the fifth grade level. Some locations (23) receive students in other grade levels in addition to the fifth grade, but most DoD STARBASE students are fifth graders (88%). Table 2 (page 39) shows the number of students at each grade level. The total number of students served in FY 2015 was 62,071. This is a 24% increase over FY 2014 which may be due to the increase in DoD STARBASE staffing and decrease in turnover enabling DoD STARBASE locations to begin operations in line with the participating schools' calendar.

Table 2:
Grade Level of FY 2015 DoD STARBASE Students

Grade Level	Number of Students
Kindergarten through 3rd Grade	0
4th Grade	3,324
5th Grade	54,887
6th Grade	3,793
7th Grade and Above	67
Total Number of Students	62,071

CLASS SIZE

Smaller class size is particularly important to the inquiry-based instruction used at DoD STARBASE locations. The DoDI requires two DoD STARBASE teachers per class or an average DoD STARBASE instructor to student ratio of 1:15, with 20-35 students as acceptable class sizes. The average instructor to student ratio for the FY 2015 program year was 1:14. The average class size for the FY 2015 program year was 24 students. Three locations reported averages below 20 students⁴. The highest reported average class size was 30 students.

Classroom size has decreased in public schools across the country and many STARBASE locations have increased their efforts to service more students by opening additional STARBASE classrooms so that classes may operate simultaneously. Additional DoD STARBASE classrooms allow schools to send more students 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 FY 2015, 34 DoD STARBASE locations operated simultaneous classes ranging from two simultaneous classes to as many as six. On average, DoD STARBASE locations operate two simultaneous classes. The ability to operate simultaneous classes is dependent upon available space and personnel.

ETHNIC AND RACIAL COMPOSITION

Table 3 (page 41) shows the ethnic and racial composition of the DoD STARBASE student population⁵. The non-Hispanic or Latino, Black or African American, and White student populations are the predominate groups at 80%, 19%, and 57% respectively.

⁴ DoD STARBASE sites in Colorado, South Dakota-NOVA, and Minnesota reported averages of less than twenty students.

⁵ Five locations (with 7% of the total student population) did not report student ethnicity and/or race: STARBASE Maxwell, STARBASE Alpena, STARBASE Kelly, Texas STARBASE Houston and Wyoming STARBASE Academy.



“You guys run an amazing educational program! My son who is very intelligent, but super quiet, has not stopped talking about all the activities that you have done and the science behind those activities. Now all you need to do is open a school! We would be first in line!”

Tina McCarthy, Parent of a student at DoD STARBASE Waterbury, Waterbury, CT

Table 3:
Ethnicity and Racial Composition of DoD STARBASE Student Population FY 2015

Ethnicity	Percentage
Hispanic or Latino	18%
Non-Hispanic or Latino	80%
Ethnicity Unknown	2%
Race	
American Indian or Alaskan Native	3%
Asian	4%
Black or African American	19%
Hawaiian Native or Pacific Islander	1%
White	57%
More Than One Race	7%
Race Unknown	9%

DoD STARBASE programs are located in areas where the need for STEM education is great. Consequently, these neighborhoods contain groups that have been historically underrepresented in STEM fields (Hispanics and Latinos, African Americans, American Indians, Alaska Natives, Native Hawaiians and Pacific Islanders). Figure 1 (page 42) compares these groups in the FY 2015 DoD STARBASE student population and in public and secondary school enrollment (pre-kindergarten through grade twelve) as reported by the U.S Department of Education⁶. The American Indian or Alaskan Native and Black or African American populations are higher at DoD STARBASE than at U.S. public schools. Public school statistics on Hawaiian Native or Pacific Islander populations are not available, but the percentage of DoD STARBASE students compared to the U.S. population of Hawaiian Native or Pacific Islanders is higher at DoD STARBASE (1 %) than in the U.S. population (0.2 %)⁷.

⁶ U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "State Nonfiscal Survey of Public Elementary and Secondary Education," 2002–03 and 2012–13; and National Elementary and Secondary Enrollment Projection Model, 1972 through 2024. See Digest of Education Statistics 2014, Table 203.5.

⁷ United States, "The United States Census Bureau, State & County QuickFacts." Accessed November 6, 2014. <http://quickfacts.census.gov/qfd/states/00000.html>.

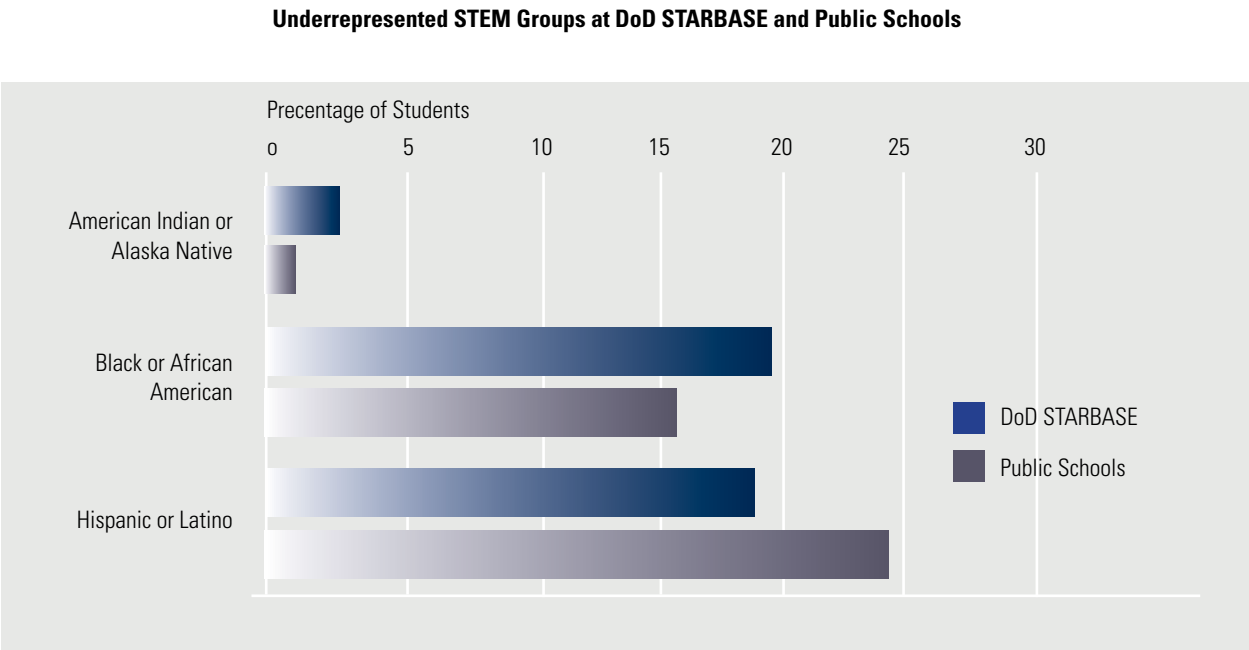


Figure 1. Public school statistics for the group Native Hawaiian or Other Pacific Islanders is not available.

GENDER COMPOSITION

While there are a few DoD STARBASE locations where the ratio between females and males is over-represented by one gender or the other, on the whole, the ratio is the same as in previous years with 49% female and 51% male.

DoD STARBASE Staff

EMPLOYMENT AFFILIATION

The DoDI provides general guidelines on personnel 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 policy and practices, as well as reporting relationships. Federal and state affiliations often provide retirement and health benefits, which increases a location’s personnel costs and uses a greater portion of the location’s operating budget. Contractor affiliations make up 53% of the employment relationships followed by state and federal affiliations which are at 46% and 1%, respectively.

STAFFING MODEL

The DoDI outlines the prototypical staffing model for a DoD STARBASE location. 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/administrative 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 59 DoD STARBASE locations, 10 operate with the four typical staff members of director, a deputy director/instructor, an instructor, and an office manager/administrative assistant. Many locations have made adjustments to the prototype staffing model. The most common changes in the staffing model are additions to instructional and classroom support staff in an effort to serve more students. Some locations restructure the administrative position to include instruction. Other DoD STARBASE locations have used the following adjustments: hire part-time instructors, establish job-sharing positions, consolidate job tasks, limit benefits, eliminate the deputy director position in favor of two instructors, eliminate the administrative position, and hire retirees who require fewer benefits. In FY 2015 “Other” DoD STARBASE positions included: DoD STARBASE 2.0 coordinators, teaching assistants, tech assistants, substitute instructors and modified deputy director/office manager. If a location does not meet the DoDI prescribed manning model, the director must submit a written request for a waiver to OASD/M&RA.

There was a 16% increase in the number of employees from FY 2014. Of the 59 DoD STARBASE locations in FY 2015, 30 operated with more than four staff members. Table 4 describes the FY 2014 and FY 2015 staffing profile for full- and part-time personnel. Full time is defined as an employee working more than 125 days per year.

Table 4:
FY 2014 - FY15 Staffing Profile

Position	Number of Staff		Full-Time		Part-Time	
	FY 2014	FY 2015	FY 2014	FY 2015	FY 2014	FY 2015
Director	44	46	44	46	0	0
Deputy-Director/Instructor	44	47	44	47	0	0
Instructor	91	128	68	105	23	23
Office Manager	34	41	23	38	11	3
Other	45	28	16	18	29	10
Total	258	290	195	254	63	36

Table 4 also shows there are fewer staff directors than DoD STARBASE locations. Some directors manage more than one location, some STARBASE locations are new and have not hired a director yet, and other STARBASE locations are in the process of replacing directors who have left the program.⁸

STAFF DEVELOPMENT

DoD STARBASE instructors attend professional development to stay current in program content, methodologies, and curriculum. Eighty-nine percent of the DoD STARBASE locations offer staff development opportunities. Regional and national professional association programs, university courses, on-line training visits to other locations and in-service workshops are all used as professional development. Professional development keeps instructors up-to-date on emerging technology, curriculum, resources,

⁸ Directors in Connecticut, North Carolina, Indiana, Oklahoma, Oregon, South Dakota, Montana, and Vermont operate multiple STARBASE locations.

and instructional modalities. Some instructors undergo additional requirements in their state to maintain a current teaching certificate (39%).

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) software and updates to the DoD STARBASE curriculum.

STAFF CHANGES AND DEPARTURES

There were 55 staff departures in FY 2015. The majority (33 departures) were at the instructor level. Office Managers were the next highest with seven departures followed by teaching assistants at five departures. The overall turnover rate in FY 2015 was 21%, which is down from last fiscal year's turnover rate of 23%. Some (20%) of these staff were terminated while others elected to leave the STARBASE program. Directors reported that of those staff members who left the program, 17% indicated the reason for their decision to leave DoD STARBASE was because of a better opportunity at another academic institution. Others stated program funding uncertainty (15%), personal reasons (13%), and better financial opportunities (11%) for their decision to leave. A few of these positions (10 vacancies) remained unfilled at the end of FY 2015.

VOLUNTEERS

Volunteers are an essential participant group in the DoD STARBASE program. They serve as presenters, board members, advisors, tour guides, and instructor aides and perform a wide variety of daily support services. Volunteers include military personnel, teachers, parents, and community leaders. All locations reported using volunteers.

The DoD STARBASE locations documented a total 8,051 volunteers who contributed a total of 188,846 hours to the program during FY 2015 (see Table 5). This is a 67% increase from FY 2014 which may be due to the stabilization of the program allowing locations to focus on the fundamentals of the DoD STARBASE program. As part of the objectives outlined under the Inspire goal of the DoD STEM Education and Outreach Strategic Plan, military personnel are encouraged to volunteer their time to the program as mentors, expert speakers, tour guides, and other support activities. After parents, military personnel account for the greatest amount of volunteers, followed by teachers.

Table 5:
FY 2015 Volunteer Participation

	Volunteers	Hours
Military	1,987	16,782
Teachers	1,795	132,546
Parents	3,834	35,389
Other ⁹	435	4,129

⁹ Other volunteers include STEM groups, firefighters, board members, etc.

OUTREACH

Many DoD STARBASE locations provide resources and training to local teachers. Of the 59 locations, 23 locations provided some kind of training to local teachers in FY 2015. Many DoD STARBASE locations (60%) reported they have relationships with nearby teacher colleges or training programs where student teachers may obtain practicum hours at DoD STARBASE. At the DoD STARBASE locations that offer teacher training, 70% of the teachers may use this training towards their certification requirements.

Students may attend DoD STARBASE at the fifth grade level, as well as participate in other outreach programs that are available in their area at other grade levels. OASD/M&RA encourages DoD STARBASE locations to connect with other local outreach programs to create a STEM pipeline for students. Directors from 41 of the 59 DoD STARBASE locations report that they have relationships with other outreach programs in their area to include: FIRST LEGO League, Civil Air Patrol, Girl Scouts and Boy Scouts. In addition, the DoD STARBASE location may coordinate a DoD STARBASE 2.0 program at the middle school level. DoD STARBASE 2.0 is a STEM-based afterschool mentoring program that is based at a collaborating school system¹⁰.

Mentors provide a vital role in the success of the participants and the program, providing a role model of a successful STEM professional. Serial engagements with professionals in STEM careers allow students to network with someone successful in the field and envision pathways for themselves to pursue those careers. Additionally, mentoring can be a powerful experience for STEM professionals, building work skills and connecting them to their community.

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. Curriculum development is aligned with both the DoD STEM Education and Outreach Strategic goal to *Inspire* and two Priority Investment Areas within the Federal STEM Education 5-Year Strategic Plan: *Increase and Sustain Youth and Public Engagement and Better Serve Groups Historically Underrepresented in STEM Fields*. It also supports the Federal STEM Education goal to improve STEM instruction. As such, the DoD STARBASE curriculum is designed to increase the 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. It also contains the presentation of accurate scientific information, which promotes the development of STEM skills, knowledge, and practices, thereby supporting the Federal goals of a learning investment.

The 36 learning objectives are clearly outlined for each of the curriculum's STEM categories, which are consistent with national education standards. The DoD STARBASE curriculum provides students the opportunity to engage in authentic scientific inquiries, which allow the participants to learn through experiential "hands on-minds on" based activities. 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.

¹⁰ DoD STARBASE 2.0 programs are currently offered in California, Connecticut, Georgia, Indiana, Louisiana, Michigan, Minnesota, New Mexico, Ohio, Oklahoma, Oregon, South Dakota, Texas, Utah, West Virginia, and Wyoming. See the section on DoD STARBASE 2.0 in this report.

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 the curriculum objective. These are shorter in length and are always 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. When instructors establish their teaching criteria, they will use 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. For example, a number of activity station lesson plans are in the final stages of development to support teaching Bernoulli’s Principles where one investigation of these principles might not be enough to ensure a higher level of understanding and application.
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 and instructional guidance and support criteria to meet the requirements for the objective.

This progressive curriculum is designed for DoD STARBASE students by a highly educated DoD STARBASE staff. Ideas for new lesson plans are solicited from the DoD STARBASE directors and are then vetted by a Curriculum Committee that is comprised of experienced DoD STARBASE staff members. Lesson plans are adopted using a peer-review process which utilizes the expertise of the DoD STARBASE staff who field-test the proposed activities to further improve the pedagogy and delivery methodology.

This rigorous process expands and enhances the DoD STARBASE curriculum offerings. DoD STARBASE directors and instructors may choose from multiple approved lesson plans to teach the required 36 objectives. Directors are asked to create a schedule outlining the lessons they have chosen to teach. Although the focus is on using the approved lessons to teach the required objectives, 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 and validated during visitations by the evaluation team.

The DoD STARBASE 2.0 Program Elements

DoD STARBASE 2.0 is a STEM-based afterschool mentoring program that is based at a collaborating school system. The objective is to serve students at other grade levels in the STEM areas beyond their initial DoD STARBASE experience. The program was introduced in 2010 and expanded to a dozen sites during the 2011-12 program year. After building to a high of 25 locations hosting 42 DoD STARBASE 2.0 programs in FY2013, the initiative dropped in FY 2014 to 15 locations and 25 2.0 programs due to the Government shutdown. The program rebounded in FY 2015 with 20 DoD STARBASE locations reporting coordinating a total of 41 DoD STARBASE 2.0 programs in 19 states (see Figure 2). Directors of the 20 FY 2015 locations were surveyed to obtain data on program requirements, participants, curriculum, staff, and funding for the DoD STARBASE 2.0 program.

The DoD STARBASE 2.0 Program Locations



Figure 2.

¹¹ A 2.0 program is defined by the location where 2.0 meetings take place. A 2.0 program location may operate a number of 2.0 clubs.

PROGRAM REQUIREMENTS

DoD STARBASE 2.0 maintains a unique school-based afterschool program that targets at-risk sixth to eighth graders. The program takes place in partnering schools that have expressed the desire for additional DoD STARBASE program resources. As with other school-based afterschool 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 while empowering schools through student referrals. Basic program requirements are outlined in the DoD STARBASE 2.0 Program Guide. The guide lists expectations for program basics, the partnering school, participant eligibility, and the STEM Mentor Coordinator position. Compliance on several of the basic requirements is given below (see Table 6).

Table 6:
Locations Meeting Basic Requirements

Basic Requirement	Percentage of Locations Meeting Requirement
DoD STARBASE 2.0 meetings are held at a school	95
There is ample space for meetings	100
Meetings are held after school hours	98
Parking is provided for mentors	98
A nutritional snack is provided for the students	76
The students are in 6th, 7th and/or 8th grades	86

PARTICIPANTS

In FY 2015, 31 school districts and 40 schools partnered with DoD STARBASE at 41 locations to operate 60 - 2.0 clubs. This large increase in the number of programs and clubs from FY 2014 (25 programs and 36 clubs) is largely due to the expansion of 2.0 programs by the DoD STARBASE locations that coordinated a 2.0 program in FY 2014. In addition, five DoD STARBASE locations coordinated new 2.0 programs in FY 2015¹².

DoD STARBASE 2.0 programs are sponsored by the Air Force, Air Force Reserve, Army and National Guard (see Table 7). The greatest numbers of programs (20 programs) are sponsored by the National Guard which also hosts the majority of the DoD STARBASE programs (44 DoD STARBASE locations).

¹² STARBASE Los Alamitos, STARBASE Savannah, STARBASE Indiana, Pelican State STARBASE, and Texas STARBASE Houston

Table 7:
FY 2015 DoD STARBASE 2.0 Programs and Clubs by Military Affiliation

Service Arm	Number of 2.0 Programs	Number of 2.0 Clubs
Air Force	8	9
Air Force Reserve	12	18
Army	1	1
National Guard	20	32
Marine Corp	0	0
Total	41	60

In FY 2015, the DoD STARBASE 2.0 program began with 1,072 student participants and finished with 848 students. The retention rate is 79%. Of the students who did not complete the program, 33% were females and 67% were males. Directors reported several reasons why students discontinued the program. Moving, time conflicts, and lack of interest in the chosen curriculum are the main reasons why students drop from the program.

Many of the FY 2015 DoD STARBASE 2.0 students were former DoD STARBASE students (60%) and most were males (67%). The average student attendance at club meetings was 14 students, with a 1:4 mentor-to-student ratio. The students are mostly 6th and 7th graders (40.1% and 27.1%, respectively) although some are from other grades (see Table 8).

Table 8:
Grade Level of Participating Students

Grade Level	Percentage of Students
4th Grade	4.1
5th Grade	6.8
6th Grade	40.1
7th Grade	27.1
8th Grade	19.8
9th Grade	0.1
10th Grade	0.5
11th Grade	1.0
12th Grade	0.5

Figure 3 and Figure 4 show the ethnic and racial composition of the FY 2015 DoD STARBASE 2.0 students. Although this program is strictly a volunteer program, most groups of students historically underrepresented in STEM fields (Hispanics and Latinos, American Indian or Alaska Native, and Black or African American) are represented¹³. Higher participation of these groups in DoD STARBASE 2.0 may be due to the positive experience the students encountered at DoD STARBASE as indicated by attitudinal tests (see attitudinal test results).

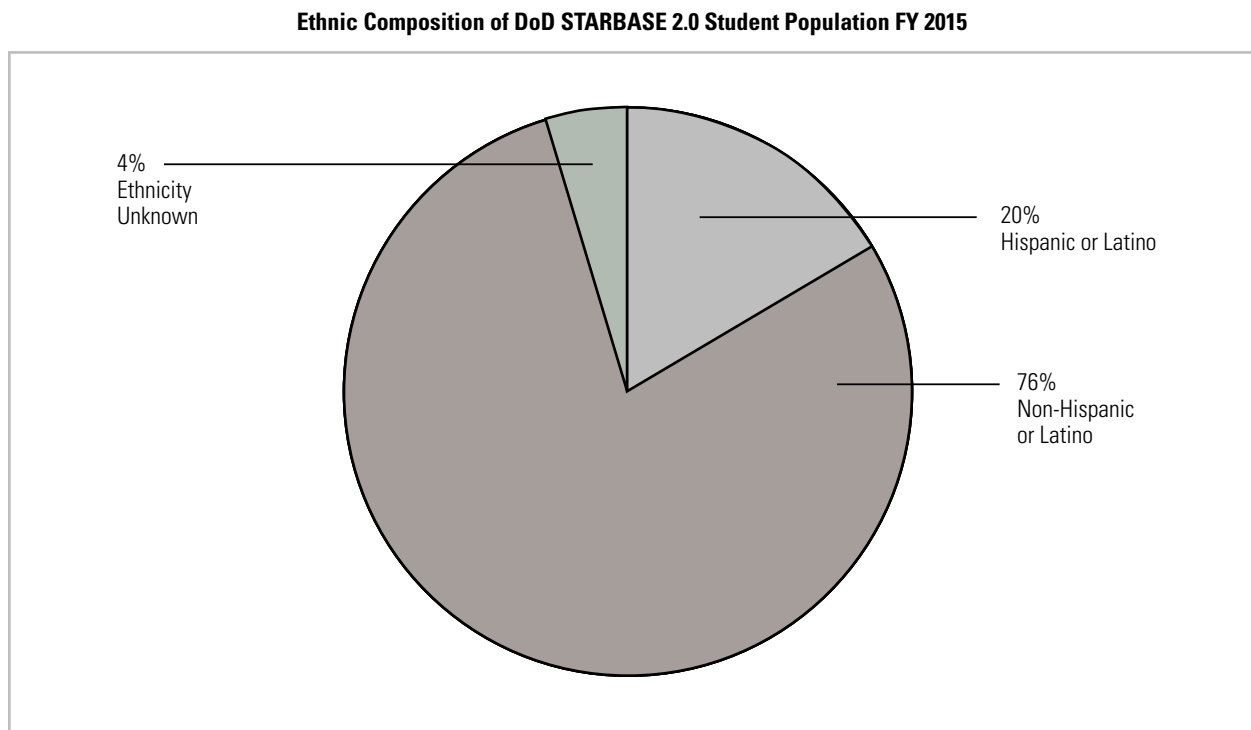


Figure 3. Ethnic groups historically underrepresented in STEM fields are: Hispanics and Latinos.

¹³ Although the group "Native Hawaiian or Other Pacific Islander" is also historically underrepresented in STEM fields, STARBASE Hawaii does not coordinate a 2.0 program nor did this group attend another DoD STARBASE 2.0 program.

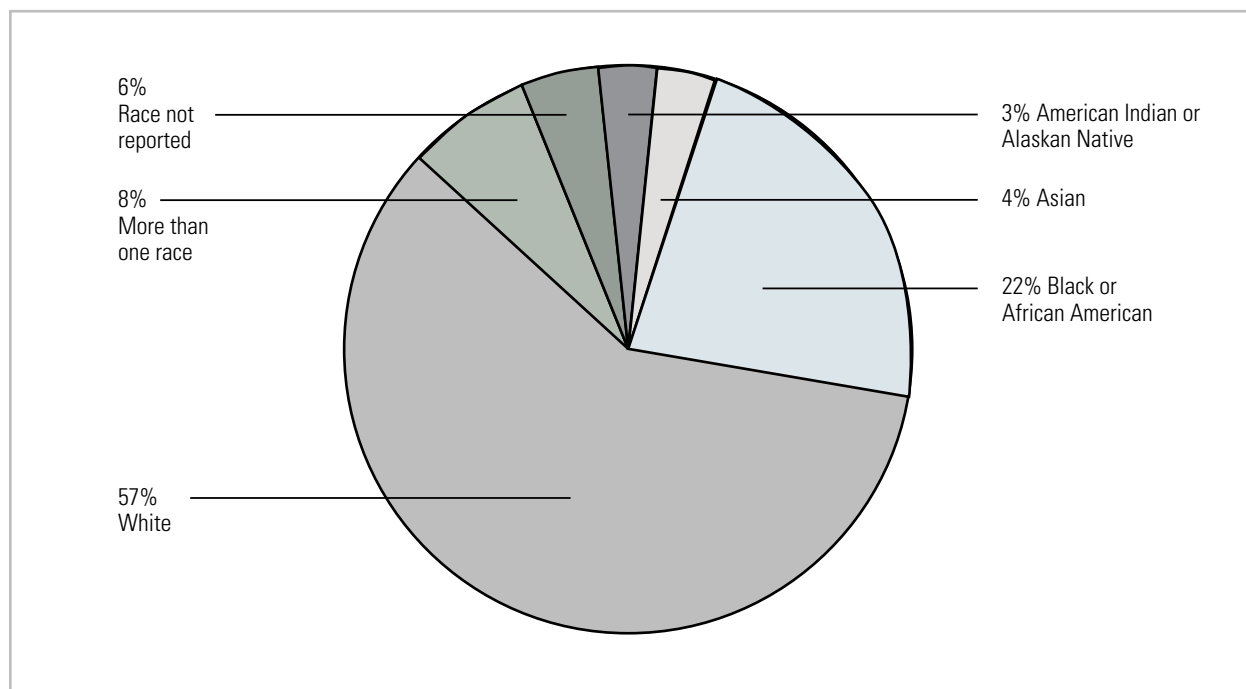
Racial Composition of DoD STARBASE 2.0 Student Population FY 2015

Figure 4. Racial groups historically underrepresented in STEM fields are: African Americans, American Indians, Alaska Natives, Native Hawaiians and Pacific Islanders.

CURRICULUM

Over the course of three to five months, DoD STARBASE 2.0 students work on a team project at their school with a STEM mentor during club meetings. The outcomes for students participating in DoD STARBASE 2.0 are as follows:

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

Program locations use a variety of different team projects to achieve these goals. STEM projects include: Scalextrics, robotics, rocketry, engineering, physics, FIRST LEGO League, solar cars, chemistry, technology, and aerospace. Some programs (46%) culminate the program with some sort of related competition. Of those programs, 32% participate in FIRST LEGO League competitions¹⁴ and 16% participate in Team America Rocketry Challenge¹⁵.

¹⁴ 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.

¹⁵ The Team America Rocketry Challenge (TARC) is an annual American model rocketry competition for students in grades 7 to 12 where students design, build and launch a rocket with specific characteristics.

STAFF

STEM Mentor Coordinator

DoD STARBASE 2.0 is primarily a volunteer program. The volunteer STEM mentors and volunteer classroom teacher are all coordinated by a designated DoD STARBASE STEM Mentor Coordinator. This is typically a part-time position and many programs choose to hire the STEM Mentor 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 responsibilities of the STEM Mentor Coordinator include:

- Program marketing
- Managing relationships with schools
- Recruiting and screening program volunteers
- Managing volunteer STEM mentors
- Coordinating and delivering volunteer training
- Tracking data
- Supporting and motivating program volunteers

These tasks play an invaluable role in the success of DoD STARBASE 2.0. Of the 20 DoD STARBASE locations that support a DoD STARBASE 2.0 program, 17 (85%) have a dedicated STEM Mentor Coordinator, which is up from 32% in FY 2014.

STEM Mentor

The ideal STEM mentor team consists of a lead STEM mentor, representatives from local STEM industries, college students, and members of the military. To serve as a DoD STARBASE 2.0 STEM mentor, volunteers must meet the following minimum requirements:

- Be at least 18 years of age
- Successfully pass mentor screening/background
- Volunteer approximately six hours per month through the school year

Of the mentors who participated in the In FY 2015 programs, 96% completed 2.0 training and all completed a background check. The mentors were male (57%) and female (43%). Mentors from a variety of STEM professions participated in the program including military, non-military, DoD professionals, industry professionals and college students (see Table 9). Working with a mentor, 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.

Table 9:
Mentor Types

Type	Percentage of Mentors
Military	36
Non-Military, DoD, Professionals	23
Industry Professionals	18
College Students	12
Other ¹⁶	10

Funding

The DoD STARBASE 2.0 programs operate through a combination of federal and private funds. Of the 20 DoD STARBASE locations coordinating a 2.0 program, 50% receive funding from both sources¹⁷ and 25% receive solely federal funds. Three programs reported that they do not receive any funds whatsoever to operate a 2.0 program¹⁸.

PROGRAM OVERSIGHT

Compliance

The Office of the Assistant Secretary of Defense for Manpower and Reserve Affairs (M&RA) has the overall responsibility for the management of the DoD STARBASE program. Department of Defense Instruction (DoDI) 1025.7 provides the policies and procedures that guide the current DoD STARBASE program locations. 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 for instruction, core curriculum, fiscal and property audits and frequency of them, and reporting requirements.

Compliance Procedures

A compliance program was designed and developed to ensure that the DoD STARBASE locations adhere to the DoDI requirements as well as administrative directions and reporting requirements. The program is reviewed and adjusted each year based on OASD/M&RA guidelines. Over the past several years, DoD STARBASE locations have been evaluated using a performance assessment system that is composed of three progressive levels of program and organizational performance. Each level has a prescribed set of activities that range from obtaining adherence to the DoDI requirements that guide basic operating procedures and full installation of program delivery (Level I); to obtaining desirable operating applications, key planning strategies, and managerial efficiencies (Level II); and lastly, to exhibit advanced strategic program linkages and downstream relationships for promoting student skills and abilities in STEM-related activities (Level III). The sections below outline details and criteria of the performance assessment system.

¹⁶ Other types of mentors include STARBASE employees, teachers, and parents.

¹⁷ This is an increase of 24% from FY 2014.

¹⁸ STARBASE Martinsburg, STARBASE Sioux Falls, and STARBASE Los Alamitos do not receive funding for a DoD STARBASE 2.0 program.

For each DoD STARBASE location, the assessment system not only requires the attainment of each of the objectives at each level but also their maintenance and sustainability over time to retain their status level. Performance level is determined through site visitations, academy reporting requirements, and periodic surveys. Shortfalls in required activities are usually handled through a corrective action schedule agreed upon by the participants and OASD/M&RA to successfully obtain the required performance level under review. 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 requirements are completed and verified.

The assessment system also requires 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 towards and complete an activity at another level, the program would not be reviewed for acceptance until the prior level is successfully achieved.

The successful attainment of these levels of performance provides OASD/M&RA and the military service representatives a way to determine whether an academy may be selected and/or considered for special programs that will be made available to locations at the required level. 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 assessment and validation of academy performance levels was placed on hold in FY 2014 in order to focus on documenting recovery efforts after the large staff turnover experienced in FY 2013. With 15 new directors joining the program, FY 2015 visitations included 11 new director orientations and 13 visits regarding compliance with and/or orientation to the DoD STARBASE curriculum. As programs in FY 2015 regained full operational status and Level I compliance, it was noted that outreach activities had declined. Confirmation of progress in outreach activities to include DoD STARBASE 2.0 participation will be the focus of the FY 2016 visitations.

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-base program delivery, emphasis on target student population, required documentation (i.e., MOU's, student waivers, etc.), reporting requirements, and a number of administrative responsibilities such as written waivers, disability building accessibility, testing samples, teacher assessment, 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 DoD STARBASE 2.0. These are organizational and administrative requirements set up by OASD/M&RA to obtain program delivery efficiencies and operational effectiveness.

These requirements include, but are not exclusive to, participant group involvement; 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 relation planning; personnel management plans; equipment status assessment; “children-at-risk” review; staff development/personnel plans; transfer of leadership plans (i.e., succession plans); management resource manuals; and several other considerations that upgrade program management and operating performance.

Level III: A High Performing Location

Academies must achieve Level I and II status levels before they can be assessed at Level III. Level III requires the development of an activity or set of activities that significantly advances the DoD STARBASE program vision and mission.

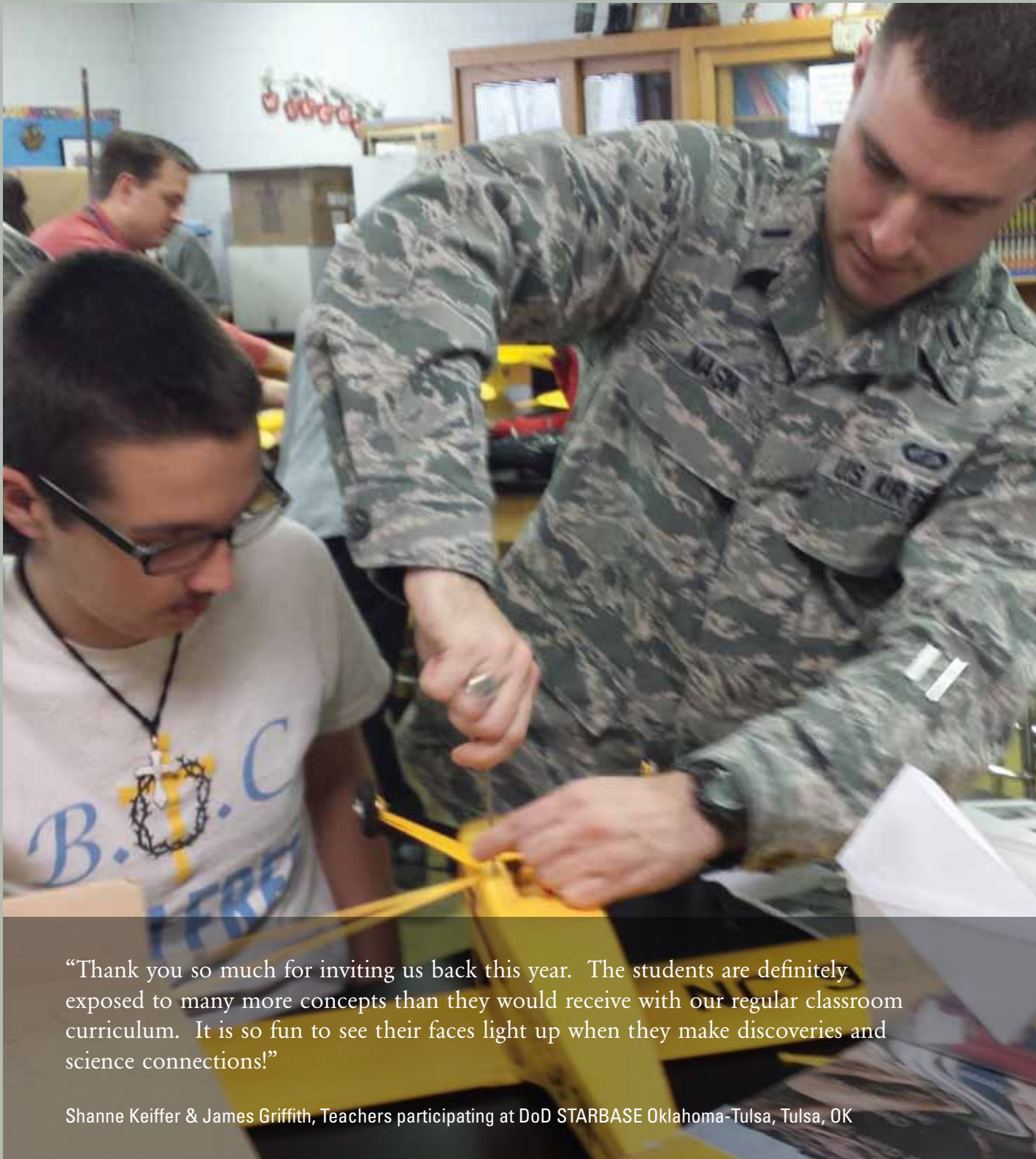
Operational and program enhancements, higher-level problem-solving techniques, time-sensitive improvements, and efficiencies in operations could be included in the assessment of Level III activities if they are of significant magnitude. High priority activities are those that promote the welfare and 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, would be reviewed by the evaluation team for approval by OASD/M&RA.

Each of the above level criteria 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.

Compliance Adherence

Compliance visitations under DoDI 1025.7 are conducted at least once every three years for each DoD STARBASE location. The visitation involves a two to five-day review of 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 base commander and 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 visitation. OASD/M&RA may share the key points of the report with the director and/or the base commander. A written summary of progress made by the DoD STARBASE director is sent to OASD/M&RA as corrective tasks are obtained, and copies may be forwarded to sponsors and military service representatives. Occasionally, a follow-up visitation is scheduled to document that corrective action has been taken.

Newly installed locations may receive an orientation visitation to outline DoDI requirements. The director and staff are briefed and provided information and materials on best practices, testing administration, reporting schedules, documentation, performance expectations, and protocols. This time is also used to answer any questions and concerns the staff and sponsors may have.



“Thank you so much for inviting us back this year. The students are definitely exposed to many more concepts than they would receive with our regular classroom curriculum. It is so fun to see their faces light up when they make discoveries and science connections!”

Shanne Keiffer & James Griffith, Teachers participating at DoD STARBASE Oklahoma-Tulsa, Tulsa, OK

The non-compliant activities most commonly noted are primarily 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 location to have them conducted by the appropriate local base agency; incomplete documentation and/or lack of a written request for modification to OASD/M&RA for exceptions or revisions on DoDI 1025.7 requirements; and incomplete implementation of the core curriculum. As previously indicated, given the number and scope of activities, the number of incidents is small, and involves only a few locations. Overall, most locations met compliance requirements. A small number of locations face challenges in obtaining student numbers, hours of instruction, audit schedules and completions, and meeting reporting requirements in a timely fashion.

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 2015, the total program budget was \$25,000,000. OASD/M&RA allocated \$22,500,000 to program operations. The remainder of the appropriation was used for assessment activities, staff development and training programs, and overall program design and development activities.

In FY 2015, the average operating cost per location was \$387,931 (see Table 10). This is a 5% decrease from FY 2014, due to an increase in student numbers and a 42% increase from the average cost per location in FY 2004.

Table 10:
Average Cost Per Location 2004 - 2015

Fiscal Year	Average Cost Per Location
2004	\$272,469
2005	\$273,040
2006	\$293,584
2007	\$301,773
2008	\$310,895
2009	\$317,638
2010	\$320,304
2011	\$331,482
2012	\$310,500
2013	\$319,408
2014 ¹⁹	\$408,714
2015	\$387,931

¹⁹ The 16-day Government shut down in October, 2013, severely impacted the overall DoD STARBASE program. Significant increases in staff turnover during FY 2013 and FY 2014 resulted in a reduction in the number of students, schools and districts served as well as the number of DoD STARBASE 2.0 programs.

Operational costs differ among DoD STARBASE locations. Overall expenditures of DoD STARBASE funds allocated to each program site are shown in Figure 5. Staff costs range from 30% to 97% of the location's budget which, on average, account for 74% of the site budget followed by equipment (9%), contract services (6%) and supplies (6%).

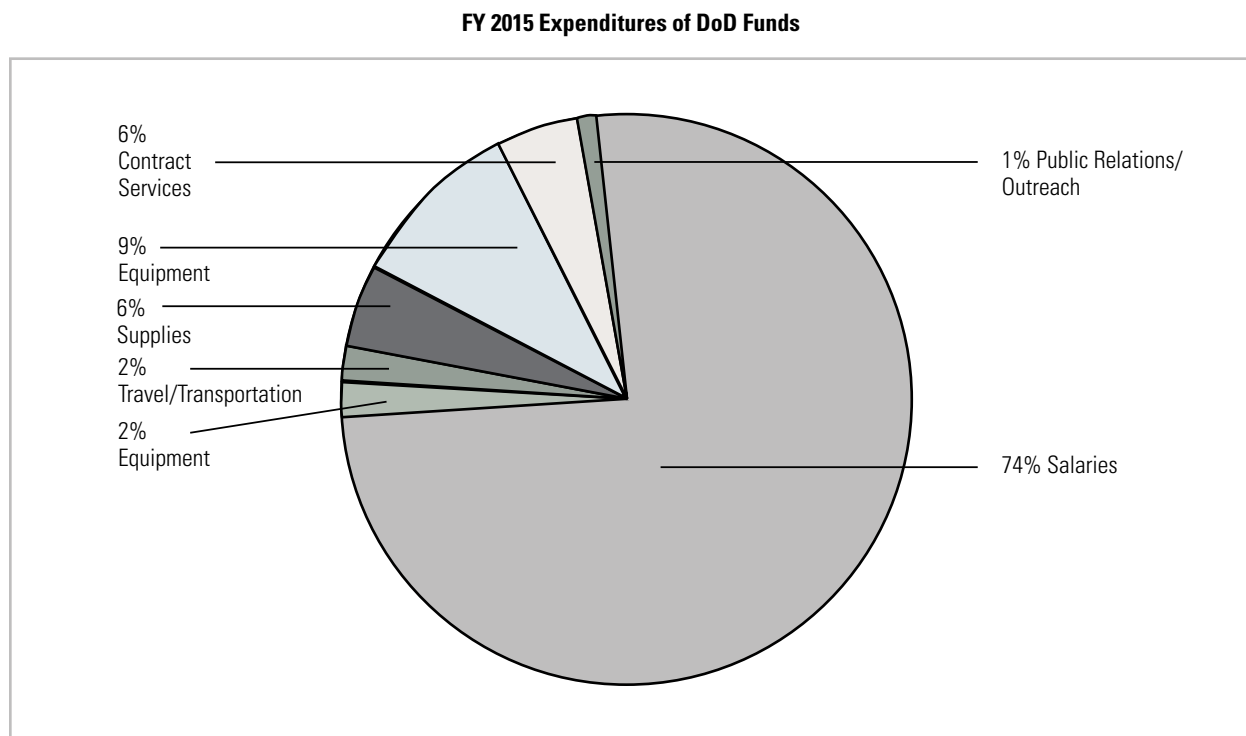


Figure 5.

Several factors contribute to the cost variances, including geographic location, outreach programs, and salary scales. OASD/M&RA annually reviews each location's budget to maintain an equitable distribution of funds. In addition, 25 of the 59 locations obtained supplemental funding from non-DoD sources. The total raised in supplemental funding for FY 2015 was \$691,012. The average raised by locations that secured additional funding through state allocations, grants, and donations was \$27,640. The total monies received from these sources were \$61,381, \$93,790, and \$187,625, respectively. A total of \$596,161 (86%) of supplemental funding was expended in FY 2015. Academies use supplemental funding for staff salaries (25%); program/curriculum development (5%); facilities/furnishings (8%); transportation/travel (5%); supplies (30%); equipment (8%); contract services (11%); public relations/outreach (3%); and other expenditures (5%).

Assessment Results

Student Assessment

OVERVIEW

Annual program evaluation is accomplished in part by assessing student attitudes toward school, the military, and career opportunities as well as assessing knowledge gains in the core curriculum of science, technology, engineering, and math (STEM) concepts. Students complete the DoD STARBASE Student Questionnaire before the DoD STARBASE program and then again once the program is complete. The key pre- to post-assessment areas include:

- Attitudes toward the military (e.g., military personnel, military locations)
- Attitudes toward STEM topics
- Attitudes toward STEM careers, both military and non-military
- Knowledge items assessing the STEM curriculum

This year's DoD STARBASE Student Assessment uses a set of 18 knowledge items (14 retained from prior years) and 36 attitudinal items (15 from prior years). New knowledge items were piloted based on evolving curriculum materials and classroom activities. Pilot items and historical items are maintained in an item database for possible use in future administrations and to allow year-to-year comparisons.

Instrument Design

The core curriculum content underwent significant changes in 2010 and is updated regularly with new learning exercises and experiences for the students. In response, the DoD STARBASE Student Assessment is updated annually to:

- Continually align the assessment with the DoD STARBASE learning objectives and DoD sponsor objectives
- Gather data on pilot items that can be utilized in future assessments
- Minimize the risk of teaching to the assessment

As in previous years, the assessment for this year consisted of two separate instruments combined into one questionnaire. The first instrument was an 18 item multiple-response assessment of STEM knowledge that focused on the core DoD STARBASE curriculum. The second instrument was a 36-item survey measuring various aspects of students' attitudes and opinions about STEM and DoD STARBASE that impact areas such as academic success and future career goals.

- Knowledge Assessment – 17 multiple-choice items and one nomination item (select all responses that apply) were included in the knowledge assessment:
 - 14 items remained from previous versions with two of those items having historical reference benchmarks dating back to at least 2007.
 - Four new items were piloted this year.
 - The 17 multiple-choice items were used for most of the evaluations of knowledge gains, due to the different scoring pattern of the nomination item.

- Attitudinal Survey – 36 attitudinal items (31 administered both pre- and post-program; five administered post-program only) were included in the survey:
 - 15 items were retained from 2013 and 2014, with only slight wording changes.
 - Item order was modified in 2012 and 2015 to make it easier for students to follow the response option formatting.

The responses for the knowledge assessment and for the attitudinal survey are each then summarized based on item content areas to yield category scores as well as on overall score. The overall score for each instrument is presented as a mean score (i.e., group average score) and also as a percent score (i.e., percent correct for knowledge assessment; percent favorable for attitude survey) for groups of students in the following report.

Study Logistics

The DoD STARBASE Student Assessment was administered between January and June of 2015. The Student Assessment was administered twice to the same participating class of students (pre- and post-program) at each participating academy to gauge program impact. The assessments were shipped directly to the DoD STARBASE academies and included the following instruction sets:

Directors' Instructions – Overview of the DoD STARBASE evaluation components including details such as administration methodology, selection of participating classes, and an answer key for the knowledge assessment.

Administrator Instructions – Detailed instructions to the assessment coordinators including the materials needed for administration, filling out the assigned student numbers, and instructions to be read during the administration of the questionnaire.

Completed questionnaires were returned to General Dynamics Information Technology (General Dynamics IT) for processing using scan form technology.

Student Demographic Information

The Student Assessment was administered during the first half of 2015, with a total of 2,667 (1,346 pre-program and 1,321 post-program) surveys returned to General Dynamics IT for processing. Responses were received from 55 of the 59 DoD STARBASE academies (96% academy response rate) compared to 49 in 2014 (86%), and 74 academies in 2013 (99%).

Surveys were matched pre- and post-program based on unique student ID. Those with matching data for both the pre- and post-program were retained for analysis resulting in a total of 2,508 surveys (1,254 matching cases for pre- and post-program assessments). All of the 1,254 matching cases had no more than three missing items for the pre-questionnaire and no more than three missing items for the post-questionnaire. These 1,254 cases are referenced throughout this report.

The frequency and percent of DoD STARBASE students that reported belonging to the various demographic categories are presented in Table 11 and Table 12. As in previous years, the DoD STARBASE student population is evenly split between boys and girls (49.9% and 49.8% respectively). Most of the students were in the fifth grade (93.8%) and between 10 – 11 years old (92.7%).

**Table 11:
Demographic Profile of Student Sample**

Item	Response	Frequency	Percent
Age	9	30	2.4
	10	494	39.4
	11	669	53.3
	12	57	4.5
	13	3	0.2
	Unknown/No answer	1	0.1
Grade	4	50	4.0
	5	1176	93.8
	6	27	2.2
	Unknown/No answer	1	0.1
Gender	Boy	626	49.9
	Girl	625	49.8
	Unknown/No answer	3	0.2

Note: Percentages may not total to 100% within categories due to rounding.

DoD STARBASE locations throughout the United States were represented, with nearly 45% of student assessments coming from the South (24.5%) or Southeast (20.4%) combined. Another 47% came from the Midwest (32.4%) and the West (14.2%). A smaller number of students were served in the East (8.5%).

Fifty-two percent of DoD STARBASE programs (653 students) brought students in one day per week versus the students coming to the program every day within a one week time span (41% of academies including 517 students). Seven of the DoD STARBASE academies reported being aware of testing accommodations, indicating that the program is accessible to students that may need special accommodations during the program sessions.

Table 12:
Demographic Profile of Academy Sample

Item	Response	Academy Frequency	Student Frequency	Percent
Region	East	5	107	8.5
	Midwest	16	406	32.4
	South	14	307	24.5
	Southeast	12	256	20.4
	West	8	178	14.2
Class Schedule	Consecutive	23	517	41.2
	One per week	28	653	52.1
	Other schedule	3	63	5.0
	Unknown/No answer	1	21	1.7
Accommodations	Not aware of testing accommodation	48	1,099	87.6
	Aware of testing accommodation	7	155	12.4

Students' previous exposure to the military and the DoD STARBASE program is presented in Table 13. Familiarity with the military and with DoD STARBASE was reviewed to gauge experience with the military in general and with DoD STARBASE in particular. Most of the students knew someone who went through DoD STARBASE (64.3%), had heard about DoD STARBASE (59.8%), or had met military people before coming to the DoD STARBASE program (61.2%).

Table 13:
Students' Prior Experience with Military and DoD STARBASE

Item	Response	Frequency	Percent
I have met military people before coming to DoD STARBASE	No	485	38.7
	Yes	767	61.2
	Unknown/No answer	2	0.2
I heard about DoD STARBASE before I knew I was coming here	No	501	40.0
	Yes	750	59.8
	Unknown/No answer	3	0.2
I know someone that went through DoD STARBASE before me	No	446	35.8
	Yes	806	64.3
	Unknown/No answer	2	0.2

STUDENTS' ATTITUDINAL RESPONSES

The following analysis provides a summary of the Attitudinal Survey results for both the pre-program survey and the post-program survey. The analysis includes those surveys with no more than three missing items for either survey. The attitudinal items were rated using a 7-point Likert scale with a range of responses from one (Strongly Disagree) through seven (Strongly Agree).

For the students responding to both the pre- and post-program attitude questionnaire, many of their pre-program responses started out positive and increased in favorability post-program. This suggests that these students entered the program with generally positive attitudes that were reinforced throughout the program.

Pre/Post Attitudinal Survey Means

Pre- and post-program Attitudinal Survey total mean scores are shown in Table 14. Total mean scores are a composite averaged score of all the items on the survey with a possible range from one (least favorable) to seven (most favorable). The pre-program means include the 31 core survey items. The post-program means include the 31 core survey items as well as the five post-program items. As in the previous years, there was a significant increase in post-program mean scores as compared to pre-program mean scores, indicating that immediately following the program, students responded more favorably.

Table 14:
Pre/Post Attitudinal Survey Means and Standard Deviations (2008-2015)

Survey	2015 Mean*	2008-2015 Average*
Pre-Program	5.18	5.70
Post-Program	5.59	5.91
Survey	Std. Dev.	Std. Dev.
Pre-Program	.86	0.69
Post-Program	.86	0.70

* Pre- and post-program means are significantly different.

Table 15 rank-orders the items based on post-program means from most favorable to least favorable. Most of the items show an increase in favorability from pre- to post-program means. The 26 bolded items (84% of the items) show a significant increase in favorability from pre-program to post-program attitudes. Three additional items show trends that fell just short of statistical significance [I like figuring out how to use technology gear (tablets, smart phones, etc.); I need to do well in math to get the kind of job I want; I am good at math]. Dramatic improvements in attitudes toward STEM fields include the following, many of which are new attitude items for this year:

- I am aware of some STEM careers.* (increase of .76)
- Most people use STEM skills every day.* (increase of .58)
- I like engineering.* (increase of .57)
- I am interested in being a scientist or engineer. (increase of .52)
- STEM jobs are exciting.* (increase of .51)
- I would like a job in a science-related area.* (increase of .49)
- Engineers help solve challenging problems.* (increase of .46)
- I enjoy learning about STEM topics.* (increase of .43)

**New item in 2015*



“Lessons and activities were a nice review or introduction to skills presented in the classroom! Instructors were very knowledgeable and engaging! I look forward to coming back!”

Heather Carr & James Griffith, Teachers participating at DoD STARBASE Oklahoma-Tulsa, Tulsa, OK

Table 15:
Pre/Post Rankings and Mean Scores of Student Attitudinal Responses

Pre-Program N=1,254		Attitudinal Item	Post-Program N=1,254	
Mean	Rank		Mean	Rank
Post Only		DoD STARBASE is boring. (Reversed scored)	6.52	1
Post Only		I have enjoyed coming to a military base.	6.49	2
Post Only		At DoD STARBASE, I learned a lot of things that I can use.	6.43	3
6.29	1	I do not think DoD STARBASE will help me do better in school. (Reversed scored)	6.42	4
Post Only		DoD STARBASE Instructors made learning about STEM topics fun. **	6.37	5
6.15	2	I like figuring out how to use technology gear (tablets, smart phones, etc.). **	6.23	6
Post Only		I would tell my friends to come to DoD STARBASE.	6.22	7
6.13	3	People who work on a military base do lots of different things.	6.21	8
5.85	6	People who work for the military use technology in their jobs. **	6.14	9
5.91	5	Scientists work on things that will make life better. **	6.08	10
5.92	4	I like technology. **	6.04	11
5.80	7	Military bases are exciting.	5.98	12
5.36	13/14	Most people use STEM skills every day. **	5.94	13
5.43	10/11	I think learning about STEM topics will help me in my daily life. **	5.82	14/15
5.36	13/14	Engineers help solve challenging problems. **	5.82	14/15
5.71	8	I want to learn more about technology.	5.81	16
5.60	9	I need to do well in math to get the kind of job I want. **	5.68	17
4.82	24	I am aware of some STEM careers. **	5.58	18
5.43	10/11	I like science.	5.57	19
5.41	12	I am good at math.	5.48	20
5.02	19	I enjoy learning about STEM topics. **	5.45	21
5.17	15	I am good at science.	5.44	22
5.07	18	A military base is a good place to work.	5.42	23
4.90	22	STEM jobs are exciting. **	5.41	24
4.81	25	I like engineering. **	5.38	25
5.11	16	I would take classes on technology if available. **	5.31	26
4.91	20/21	I want to learn more about engineering. **	5.27	27
4.78	26	When I finish school, I would like to get a job where I could use STEM. **	5.17	28
5.09	17	I like math.	5.16	29
4.85	23	Learning about science is easy for me.	5.15	30
4.55	27/28	I would take engineering classes if offered. **	4.95	31
4.91	20/21	I would like to take more science classes. **	4.92	32
4.55	27/28	I would like to take more math classes. **	4.65	33
4.03	29	I would like a job in a science-related area. **	4.52	34
3.97	30	I am interested in being a scientist or engineer.	4.49	35
3.92	31	I would like to join a science club at my school. **	4.05	36

* Item reverse-scored (a higher score is associated with a more positive attitude).

** New item in 2015.

Bold items show statistically significant changes.

Shifts in Students' Attitudes

Table 16 provides the top ten significant pre- to post-program attitudinal shifts for the 2015 program. As expected, the attitudinal items resulted in a positive shift from pre-program mean responses to post-program mean responses. In particular, there was a .77 increase from pre- to post-program mean response in awareness of STEM careers. There also were impressive changes, averaging +.18, on three items reflecting positive attitudes towards military bases (+.34), the use of technology by the military (+.29) and the diversity of activity on military bases (+.08). These significant changes pre- to post-program, plus the students' greater positivity toward learning science, math and computers after attending DoD STARBASE, indicate that the DoD STARBASE program is achieving many of its primary goals.

Table 16:
The Top 10 Ranking of Attitudinal Item Shifts from Pre- to Post-Program in 2015

Attitudinal Item	Mean Positive Shift Pre- to Post-program
I am aware of some STEM careers.*	0.77
Most people use STEM skills every day. *	0.58
I like engineering.*	0.56
I am interested in being a scientist or engineer.	0.52
STEM jobs are exciting.*	0.51
I would like a job in a science-related area.*	0.48
Engineers help solve challenging problems.*	0.46
I enjoy learning about STEM topics.*	0.44
I would take engineering classes if offered.*	0.40
When I finish school, I would like to get a job where I could use STEM.*	0.40

* New item in 2015

Math and Science Attitudinal Ratings

Similar to previous years, students' mean attitudes in Table 17 on science and math are more positive post- as compared to pre-program. In addition, students have larger shifts in being good at math and science post-program, suggesting that the exposure to STEM concepts taught within the program curriculum is giving the students more confidence in their abilities pertaining to math and science.

Table 17:
Math and Science Attitudinal Item Mean Scores (2015)

Math and Science Attitudinal Items	Pre-Program Mean	Post-Program Mean	Gap Score [•]
I like science.	5.45	5.57	+0.12
I am good at science.	5.17	5.45	+0.28
I am good at math.	5.41	5.48	+0.07
I like math.	5.09	5.16	+0.07

Military-Related Attitudes

Shifts in Military-Related Attitudes

Table 18 shows the four items in the Attitudinal Survey related to perceptions surrounding the military. The item, “I have enjoyed coming to a military base,” was administered post-program only and received a mean of 5.98 out of a possible 7.00, indicating a very positive rating. Positive ratings also were observed for the items “People who work on a military base do lots of different things” (mean = 6.21) and “People who work for the military use technology in their jobs” (mean = 6.14). Although the item “A military base is a good place to work” (mean = 5.42) was ranked lower than other items, it was still substantially above the 3.5 midpoint of the scale, and increased significantly as a function of participation in the DoD STARBASE program (change = +.34, $t(1219) = 7.36$, $p < .0001$). In general, it appears that students’ attitudes about the military are positively influenced by their DoD STARBASE experiences. The Appendix provides explanations of the statistical techniques used to analyze group differences and relationships throughout this report.

Table 18:
Attitudinal Shifts on Military-Related Items (2015)

Military Attitudinal Items	2015
	Shift
I am enjoying coming to a military base.	Post Only
Military people do lots of different things.	+.08
Military bases are exciting.	+.18
The military is a good place to work.	+.34

Comparison of High vs. Low Military Attitude

Overall military attitudes were calculated based on a composite of those items administered both pre- and post-program. Student responses to the following items were summed for the post-program assessment only: “People who work on a military base do lots of different things,” “A military base is a good place to work,” and “Military bases are exciting.” Students with a sum total of 20 or 21 on those three items in the post-program assessment were categorized as having high military attitudes (n=445). Students with a sum total of 13 or less on those three items were categorized as having low military attitudes (n=145). “I have enjoyed coming to a military base” was administered post-program only and was not included within the military attitude scale. Table 19 provides the responses for all the attitudinal items rank-ordered from largest to smallest gap score between the high and low military attitude groups. As expected, the first several items are those that make up the composite scale. Other large differences between high and low military attitudes reflect:

- More interest in STEM careers, broadly described (e.g., “When I finish school, I would like to get a job where I could use STEM”, “STEM jobs are exciting”)
- More interest in science (“I would like to take more science classes”, “Scientists work on things that will make life better”, “I would like to join a science club at my school”)
- More interest in technology (“I want to learn more about technology”, “I like figuring out how to use technology gear [tablets, smart phones, etc.]”)
- More interest in engineering (“I want to learn more about engineering”, “Engineers help solve challenging problems”)
- More interest in mathematics (“I need to do well in math to get the kind of job I want”, “I would like to take more math classes”)
- Greater appreciation for the DoD STARBASE program (“At DoD STARBASE, I learned a lot of things that I can use”, “DoD STARBASE Instructors made learning about STEM topics fun”)

In short, students with more receptive attitudes toward the military appear to also be more highly motivated in regard to STEM learning and applications. All of the gap differences between students with high or low military attitude scores are statistically significant.

“I had pretty high expectations for the program, and my son was very excited in the months and weeks beforehand, but I could not have anticipated the high quality of our experience.”

Teacher participating at DoD STARBASE Minnesota, Minneapolis, MN

Table 19:
Statistically Significant Post-Program Gap Scores Based on Low and High Military Attitudes

Attitude Item	Low Military Attitude (n = 145)	High Military Attitude (n = 445)	+/- Gap
Post-program Attitudes (mean total) Composite Score	4.67	6.07	1.4
A military base is a good place to work.	3.15	6.73	3.58
People who work on a military base do lots of different things.	4.16	6.95	2.79
People who work for the military use technology in their jobs.*	4.31	6.93	2.61
Military bases are exciting.	4.65	6.63	1.98
When I finish school, I would like to get a job where I could use STEM.*	4.10	5.86	1.77
I think learning about STEM topics will help me in my daily life.*	4.60	6.36	1.75
I want to learn more about engineering.*	4.16	5.85	1.69
Engineers help solve challenging problems.*	4.70	6.34	1.64
I would like a job in a science-related area.*	3.51	5.13	1.61
I enjoy learning about STEM topics.*	4.44	6.01	1.57
I would take engineering classes if offered.*	4.10	5.62	1.52
I would take classes on technology if available.*	4.40	5.90	1.50
STEM jobs are exciting.*	4.45	5.95	1.50
Most people use STEM skills every day.*	4.99	6.44	1.46
I am aware of some STEM careers.*	4.63	6.01	1.38
I like engineering.*	4.56	5.91	1.35
I am interested in being a scientist or engineer.	3.71	5.05	1.34
I would like to take more science classes.*	4.22	5.47	1.25
I have enjoyed coming to a military base.	5.56	6.77	1.22
I need to do well in math to get the kind of job I want.*	4.94	6.11	1.17
I would like to take more math classes.*	3.88	5.05	1.17
Scientists work on things that will make life better.*	5.25	6.41	1.16
I would like to join a science club at my school.*	3.35	4.51	1.15
Learning about science is easy for me.	4.37	5.50	1.14
I want to learn more about technology.	5.09	6.23	1.14
I would tell my friends to come to DoD STARBASE.	5.44	6.56	1.12
I like math.	4.34	5.44	1.10
I like science.	4.90	5.97	1.07
I like technology.*	5.43	6.41	0.99
At DoD STARBASE, I learned a lot of things that I can use.	5.72	6.71	0.98
I like figuring out how to use technology gear (tablets, smart phones, etc.).*	5.62	6.56	0.94
DoD STARBASE Instructors made learning about STEM topics fun.*	5.66	6.57	0.91
I am good at math.	4.77	5.67	0.90
I am good at science.	4.94	5.75	0.81
DoD STARBASE is boring. (Reversed Scored)	6.17	6.50	0.53
I do not think DoD STARBASE will help me do better in school. (Reversed Scored)	6.12	6.51	0.39

(Reversed scored) This item was reverse-scored; therefore a higher mean average value reflects a more positive attitude.

* New item in 2015

Knowledge total scores were also compared against military attitudes. Table 20 shows that those with high military attitude and those with low military attitude scores did not significantly differ in their pre-program mean knowledge ($F(1,589) = 1.26, p = .26$). In the post-program assessment, by contrast, those with high military attitudes displayed a stronger performance than those with low military attitudes ($F(1,589) = 11.26, p = .001$). Both groups (high and low military attitude scores) had significant gains in knowledge scores pre- to post- program ($F(1,588) = 894.28, p < .0001$), but the high military attitude score group showed significantly greater improvement (+4.69 vs. +3.94, $F(1,588) = 6.76, p = .01$).

Table 20:
Pre/Post Knowledge Assessment Mean Scores for High and Low Military Attitude Students

Military Attitudes	Sample Size	Pre-Program Mean	Std. Deviation	Post-Program Mean	Std. Deviation
High Military Attitude	445	7.58	2.79	12.27*	3.21
Low Military Attitude	145	7.28	2.84	11.22*	3.48

*Significant increase in post-program means.

Gender Comparisons and Attitudinal Differences

The following two tables provide the Attitudinal Survey mean total scores, as well as the item-level detail comparing the responses for both boys and girls. Table 21 shows the overall differences in responses based on gender for both the pre- and post-program responses. Although boy's attitude scores were significantly more positive than girls at the pre-program assessment (5.28 vs. 5.08, $F(1, 1250) = 17.60, p < .0001$), the gap had been cut by 20% by the post-program assessment (5.67 vs. 5.51; $F(1, 1250) = 10.68, p < .001$).

Boys and girls did not significantly differ on 22 of the post-program items measuring favorable attitudes to STEM and the DoD STARBASE program. Boys displayed more positive attitudes toward DoD STARBASE and STEM than girls on 14 items as shown by Table 22. These include five items related to engineering (e.g. "I would take engineering classes if offered"), five items related to technology (e.g. "I want to learn more about technology"), and one item each focused on math and STEM ("I am good at math" and "When I finish school, I would like to get a job where I could use STEM"). The Appendix contains a complete listing of the attitude items comparing girls and boys on pre-program and post-program means. The Appendix also provides a comparison of the gap scores from pre- to post-program for girls and boys separately.

Table 21:
Gender Differences on Pre/Post Attitude Survey Mean Total Scores

	Sample Size	Pre-Program Mean	Post-Program Mean	Performance Gap Score
Boys	626	5.28	5.67	+ .39
Girls	625	5.08	5.51	+ .43

Table 22:
Gender Gap Score Differences in Post-Program Attitude Survey Mean Item Scores

Attitude Item	Girls' Mean	Boys' Mean	B-G Difference
Boys More Favorable than Girls			
I would take engineering classes if offered.*	4.60	5.30	0.70
I am interested in being a scientist or engineer.	4.16	4.82	0.66
I like engineering.*	5.10	5.66	0.56
I want to learn more about engineering.*	5.01	5.53	0.52
I would take classes on technology if available.*	5.07	5.56	0.49
I want to learn more about technology.	5.61	6.00	0.39
People who work for the military use technology in their jobs.*	5.97	6.30	0.33
Military bases are exciting.	5.82	6.14	0.32
I like technology.*	5.90	6.17	0.27
I am good at math.	5.35	5.60	0.25
I like figuring out how to use technology gear (tablets, smart phones, etc.).*	6.11	6.36	0.25
When I finish school, I would like to get a job where I could use STEM.*	5.06	5.28	0.22
Engineers help solve challenging problems.*	5.71	5.91	0.20
A military base is a good place to work.	5.33	5.51	0.18

*New item in 2015

Prior Experience with the Military

Comparisons Based on Prior Experience with Military Personnel

Prior experience with military locations and/or personnel was related to the pre- and post-program attitudinal patterns of the students. Prior experience was determined by affirmative responses to the demographic item "I have met military people before coming to DoD STARBASE." As expected, those with prior military exposure had more positive attitudes before and after the program, which is shown on 13 items, and more favorable post-program attitudes on 4 items compared to those with no prior military exposure (Table 23). There was one item on which participants with prior exposure to the military had more favorable attitudes only on the pre-program assessment ("I like technology") and one item on which participants without prior exposure to the military had more favorable attitudes only on the pre-program assessment ("I would like to take more math classes"). Because those differences were no longer evident at the end of the program, they are not included in Table 23.

Table 23:
Significant Differences in Attitudinal Items Based on Prior Military Contact

More Positive with Prior Military Contact
I am good at science. (Pre & Post)
Learning about science is easy for me. (Pre & Post)
I am interested in being a scientist or engineer. (Pre & Post)
Military bases are exciting. (Pre & Post)
Engineers help solve challenging problems.* (Pre & Post)
A military base is a good place to work. (Pre & Post)
I would take engineering classes if offered.* (Pre & Post)
I would take classes on technology if available.* (Pre & Post)
I am aware of some STEM careers.* (Pre & Post)
I like engineering.* (Pre & Post)
Most people use STEM skills every day.* (Pre & Post)
People who work on a military base do lots of different things. (Pre & Post)
People who work for the military use technology in their jobs.* (Pre & Post)
I would like a job in a science-related area.* (Post only)
I want to learn more about engineering.* (Post only)
When I finish school, I would like to get a job where I could use STEM.* (Post only)
I think learning about STEM topics will help me in my daily life.* (Post only)

Note: Mean values of item responses by prior military contact group are omitted for simplicity. They are available upon request.

**New item in 2015*

Gender Differences Based on Prior Experience with Military Personnel

Experience with military personnel was also reviewed based on gender differences for both attitudinal (Table 24) and knowledge-based pre- and post-program responses (Table 25). The positive impact of prior exposure to the military did not interact with gender on pre-program attitudes ($F(1, 1248) = .10, p = .75$), but there was an interaction of prior exposure with gender on post-program attitudes ($F(1, 1248) = 4.42, p = .04$). That is, boys' post-program attitudes were highly favorable regardless of whether or not they had prior exposure to the military, but girls who had prior exposure to the military had post-program attitudes that were significantly more favorable than girls who had not had prior exposure.

There was a significant direct effect of prior exposure to the military on pre-program knowledge scores ($F(1, 1248) = 34.25, p < .0001$), but there was no effect of gender ($F(1, 1248) = 1.95, p < .16$) nor any interaction between gender and exposure ($F(1, 1248) = 2.51, p < .11$) on pre-program knowledge scores. Similarly, there was a significant direct effect of prior exposure to the military

on post-program knowledge scores ($F(1, 1248) = 27.22, p < .0001$). However, there was no effect of gender on post-program knowledge scores ($F(1, 1248) = 0.06, p < .81$), nor any interaction between gender and prior exposure ($F(1, 1248) = 0.15, p = .70$). Thus, these patterns of results suggest that individual differences in mean knowledge scores are more likely derived from prior military experience rather than being related to gender, whether assessed pre- or post-DoD STARBASE program.

Table 24:
Prior Experience with the Military Attitudinal Differences by Gender

	No Prior Experience with Military		Prior Experience with Military		Difference Between Post- Program Means
	Pre-Program Mean	Post-Program Mean	Pre-Program Mean	Post-Program Mean	
Boys	5.18	5.64	5.34	5.69	+0.05
Girls	5.04	5.37	5.14	5.63	+0.26

Table 25:
Prior Experience with the Military Knowledge Differences by Gender

	No Prior Experience with Military		Prior Experience with Military		Difference Between Post- Program Means
	Pre-Program Mean	Post-Program Mean	Pre-Program Mean	Post-Program Mean	
Boys	7.02	11.51	8.22	12.42	+0.91
Girls	7.05	11.48	7.77	12.54	+1.06

Comparisons Based on Prior Knowledge of DoD STARBASE

Knowledge of the program was measured by responses to, "I heard about DoD STARBASE before I knew I was coming here." Those familiar with DoD STARBASE responded significantly more favorably to 16 of the Attitudinal Survey items both pre- and post-program (Table 26), indicating that they started and finished the program with more positive attitudes. Further, students who had heard of DoD STARBASE responded significantly more favorably to two additional items post-program. In addition to producing generally more favorable attitudes, the DoD STARBASE program eliminated the differences between those with prior knowledge of DoD STARBASE and those lacking such knowledge on the following items:

- STEM jobs are exciting.
- I would take classes on technology if available.
- People who work for the military use technology in their jobs.

Table 26:
Significant Differences on Attitudinal Survey Items Based on Knowledge of DoD STARBASE Ranked High to Low

Pre- and Post-Program	Pre-Program Only
I am good at science.	I have enjoyed coming to a military base.
Learning about science is easy for me.	I would tell my friends to come to DoD STARBASE.
Military bases are exciting.	
I am good at math.	
I would like a job in a science-related area.*	
Engineers help solve challenging problems.*	
A military base is a good place to work.	
I like science.	
I would take engineering classes if offered.*	
I am aware of some STEM careers.*	
I like engineering.*	
Most people use STEM skills every day.*	
I want to learn more about engineering.*	
People who work on a military base do lots of different things.	
I like figuring out how to use technology gear (tablets, smart phones, etc.).*	
Scientists work on things that will make life better.*	

Note: All attitudes were more positive among students with prior knowledge. Mean values of item responses by DoD STARBASE knowledge group are omitted for simplicity. They are available upon request.

** New item in 2015*

Impact of Student Age and Grade on Reported Attitudes

Table 27 presents statistically significant correlations between a student's age and grade in school with Attitudinal Survey items. Although the age and grade reports are correlated ($r = .379$, $p < .0001$), grade seems to be a more reliable and consistent predictor of student attitudes. Grade correlated with 12 attitudes, compared to only three for age. This is reasonable, because students participate with their classmates by grade level, and not by age. Though the magnitudes of the relationships are all fairly small, the positive relationships suggest that students in higher grades may serve as role models to students in lower grades for a positive engagement in the DoD STARBASE program, including an appreciation for STEM, specifically engineering and science. This year, students in higher grades were less likely to like math or find military bases exciting, suggesting that might be a focus for future years for that group. The complete Pearson Correlation matrix for the Attitudinal Survey items and selected student characteristics is presented in the Appendix.

Table 27:
Relationships of Student Age and Grade With Post-Program Attitudinal Responses

	Correlation	
	Grade	Age
Learning about science is easy for me.	.058*	.081**
STEM jobs are exciting.	.007	.089**
Engineers help solve challenging problems. [^]	.038	.086**
I would take engineering classes if offered. [^]	.029	.056*
I am aware of some STEM careers. [^]	.069*	.161**
I like engineering. [^]	.047	.095**
Most people use STEM skills every day. [^]	.063*	.113**
I want to learn more about engineering. [^]	.034	.056*
I enjoy learning about STEM topics. [^]	.020	.058*
When I finish school, I would like to get a job where I could use STEM. [^]	.017	.068*
Military bases are exciting.	.020	-.057*
I like math.	-.047	-.091**

*Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

[^] New item in 2015

Comparisons Based on Class Schedule

Academies were compared based on class schedule (Table 18). Class schedule was categorized as meeting:

- On consecutive days (23 academies and 517 students)
- Once per week (28 academies and 658 students)
- Some other schedule (3 academies and 63 students)

Students attending on consecutive days demonstrated the highest pre-program and post-program knowledge scores, but students who attended once per week showed comparable knowledge gains (improvement of 4.47 once per week vs. 4.58 for consecutive day students). Students attending on consecutive days also demonstrated the highest gains in attitudinal scores (improvement of .46 consecutive day students vs. .35 for once per week students).

Table 28:
Class Schedule Pre-program and Post-program Knowledge and Attitudinal Scores

	Knowledge Scores•			Attitudinal Scores		
	Pre-Program	Post-Program	Gap	Pre-Program	Post-Program	Gap
Consecutive	8.19	12.77	4.58	5.20	5.66	0.46
Once per week	7.32	11.79	4.47	5.17	5.52	0.35

* Means are significantly different across class schedule.

Attitude Dimensions

To help simplify and gain greater insight into the impact of the DoD STARBASE program on student attitudes, the attitude items were grouped into seven dimensions. Initial groupings into six categories were made on the basis of a priori rational conceptualizations during the design phase of the assessment. These were later empirically refined by follow-up statistical confirmation using principal components analysis (PCA), a standard data reduction method, with actual student response data. The definitions are provided below. The specific items and the results of the PCA analysis are presented in the Appendix. Each of the seven dimensions is highly reliable, based on Cronbach's, a statistical index of measurement consistency and coherence:

- **STEM Concept Awareness** Recognition of the value of technology in everyday life (4 items, = .816)
- **Future Planning** Expression of interest in future careers and taking relevant classes, especially in STEM (8 items, = .905)
- **Science Confidence** Appreciation for science and a positive view of one's capacity for learning science (5 items, = .895)
- **Math Confidence** Enjoyment of math and belief in personal ability to do well in mathematics (4 items, = .760)
- **STEM Behavior & Motivation** Identification with the importance of STEM and the roles of engineers and scientists in solving problems and improving life (5 items, = .829)
- **Military Setting Endorsement** Positive impressions about enjoying military facilities and the diversity of work activities done by people on military bases (5 items, = .759)
- **DoD STARBASE Program Evaluation** Positive rating of the impact of the DoD STARBASE program on learning and enthusiasm to convey that to others (5 items, = .848)

Pearson correlations among the seven attitude dimensions, student demographic characteristics and post-DoD STARBASE Total Knowledge (discussed in the following section) were calculated and are presented in the Appendix. The dimensions are moderately correlated with each other, as would be expected, yet are distinct enough to reflect clear aspects of student attitudes toward STEM, careers, the military and DoD STARBASE. STEM Behavior & Motivation ($r = .294$, $p < .0001$) and Future Planning ($r = .210$, $p < .0001$) are the strongest predictors of post-program Total Knowledge scores.

Contrast analyses were performed between pre-program and post-program scores on the first six dimensions (Table 29). As with the individual item trends, there were increases in favorable attitudes on the dimension scores from pre-program to post-program. All differences were statistically significant.

Table 29:
Pre-Program and Post-Program Attitudinal Dimension Scores

Attitude Dimension	Pre-Program	Post-program	Gap
STEM Concept Awareness	22.60	23.10	+0.50
Future Planning	36.45	40.16	+3.70
Science Confidence	24.04	24.92	+0.88
Math Confidence	20.44	20.75	+0.31
STEM Behavior & Motivation	26.61	28.94	+2.33
Military Setting Endorsement	22.96	30.05	+7.09
DoD STARBASE Program Evaluation		31.33	

Contrasts were also conducted between the girls' and boys' post-program scores (Table 30). At the end of the DoD STARBASE program, boys' attitude scores exceeded girls' scores on STEM Awareness, Future Planning and Military Setting Endorsement. Perhaps even more noteworthy is the finding that girls were not significantly different from boys on Science Confidence, Math Confidence, STEM Behavior and Motivation or DoD STARBASE Program Evaluation.

Table 30:
Gender Gap Score Differences in Post-Program Attitude Dimension Scores

Attitude Dimension	Girls' Mean	Boys' Mean	B-G Difference
STEM Concept Awareness	22.45	23.74	1.29**
Future Planning	38.72	41.59	2.87**
Science Confidence	24.99	24.85	-0.14
Math Confidence	20.57	20.91	0.34
STEM Behavior & Motivation	28.93	28.92	-0.01
Military Setting Endorsement	29.56	30.53	0.97**
DoD STARBASE Program Evaluation	31.21	31.43	0.22

Drivers of Student Attitude

The subsections of Table 31 provide a list of non-overlapping statistical predictors for specific target student attitudes. The predictors, or drivers, are rank-ordered by relative impact of the driver attitude on the target attitude. This indicates that if the conditions in each list are present (that is, more favorable attitude is expressed), it is very likely the target attitude also will be present.

The Adjusted R Square values indicate the cumulative amount of the variance, or variability, across students in their attitudes about DoD STARBASE and STEM-related topics that the drivers explain. That is, these attitude items predict student feelings about particular aspects of the DoD STARBASE program with an increasing degree of efficiency. Thus, they provide a condensed model from which to tell what makes students more enthusiastic about the program and about STEM. Many consider these lists to be prioritized action items for improving the target attitude.

Considerations Based on Drivers

There are repeating drivers that appear to have a broad impact on the target attitudes. One main driver affected five of the target attitudes:

- Scientists work on things that will make life better.

Three other drivers each impacted three target attitudes:

- DoD STARBASE Instructors made learning about STEM topics fun.
- A military base is a good place to work.
- People who work on a military base do lots of different things.

Eight additional drivers affected two target attitudes:

- DoD STARBASE is boring. (Reversed scored)
- Engineers help solve challenging problems.
- I have enjoyed coming to a military base.
- I like science.
- I think learning about STEM topics will help me in my daily life.
- I want to learn more about engineering.
- I want to learn more about technology.
- People who work for the military use technology in their jobs.

These outcomes suggest that DoD STARBASE instructors should continue to stress the value of science, continue to make learning fun, and continue to emphasize the positive qualities of military bases. Other drivers of student attitudes, such as liking science, and wanting to learn more about engineering and technology, are important predictors, but may follow from the more potent predictors. To the extent that academies are able to create a stimulating, rewarding and supportive learning environment, positive student attitudes can be enhanced and reinforced, which may pay continuing dividends over the longer term after DoD STARBASE attendance. These desirable outcomes include word of mouth endorsement, further pursuit of learning about technology, STEM career motivation, and support for the military.

Table 31:
Drivers of Key Target Attitudes (Post-Program Responses)

Target Attitude	Drivers of Target Attitude	Adjusted R Square
At DoD STARBASE, I learned a lot of things that I can use.	I would tell my friends to come to DoD STARBASE.	0.287
	DoD STARBASE Instructors made learning about STEM topics fun.*	0.363
	Engineers help solve challenging problems.*	0.402
	I like science.	0.415
	People who work on a military base do lots of different things.	0.423
	I need to do well in math to get the kind of job I want.*	0.428
	I want to learn more about technology.	0.432
	Scientists work on things that will make life better.*	0.436
	I do not think DoD STARBASE will help me do better in school. (Reversed scored)	0.438
I would tell my friends to come to DoD STARBASE.	DoD STARBASE Instructors made learning about STEM topics fun.*	0.288
	At DoD STARBASE, I learned a lot of things that I can use.	0.378
	DoD STARBASE is boring. (Reversed scored).	0.430
	Military bases are exciting.	0.441
	I like math.	0.447
	I want to learn more about engineering.*	0.451
	I think learning about STEM topics will help me in my daily life.*	0.458
	Scientists work on things that will make life better.*	0.461
I want to learn more about technology.	DoD STARBASE Instructors made learning about STEM topics fun.*	0.442
	At DoD STARBASE, I learned a lot of things that I can use.	0.528
	DoD STARBASE is boring. (Reversed scored).	0.546
	Military bases are exciting.	0.555
	I like math.	0.563
	I want to learn more about engineering.*	0.569
	I think learning about STEM topics will help me in my daily life.*	0.573
	Scientists work on things that will make life better.*	0.576
I am interested in becoming a scientist or engineer.	I would like a job in a science-related area.*	0.409
	I would take engineering classes if offered.*	0.544
	I like engineering.*	0.566
	When I finish school, I would like to get a job where I could use STEM.*	0.573
	People who work on a military base do lots of different things.	0.578
	I want to learn more about technology.	0.581
	Scientists work on things that will make life better.*	0.583
	I would like to take more math classes.*	0.584
	I would like to take more science classes.*	0.587
	I like science.	0.590

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Table 31: (Continued)
Drivers of Key Target Attitudes (Post-Program Responses)

Target Attitude	Drivers of Target Attitude	Adjusted R Square
Military bases are exciting.	A military base is a good place to work.	0.304
	I have enjoyed coming to a military base.	0.432
	People who work for the military use technology in their jobs.*	0.443
	I am good at math.	0.448
	People who work on a military base do lots of different things.	0.452
Military people do lots of different things.	People who work for the military use technology in their jobs.*	0.256
	A military base is a good place to work.	0.321
	Scientists work on things that will make life better.*	0.347
	I have enjoyed coming to a military base.	0.356
	Engineers help solve challenging problems.*	0.364
	I am interested in being a scientist or engineer.	0.370
	I am aware of some STEM careers.*	0.374
	Military bases are exciting.	0.377

* New item in 2015

Student Knowledge and Skills

The 18 items of the Knowledge Assessment were categorized according to the DoD STARBASE curriculum area that they most closely measure in order to calculate scale scores. The following table (Table 32) breaks down the Knowledge Assessment items into the specific curriculum areas measured. Only the item stems are presented here.

“Thank you for putting on such a great program and the fact that it was free is completely incredible. I am a firm believer that if you get kids interested and excited in math, science, etc. at an early age, you have them hooked for the tough years coming ahead.”

Teacher participating at DoD STARBASE One, Selfridge, MI

**Table 32:
Scored and Pilot Knowledge Items by Curriculum Area**

Chemistry Science (E3.1.1.2)	
Item #	
1	Sodium and chloride bond to form salt (NaCl). What does this bonded substance represent?
5	Which pie chart represents the correct composition of air?
10	Which of the following is an example of physical change?
14	Which of the following states of matter have the least amount of kinetic energy?
Engineering (E3.1.1.4)	
Item #	
2	By constructing a 3D scale model of a car, a person can learn all of the following EXCEPT:
3	Why are prototypes a key part of the engineering design process?
11	When using computer design software to build a model, the first step is to...
Mathematics Operations & Applications (E3.1.1.5)	
Item #	
4	Which of the following is typically measured in nanometers?
9	In the graph above, find the letter that is at the coordinates (3,-2). Is it A, B, C, or D?
12	Of the following, which tool would be appropriate to measure the volume of a glass of milk?
15	An engineer is testing how well three different towels absorb liquids over three trials. The data for the experiment is in the table below. Select the graph that correctly represents the data of the experiment.
Physics (E3.1.1.1)	
Item #	
6	Two boats are floating by each other and passing cargo from one boat to the other. Based on Bernoulli's Principle, what happens if water is forced between the two boats?
13	What scientific law makes it important to wear a seat belt?
Technology (E3.1.1.3).	
Item #	
7	You are working on a new product to melt snow and ice on walkways. You test the product by measuring the time it takes for the area to become safe for walking. What conclusion would you make based on the following results?
17	You start out at the star (coordinates -1, 3) and walk two kilometers North, then 1 Kilometer West and stop for lunch. After lunch, you head to your friend's house which is five kilometers to the East. Where does your friend live?
8	Which of the following would be a good reason to use latitude and longitude coordinates?
STEM Awareness	
Item #	
16	STEM (Science, Technology, Engineering, and Math) jobs can involve which of the following?
18	Who uses STEM concepts in their job? (Select all that apply)

Pre/Post Knowledge Items by Curriculum Area

Table 33 shows the pre- and post-program assessment mean score by curriculum area. All item categories (e.g., Chemistry, Physics) show significant improvement post-program as compared to responses prior to participation in DoD STARBASE. The largest improvement was seen in Physics (+46.25). Similar to 2014, the smallest post-program increases were in the Engineering (+13.08) and Technology (+17.15) areas.

Table 33:
Pre/Post Knowledge Scores by Curriculum Area

Curriculum Area	# of Items	Pre-Program Percentage Score	Post-Program Percentage Score*	Gap
Knowledge Item Total	17	44.80	71.11	26.31
Chemistry	4	34.05	72.03	38.68
Engineering	1	66.75	79.82	13.08
Engineering Pilot	2	48.19	65.34	17.15
Math	4	48.64	71.17	22.53
Physics	2	22.89	69.14	46.25
Technology	3	55.74	73.14	17.40
STEM Awareness Pilot	1	73.29	79.67	6.38
STEM Job Awareness Pilot	25	10.73	14.55	3.82

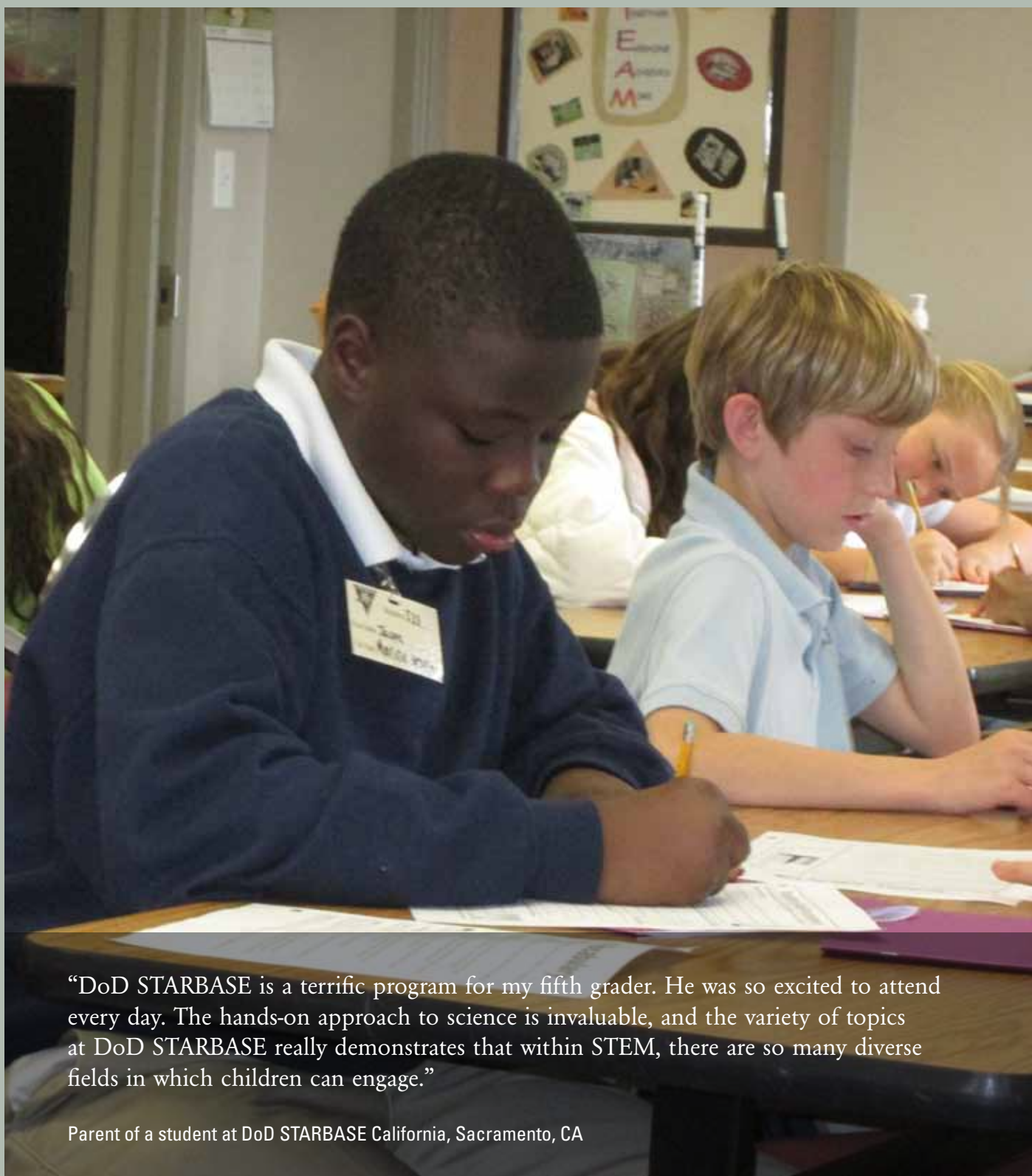
* All subtotal means are statistically significantly higher than pre-program means

Pre/Post Knowledge Scores

Table 34 compares the pre- and post-program mean scores, percent correct, and gap differences for the Knowledge Assessment. The difference between pre-and post-assessment scores is statistically significant.

Table 34:
Pre/Post Knowledge Assessment Mean Total Scores and Percent Correct (2015)

Year	2015
# of Items	17
Pre-Program Score	7.62 (44.8%)
Post-Program Score	12.09 (71.1%)
Gap	+4.47 (26.3%)



“DoD STARBASE is a terrific program for my fifth grader. He was so excited to attend every day. The hands-on approach to science is invaluable, and the variety of topics at DoD STARBASE really demonstrates that within STEM, there are so many diverse fields in which children can engage.”

Parent of a student at DoD STARBASE California, Sacramento, CA

Pre/Post Knowledge Items by Curriculum Area

Table 35 presents the gap difference for each item based on pre- to post-program percentage correct. The percentage of students answering an item correctly significantly increased for all items from pre- to post-program. Students who participate in DoD STARBASE come with a basic understanding of the concepts taught in the program, as evidenced by the percentage of students who answer certain items correctly pre-program. For example, two-thirds (67%) of the incoming students responded correctly to a question about the elements of the design process. The DoD STARBASE curriculum helped to boost that to four-fifths (80%), an increase of 13%. Knowledge of concepts that were unknown pre-program typically had much larger increases after the program. For example, correct answers to the item asking about Bernoulli's Principle increased from 8% to 68%, resulting in a 60% increase in those responding correctly pre- to post-program. Across all items, the average increase in correct responding from pre- to post-program in 2015 was 26% compared to 19% in 2014 and 21% in 2013.

**Table 35:
Pre/Post Knowledge Item Mean Percentage Correct**

Knowledge Item	2012 Pre- Program % Correct	2012 Post- Program % Correct	2013 Pre- Program % Correct	2013 Post- Program % Correct	2014 Pre- Program % Correct	2014 Post- Program % Correct	2015 Pre- Program % Correct	2015 Post- Program % Correct	2015 % Difference (2015 Post- Pre)
Chemistry Science (E3.1.1.2)									
1. Sodium and chloride bond to form salt (NaCl). What does this bonded substance represent?***	—	—	—	—	—	—	55%	80%	25%
5. Which of the following has properties similar to the properties of air?	—	—	—	—	40%	53%	11%	79%	68%
10. Which of the following is an example of physical change?	31%	57%	33%	61%	35%	55%	33%	67%	34%
14. Which of the following states of matter have the least amount of kinetic energy?	46%	72%	51%	73%	36%	62%	37%	65%	28%
Engineering (E3.1.1.4)									
2. By constructing a 3D scale model of a car, a person can learn all of the following EXCEPT:**	—	—	—	—	—	—	37%	54%	17%
3. Why are prototypes a key part of the engineering design process?	56%	68%	56%	69%	64%	77%	67%	80%	13%
11. When using computer design software to build a model, the first step is to:**	—	—	—	—	—	—	41%	62%	21%
Mathematics Operations & Applications (E3.1.1.5)									
4. Which of the following is typically measured in nanometers?	40%	72%	38%	71%	41%	69%	38%	71%	32%
9. In the graph above, find the letter that is at the coordinates (3,-2). Is it A, B, C, or D?	49%	69%	48%	67%	49%	66%	45%	65%	20%
12. Of the following, which tool would be appropriate to measure the volume of a glass of milk?	—	—	39%	60%	53%	75%	54%	80%	26%

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Table 35: (Continued)
Pre/Post Knowledge Item Mean Percentage Correct

	2012	2012	2013	2013	2014	2014	2015	2015	2015
Knowledge Item	Pre- Program % Correct	Post- Program % Correct	Pre- Program % Correct	Post- Program % Correct	Pre- Program % Correct	Post- Program % Correct	Pre- Program % Correct	Post- Program % Correct	% Difference (2015 Post- Pre)
15. An engineer is testing how well three different towels absorb liquids over three trials. The data for the experiment is in the table below. Select the graph that correctly represents the data of the experiment.	55%	69%	54%	69%	55%	67%	57%	70%	12%
Physics (E3.1.1.1)									
6. Two boats are floating by each other and passing cargo from one boat to the other. Based on Bernoulli's Principle, what happens if water is forced between the two boats?	7%	67%	7%	67%	6%	68%	8%	68%	60%
13. What scientific law makes it important to wear a seat belt?	39%	75%	39%	75%	38%	72%	37%	70%	32%
Technology (E3.1.1.3)									
7. You are working on a new product to melt snow and ice on walkways. You test the product by measuring the time it takes for the area to become safe for walking. What conclusion would you make based on the following results?	—	—	60%	71%	59%	71%	60%	71%	12%
17. You start out at the flag (coordinates -1, 3) and walk two kilometers North, then 1 Kilometer West and stop for lunch. After lunch, you head to your friend's house which is five kilometers to the East. Where does your friend live?	46%	63%	46%	62%	59%	70%	62%	75%	12%
8. Which of the following would be a good reason to use latitude and longitude coordinates?	—	—	43%	70%	41%	69%	45%	73%	28%
STEM Awareness									
16. STEM (Science, Technology, Engineering, and Math) jobs can involve which of the following?***	—	—	—	—	—	—	73%	80%	6%

* Item content modified from last administration

** New item in 2015

Gender Differences on Knowledge Test

Table 36 presents the pre- and post-program scores and gap differences between scores, based on gender. Similar to several prior years, the pre-program knowledge score was significantly higher for boys than for girls. The average post-program knowledge score for boys is slightly higher than for girls, but is no longer statistically significant. By contrast, the knowledge increase from pre- to post- program is significant for both boys and girls.

Table 36:
Pre/Post Knowledge Assessment Mean Scores by Gender

	Sample Size	Pre-Program Score	Post-Program Score*	Individual Gap Score
Boys	626	7.80	12.11	+4.31*
Girls	625	7.44	12.08	+4.64*

**Significant difference between pre-program score and post-program scores.*

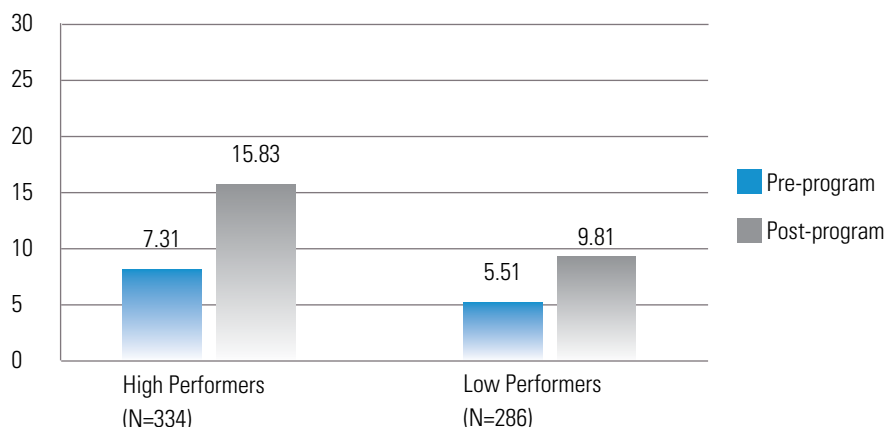
High versus Low Performers on Knowledge Test

Figure 6 (see page 87) illustrates the differences between high and low performers on the pre- and post-program knowledge assessment. Performance was measured using the post-program total assessment score sample mean of 12.09 and standard deviation of 3.27. High performance was considered to be a total score of 15 or higher ($12.09 + 3.27$, rounded to whole unit value). A total of 26.6% of the sample was classified as high performers. Low performance was defined to be a total score of 9 or lower ($12.09 - 3.27$, rounded to whole unit value). A total of 22.8% of the sample was tagged as low performers.

Both the low and high performers showed significant improvements after participating in the DoD STARBASE program. Similar to the past several years' results, those students who scored low on the post-assessment also scored low on the pre-assessment and did not improve as much. The low performers' average gap score was a 4.30 point increase from pre- to post-program, compared to the high performers who improved on average by 8.52 points. The differences between the two groups in pre- and post-program total scores are statistically significant.

The pre- and post-program averages on the Attitudinal Survey overall were also lower for low Knowledge Assessment performers. The low performing group had a significantly lower mean attitude rating both pre- and post-program (5.02 and 5.31 respectively) as compared to the high performing group (5.42 and 5.83 respectively). Overall, both pre-program attitudes and post-program attitudes were significant predictors of post-program knowledge scores ($r = .175$, $r = .218$, respectively, both $p < .0001$).

Figure 6:
High versus Low Performers on Knowledge Assessment



Perceptions of STEM Use in Jobs

A pilot knowledge item in 2015 asked students “Who uses STEM concepts in their job? (Select all that apply).” Twenty five jobs were listed (Table 37), and the average number specified as STEM-related pre-program was 10.73 (SD = 5.21).

Table 37:
High versus Low Performers

Accountant	Camera operator	Farmer	Mail carrier	Police officer
Actor/actress	Car designer	Fireman	Maintenance worker	School counselor
Animal breeder	Crime scene investigator	Hair designer/ barber	Manager	Sports athlete
Architect	Construction worker	Housekeeper	Mechanic	Teacher
Nurse	Cook	Lawyer	Military personnel	Video game designer

Conclusion

The 2015 DoD STARBASE program was successful in achieving its major goals as measured by the assessment of student attitudes and knowledge before and after attending the program. It produced measurable changes in students’ positive attitudes toward science, technology, engineering and mathematics. Those positive attitudes are likely to be helpful in encouraging learning about STEM topics throughout the students’ academic careers.

In addition, the 2015 DoD STARBASE program also yielded solid gains in students’ STEM knowledge and performance. Students completed the program with an increase in STEM information and skills, which also should be of benefit in their continuing school learning about STEM topics. The increase in knowledge performance was particularly noticeable in girls, who have historically been less well prepared in the STEM domain than boys.

Finally, the DoD STARBASE program appears to have supported the DoD sponsor’s community outreach objective by creating a favorable impression among many of the participating students of the U.S. military and the people who work for it.

PARTICIPATING TEACHER ASSESSMENT

Introduction

The Teacher Survey gathers strategic and evaluative information about the DoD STARBASE program to determine overall impact with both immediate and lasting implications. Classroom teachers support their students throughout the DoD STARBASE experience and provide valuable insight before, during, and after the program ends. The teachers provide an understanding of their student population that includes a higher level of academic aspirations and support structures available to the students in general. The Teacher Survey provides a level of analytics that evaluates outcomes typically associated with successful programs including:

- Progress toward specific academic requirements (e.g., STEM concepts)
- Personal characteristics (e.g., confidence, motivation)
- Future planning (e.g., career opportunities within the Military and DoD)
- Key stakeholder program support (e.g., principals and parents)

Beginning in the year 2000, academies invited at least 10 teachers to complete the online Teacher Survey after their program ended. As the program evolved, teachers began completing the survey on the last day while the students completed their Student Surveys resulting in more teacher responses throughout the years.

In 2014, the Teacher Survey content was updated to include additional evaluation categories, realign other categories, and eliminate some items that were repetitious. With the implemented changes, the survey administration began one month later than in previous years. Fifty-five academies provided responses with 1,668 teachers completing the survey during September 2014 through June 2015. Fifty academies received ratings from more than 10 teachers with 23 academies receiving a sample of 30 or more completed surveys. Each academy that received teacher ratings received a report of their academy responses twice during the program year, once in February that included responses to date and again in July that included the entire academic year.

Academy Characteristics

The 55 academies with teachers participating in the survey were representative of four Military components across the United States. The National Guard hosted the majority of academies with 1244 (75%) teachers responding to the survey from 43 academies. The academies were representative across regions with about 50% located in the Midwest (16 academies) or the South (13 academies). Appendix G (page 137) provides the Region for each academy location. Listed below are the number of participating academies and sample sizes of teacher surveys for each region.

Region

- 16 Midwest (N=578)
- 13 South (N=416)
- 11 Southeast (N=296)
- 10 West (N=245)
- 5 East (N=133)

DoD STARBASE TEACHER SURVEY ANALYSIS

Demographic Information

For the 2014-2015 academic year, 1,668 school personnel completed the online DoD STARBASE Teacher Survey. This represents an approximate 55% increase in total responses as compared to last year (1,076 completed surveys). The characteristics of the teachers completing the survey remain consistent from year to year. Table 38 includes the current year percentages for the teacher characteristics. The teachers represent a range of teaching experience with the largest percentage (38%) of respondents having over 15 years of experience. The majority of teachers (81%) taught mainly fifth grade with another 13% having taught the fourth (7%) or sixth (6%) grades. The remaining 'Other' response category includes those participants having taught multiple grades, are administrators with the school district, or work in specialized classrooms such as special education or counseling programs.

**Table 38:
Teacher Characteristics**

Years Taught	Grade Taught	Age Range	Gender
7% First year	7% Grade 4	18% Under 30 Years	83% Female
13% 2-4 Years	81% Grade 5	29% 31-40 Years	17% Male
11% 5-7 Years	6% Grade 6	28% 41-50 Years	
13% 8-10 Years	6% (Other Response, assistant, all grades, administrator)	19% 51-60 Years	
17% 11-15 Years		6% Over 60 Years	
38% Over 15 Years			

Four percent of the teachers (59 teachers from 20 academies) indicated that their school has participated since the program formalized over 15 years ago. In contrast, only 11 teachers (less than 1%) from nine academies reported having participated in the program for over 15 years. The majority of schools (73%) have participated in the program from two to 10 years. Conversely, the majority of teachers (77%) are new to the program (less than five years) with 39% indicating that this is their first year participating in a DoD STARBASE program.

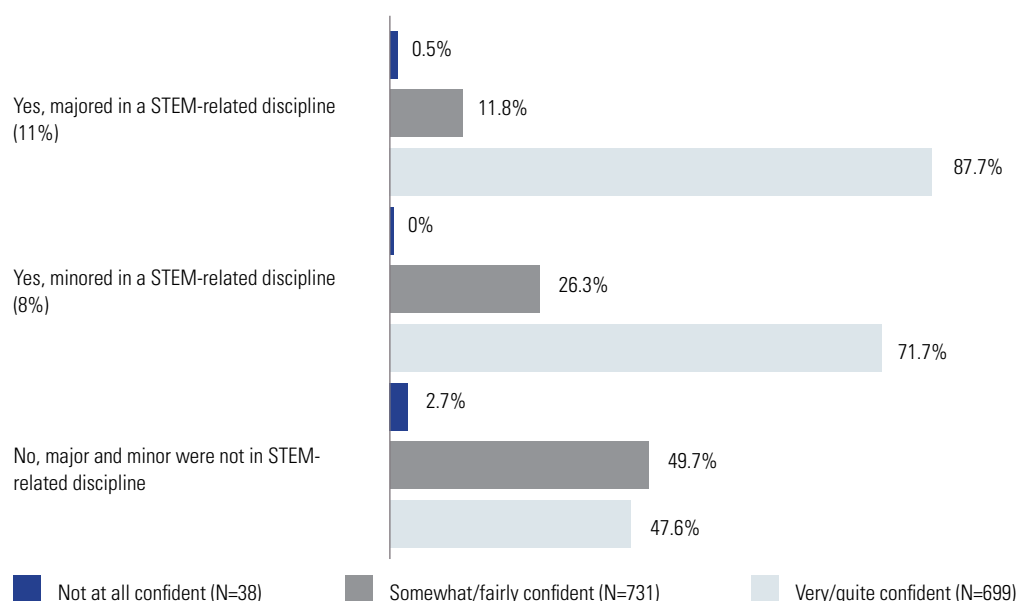
STEM-Related Experience

To evaluate familiarity with STEM topics, teachers were asked whether their college major and/or minor were in a STEM-related discipline. Eighty-one percent (N=1,354) of the teachers reported that their college major and minor were not in STEM-related disciplines. Of the remaining responses, 11% reported that their major was in STEM and 8% reported that they minored in a STEM-related discipline.

Teachers also provided their level of comfort with teaching STEM-related topics in the classroom. Overall, teachers are confident teaching STEM-related topics to their students with most reporting being Fairly (32%), Quite (37%) or Very (17%) Confident.

Having a degree in a STEM-related discipline provides teachers with more confidence in teaching STEM-related topics to their students. Those teachers who majored in a STEM-related discipline reported higher confidence with almost 88% indicating that they are Very or Quite Confident. In contrast, the majority of teachers (81%) did not major or minor in a STEM-related discipline and reported less confidence in teaching STEM-related topics (Figure 7). DoD STARBASE programs provide a valuable resource to teachers with limited background in STEM-related areas.

Figure 7:
Major/Minor in STEM-Related Discipline by Confidence with Teaching STEM-Related Topics



Teacher Attitudinal Ratings

Teachers rated 42 attitudinal items on a 7-point Likert scale from Disagree (1) to Agree (7) based on their experience with the DoD STARBASE program. The items were aggregated into an Overall Index and covered topics including the students' and teachers' attitudes involving program concepts such as understanding and enjoying the STEM program content, displaying confidence and motivation in classroom settings, and planning for future goals and careers.

The Teacher Survey content aligned with the 2014-2015 DoD STARBASE program goals and incorporated additional measurement elements. These elements provide more depth and understanding of the program impact on teachers and students during and after the program. The following table (Table 39) provides the concepts and definitions for each area measured. Additional details for each of the measurement areas are included in Appendix C. Student/Teacher Engagement is a composite of 32 item responses based on teachers' self-report of their attitudes and their perceptions of students' attitudes during the DoD STARBASE program. Engagement attitudes were grouped according to topic area (e.g., STEM Concepts, Program Support) to support aggregate ratings of most favorable to least favorable measurement area. Overall, teachers responded favorably to all measurement topics with the most favorable responses (above 6.00) to STEM Concepts, Program Support, Confidence, and Behavioral/Motivational areas.

The post-program Impact scale uses responses to 10 items completed by those teachers that have more than one year of experience with the DoD STARBASE program. Items included a broad range of post-program measures including students' interest in STEM topics, their career choice options, classroom attendance, and participation in STEM-related programs.

Table 39:
Teacher Survey Measurement Areas

Measurement Area	Definition	No Items	Cronbach's Alpha*	Mean	Std. Deviation
Student/Teacher Engagement	Engagement shown while attending DoD STARBASE	32	.962	6.15	.775
STEM Concepts	Interest in and understanding of STEM concepts	6	.882	6.37	.758
Program Support	Support and resources provided to the teachers	7	.784	6.35	.766
Confidence	Confidence with abilities and capabilities	3	.864	6.12	.918
Behavioral-Motivational positive behaviors	Effort shown in reinforcing	5	.813	6.12	.884
Teamwork	Working with and supporting others	3	.918	5.99	1.043
Future Planning	Seeing future possibilities and opportunities	4	.920	5.83	1.061
Military and Career	Positive regard for Military personnel and career options	5	.746	5.78	.940
Post-program Impact	Lasting impact of DoD STARBASE after the program ends	10	.934	6.18	.884

* Indicates measurement reliability in terms of internal consistency, or similarity, among contributing items. Values approaching or exceeding .90 reflect higher consistency; values below .70 suggest relatively more diverse subject content among items.

DoD STARBASE's Impact on the School System

The DoD STARBASE program influences students and teachers, but also impacts the school system overall, 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 40 provides the favorable responses to five items. Two of the largest increases in positive responses involve the resources provided by DoD STARBASE (in the use of materials/applications in the classroom and take home activities). These items also translate into more favorable attitudes overall when comparing teachers' ratings.

Table 40:
DoD STARBASE's Impact on the School System

Item	Positive (Yes) Responses
	Updated wording in 2015
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.)?	62.8%
Will you recommend DoD STARBASE to other teachers, principals, or school educators?	99.4%
In your view, does the DoD STARBASE curriculum help you reach your state education requirements?	94.2%
Do you or will you use DOD STARBASE materials/applications in your own classroom?	85.5%
Do you or will you use DoD STARBASE take home activities beyond your classroom?	65.8%

School & Teacher Support and Teacher Attitudinal Ratings

Program support includes support and advocacy of DoD STARBASE as well as the resources and support provided to the teachers. A school's plan to continue participation in the DoD STARBASE program next year (6.90) indicates the value that participating schools gain from student attendance in the program. Additionally, there is continued support from the teachers looking forward to future participation (6.79), parents that are delighted their children are participating (6.45), and principals that are strong advocates for the program in general (6.21) (Table 41).

An opportunity for development includes the supplemental resources that are available to the teachers. Teachers generally indicated that they would like to bring more supplemental resources from the DoD STARBASE program back to their classrooms (6.37) and they plan to incorporate some of the teaching techniques into their classroom activities (6.12). At the same time, however, there is a somewhat lower preference for DoD STARBASE resources over other similar resources (5.80).

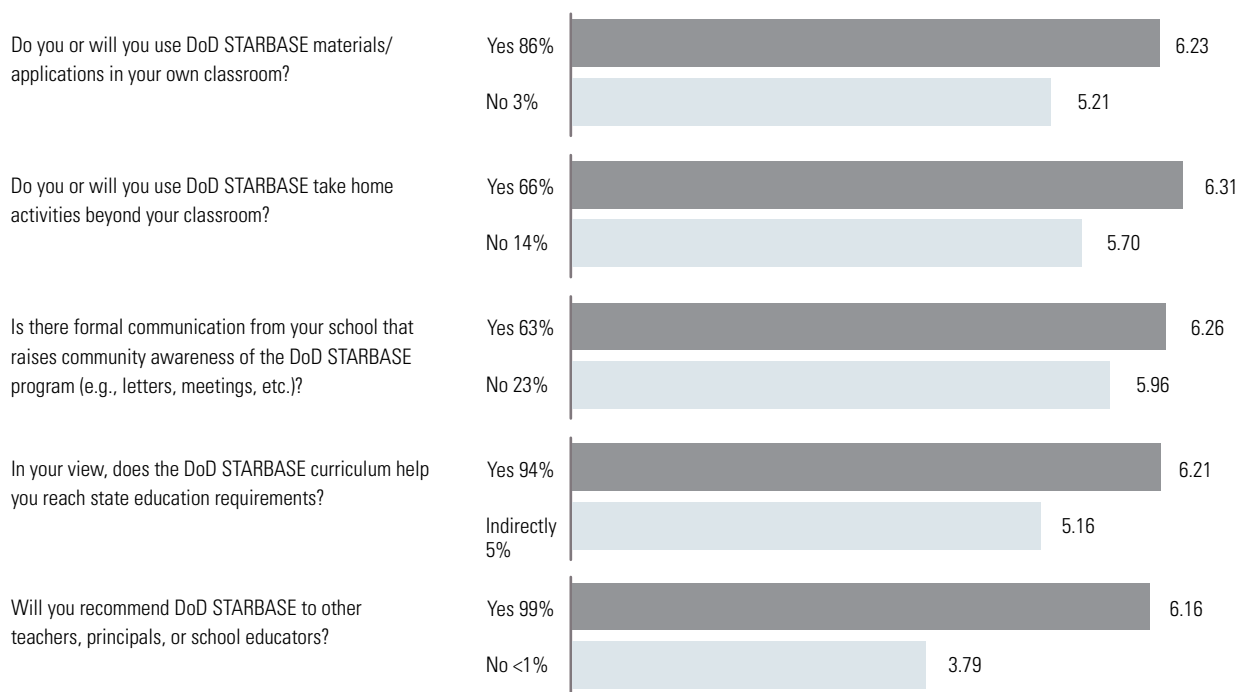
Table 41:
Program Support Ranked from Most to Least Favorable

	Mean	Std. Deviation
My school plans to participate in the DoD STARBASE program again next year.	6.90	.593
I look forward to bringing future classes to the DoD STARBASE program.	6.79	.710
Parents are delighted that their children are participating in DoD STARBASE.	6.45	.961
I would like more DoD STARBASE supplemental resources to take back to my classroom.	6.37	1.136
My principal is a strong advocate of DoD STARBASE.	6.21	1.202
I plan to incorporate DoD STARBASE teaching techniques into my daily classroom activities.	6.12	1.236
I prefer the supplemental resources DoD STARBASE provides to teachers over other similar resources.	5.80	1.358

The Overall Index is an aggregate scale based on the mean or average of 42 attitudinal items. The Overall Index was compared based on responses to items ascertaining the level of support provided to the teachers. In all instances, those teachers who received support from the school and resource materials from their DoD STARBASE program responded with more favorable attitudes toward the DoD STARBASE program as a whole compared to those teachers with little or no perceived support. Table 42 shows the percent of responses to support items, and Overall Index mean according to response category (e.g., yes or no). Highlights of the specific outcome comparisons include:

- Teachers who use or plan to use DoD STARBASE resource material and take home activities have more favorable attitudes as measured by the Overall Index (6.23 and 6.31, respectively) compared to those who do not utilize these resources (5.21 and 5.70, respectively).
- Those teachers reporting that the DoD STARBASE curriculum directly helped them reach state education requirements have more favorable overall attitudes (6.21) compared to those reporting only an indirect relationship (5.16).
- Schools with formal communication processes in place had higher teacher ratings (6.26) on the Overall Index than those with no formal communication (5.96) processes in place.
- Teachers who would recommend the DoD STARBASE program responded with higher overall ratings (6.16) as compared to those who would not recommend the program (3.79).

Table 42:
Attitude Ratings by DoD STARBASE Impact Items



Military Experience and Career Opportunities

Teacher experience with military bases remained similar to the previous three years despite the differences in participation rates during the same time-period. The majority of teachers (75%) involved in the DoD STARBASE program this year have had some type of exposure to a military base either from prior DoD STARBASE programs only (14%), from non-related programs (35%), from a combination of DoD STARBASE and unrelated activities (20%) and 6% from other activities. One quarter of the teachers reported that this is their first experience with the DoD STARBASE program (Table 43).

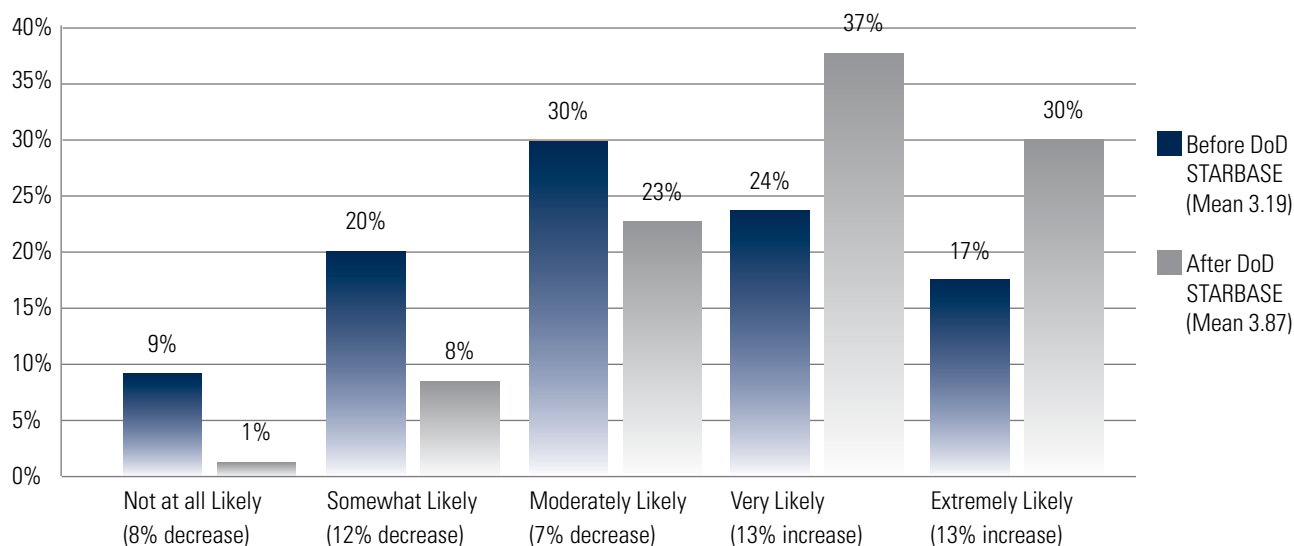
Table 43:
Experience with a Military Base

Response	2015 (N=1,668)	
	Frequency	%
Never visited a military base before the current DoD STARBASE Program	424	25.4%
Yes, for prior DoD STARBASE programs only	232	13.9%
Yes, for activities not related to DoD STARBASE	590	35.4%
Yes, for DoD STARBASE and non-DoD STARBASE activities	330	19.8%
Other ²⁰	92	5.5%

Eighty-eight percent (1,475) of the teachers reported that they are more aware of career opportunities (both uniformed and non-uniformed civilian) within the Department of Defense because of their participation in the DoD STARBASE program. Teachers also indicated how likely they are to recommend the DoD or the military as a career option both prior to and after their DoD STARBASE program. After the teachers participated in DoD STARBASE, 26% of them were more likely (Very or Extremely Likely) to recommend career options than prior to their participation (41% pre-program versus 67% post-program). Figure 8 illustrates the shift in favorability based on percentage of responses within each of the response categories. A total of 67% of all teachers were Very likely (37%) or Extremely likely (30%) to recommend the military or DoD civilian careers after the program as compared to a total of only 41% before the program (24% and 17%, respectively).

²⁰ The majority of the "Other" responses include having family members either on active duty or inactive/retired from the military, with a few attending a base for an aviation festival or an air show, or teaching at a school on a military facility.

Figure 8:
How likely are you to recommend the DoD or the military as a career option to your students?



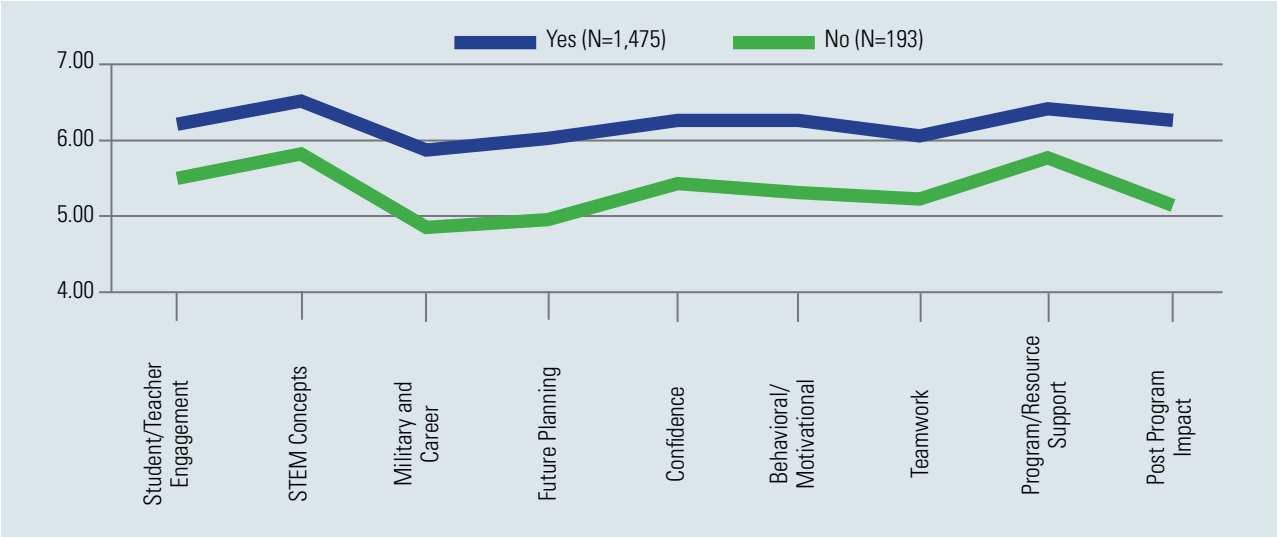
5-point Likert scale

Additionally, the 88% that reported being more aware of uniformed and non-uniformed civilian career opportunities after the program also reported higher responses in all areas of measurement (Figure 9).

Of particular interest is the greater recognition of beneficial post-program impacts on students. The most significant differences occurred in the following behaviors:

- Better school attendance
- Increased participation in the Science Fair and other STEM-related challenge programs (e.g., FIRST LEGO League, Odyssey of the Mind, Team America Rocket Competition, etc.)
- Better performance on standardized state assessments
- Ability to link their experience to careers in both military and non-military positions
- More interested in using computers for class-related learning activities
- Asking more questions about technology
- Improved cooperative learning in the classroom even after the program ended

Figure 9:
Teacher Perceptions of Student Behavior Based on More Awareness of Department of Defense Career Opportunities after Attending DoD STARBASE



Teacher Attitudinal Ratings Toward STEM Awareness

Teacher attitude toward STEM awareness was measured by four items with a focus on interest in the STEM areas and two items specific to learning about science and math (Table 44). Similar to previous years, concepts related to science were rated higher than math. Specifically, students were more interested in science (6.46) compared to math (5.93) according to teacher perceptions and had improved understanding of science (6.64) compared to appreciation of how math can be applied (6.49). Even so, students’ reported interest in and appreciation of math was greater than in previous years, attaining the highest averaged ratings seen so far. On the other hand, student interest in learning about science saw a small decline from the established steady trend of the past few years.

Two new items this year included interest in learning about technology and engineering. The current trend is toward more interest by students in learning about technology followed by science, engineering and math, based on teachers’ ratings. Leveraging technology advancements and interest in technology is relevant when engaging students in other STEM awareness programs for math, science or engineering.

Table 44:
Teacher Attitude Toward STEM Awareness

	2015
DoD STARBASE has helped to improve the students' understanding of science	6.64
More interested in learning about technology	6.51
DoD STARBASE has helped to improve students' appreciation of how math can be applied to a variety of situations	6.49
More interested in learning about science	6.46
More interested in learning about engineering	6.17
More interested in learning about math	5.93

Teachers are oftentimes the best resource for identifying additional development activities that are best suited to their students' learning styles. Teachers provided their opinion on the best way to continue developing their students' interest in STEM-related activities. Seventy percent indicated that the best way to continue interest is to promote an existing program (30%) or a new program (40%) in the school system. The least likely ways to increase awareness in the teachers' view included promoting a new program at the national, state, or community level (20%) or through an existing community-based program (10%). The DoD STARBASE program provides a unique opportunity to students and teachers by utilizing the school system to access DoD/Military personnel and civilian instructors with specialized training in STEM-related topics. By continuing to nurture its relationship with the teachers and the school system, the DoD STARBASE program can continue to support students' interest in STEM-related activities.

Table 45:
Developing Interest in STEM-Related Activities

Best way to develop continuing interest in STEM-related activities	Frequency	Percent
Promoting a new program in the school system	672	40%
An existing school-based program	498	30%
Promoting a new program at the national, state, or community level	332	20%
An existing community-based program	166	10%

Teachers provided information regarding community programs, extra-curricular activities, and available resources and/or equipment within the school in order to promote student access and interest in STEM concepts (Table 46). Responses tended to vary by question, but provide some insight into the different programs available both within the school system and in the community at large. Resources and programs that promote STEM awareness and interest are limited. Sixty-nine percent of the teachers report either no relevant (25%) or only a couple of relevant (44%) school or community programs that further develop students' STEM awareness beyond the DoD STARBASE program. When asked specifically about community extra-curricular programs, 48% are not sure and 17% report no programs or activities that are grade-level appropriate for their students.

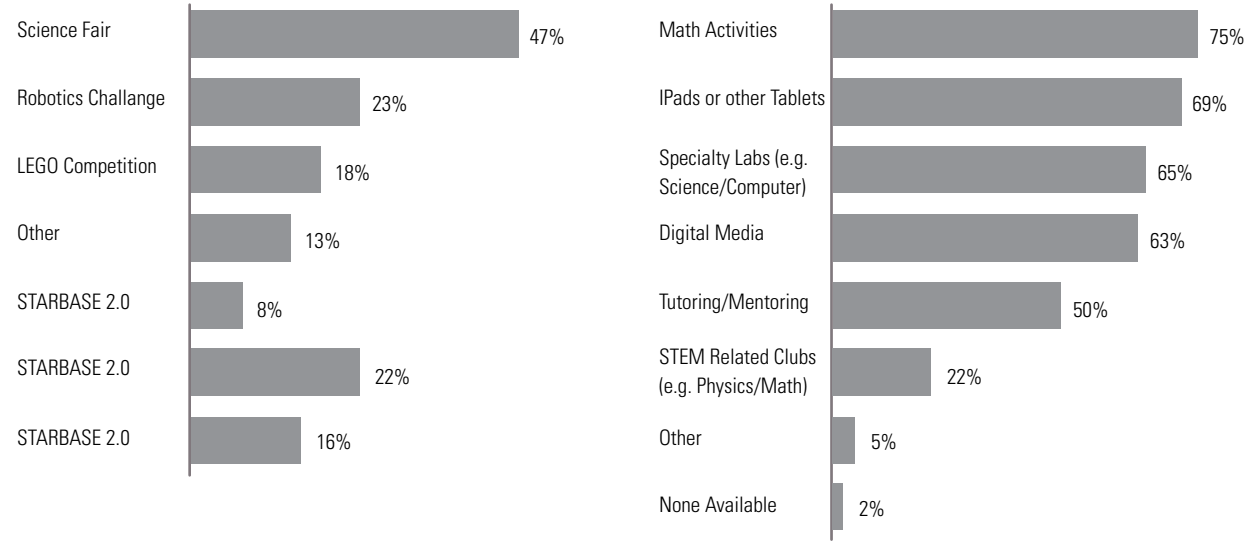
Table 46:
STEM-Related School or Community Resources and Extra-Curricular Programs/Activities

Other resources in the school or community to further develop my students' STEM awareness beyond DoD STARBASE include...	Does your community have extra-curricular programs and/or activities for stimulating STEM interest aimed at middle school aged students?
44% only a couple of relevant programs	48% Not sure
25% no other relevant programs	35% Yes
17% several relevant programs	17% No
14% many relevant STEM awareness programs	10%

Teachers identified specific STEM awareness programs, activities, resources and equipment available to students within the school system and the community at large. Thirty-eight percent of the teachers indicate that either there are no available (16%) or no planned (22%) organized STEM awareness programs, activities or resources for their students after attending the DoD STARBASE program (Figure 10).

- 62% identified an organized activity, program or other resource for their students after DoD STARBASE has ended (e.g., Science Fair, Robotics challenge).
- 98% report there are resources and/or equipment available in school for students to use (e.g., Math activities, Specialty labs).

Figure 10:
Organized STEM Programs and Available Resources for Students



It is important that teachers and educators have post-DoD STARBASE programs available to continue to engage the students after the program has ended. Referring students to additional STEM-related programs or resources after DoD STARBASE is dependent upon availability and appropriateness to the student population. Ninety-three percent of the teachers plan to always (46%), often (33%), or sometimes (14%) refer students to additional STEM-related programs or resources after the DoD STARBASE program has ended (Table 47). The high percentage of teachers referring students suggests that the teachers understand the importance of continuing STEM-related interest beyond the classroom setting regardless of whether the program is supported through the school or community at large.

Table 47:
Percent of Teachers Likely to Refer Students to STEM-Related Programs or Resources

I plan to refer students to additional STEM-related programs or resources after DoD STARBASE.	Frequency	Percent
Always	771	46%
Often	557	33%
Sometimes	239	14%
Once or twice	29	2%
Not at all	16	1%
Other responses*	56	3%

* Other responses included additional suggestions for more after school programs and willingness to refer if programs were available.

“You cannot go wrong teaching our youth about science and engineering. You are only investing in the future of our country. I cannot emphasize the importance of this program to our youth enough!”

Parent of a student at DoD STARBASE One, Selfridge, MI

Drivers of Target Ratings

Stepwise multiple regression analyses were performed to determine the important drivers of key teacher attitudes and ratings about DoD STARBASE²¹. The key teacher ratings selected this year focus on program impact and engagement attitudes. The first regression analysis evaluated the post-program impact based on student and teacher engagement attitudes. Post-program impact was a composite scale calculated using 10 items completed by teachers with more than one year of experience participating in the DoD STARBASE program. This composite scale was regressed using the core items administered to all teachers evaluating their attitudes in relation to the 32 engagement survey items.

The drivers for each regression are listed in order of magnitude and oftentimes provide a comprehensive listing for identifying actions that most influence program effectiveness. The drivers listed for the post-program Impact aggregate scale explain approximately 74% of the variance, or variability, across teachers in their perceptions of DoD STARBASE impact (as indicated by the R² value of .737). That is, these items predict individual teacher opinion about the program's impact on students with a high degree of efficiency. Thus, they provide a condensed model from which to tell how teachers feel about its value. The more drivers that are answered favorably or affirmatively, the more likely it is that a teacher holds a strongly positive viewpoint of the program impact.

Drivers of Post-Program Impact²² (R² = .737)

- While attending DoD STARBASE, the students appear to focus more on their future potential.
- I plan to incorporate DoD STARBASE teaching techniques into my daily classroom activities.
- During DoD STARBASE, students have better school attendance.
- The students appear more interested in learning about technology.
- The DoD STARBASE experience has influenced me to become skilled in STEM instruction.
- The students appear more ready to set future educational and career goals.
- DoD STARBASE has helped to improve students' appreciation of how math can be applied to a variety of situations.
- I prefer the supplemental resources DoD STARBASE provides to teachers over other similar resources.
- The students appear more comfortable with military personnel.
- The students appear more goal oriented.
- The students appear more interested in learning about engineering.
- The students appear more interested in learning about military careers.

Table 48 provides a summary of the regression analyses for key target ratings based on all attitudinal items within the teacher survey. The target ratings used in the regression analysis focused on future career opportunities. The target ratings are based on estimates of teachers' perceived student outcomes, or gains made by students on specific items. The predictive models selected for analysis this year focus on students' attitudes about future career opportunities and their understanding of how STEM-related skills and abilities link to various career paths.

²¹ A definition of multiple regression and other statistical techniques used in this report are provided in the Appendix.

²² The items making up this scale were not included in the regression analysis.

The DoD STARBASE program helps students understand their potential. Specifically, the regression analyses identified several areas that had the most impact across many of the target attitudes including, but not limited to, the following:

- Linking the students' experience to careers in both military and non-military positions
- Helping students understand better how STEM skills/abilities fit job requirements for certain career fields
- Helping students understand better that developing their current skills/abilities is necessary to have good future career choices
- Using computers for class-related learning activities
- Facilitating interest in engineering and science
- Providing information about military and non-military career opportunities
- Creating excitement about their future potential and how to set educational and career goals
- Reinforce positive behaviors such as cooperating with each other during program activities

Table 48:
Drivers of Key Target Ratings

Drivers of "Attending DoD STARBASE helps students link their experience to careers in both military and non-military positions" (R2 = .721)

Attending DoD STARBASE helps students understand better how STEM skills/abilities fit job requirements for certain career fields.

More interested in learning about military careers

Attending DoD STARBASE helps students understand better that developing their current skills/abilities is necessary to have good future career choices.

I would like more DoD STARBASE supplemental resources to take back to my classroom

More interested in learning about science

More ready to set future educational and career goals

Students that have attended DoD STARBASE seem to perform better on standardized state assessments.

Better at following directions

More interested in learning about math

Drivers of "Attending DoD STARBASE helps students understand better how STEM skills/abilities fit job requirements for certain career fields" (R2 = .736)

Attending DoD STARBASE helps students understand better that developing their current skills/abilities is necessary to have good future career choices.

Attending DoD STARBASE helps students link their experience to careers in both military and non-military positions.

DoD STARBASE has helped to improve students' appreciation of how math can be applied to a variety of situations.

I plan to refer students to additional STEM-related programs or resources after DoD STARBASE.

More interested in learning about engineering

Continued on next page

More interested in learning about military careers

To focus more on their future potential

More ready to set future educational and career goals

I look forward to bringing future classes to the DoD STARBASE program.

After DoD STARBASE attendance, there is increased participation in the Science Fair and other STEM-related challenge programs (e.g., FIRST LEGO League, Odyssey of the Mind, Team America Rocket Competition, etc.).

During DoD STARBASE, students have better school attendance.

Drivers of “Attending DoD STARBASE helps students understand better that developing their current skills/abilities is necessary to have good future career choices” ($R^2 = .769$)

Attending DoD STARBASE helps students understand better how STEM skills/abilities fit job requirements for certain career fields.

Attending DoD STARBASE helps students link their experience to careers in both military and non-military positions.

DoD STARBASE reinforces many positive behaviors I try to teach my students.

The DoD STARBASE experience has influenced me to become skilled in STEM instruction.

More excited about their futures

More willing to cooperate with each other

After DoD STARBASE, students are more interested in using computers for class-related learning activities.

My principal is a strong advocate of DoD STARBASE.

More interested in learning about engineering

More ready to set future educational and career goals

More interested in learning about science

Have more questions about DoD and other non-military career opportunities

Students that have attended DoD STARBASE seem to perform better on standardized state assessments.

Better at working in groups

The students talk about DoD STARBASE long after the program has ended.

Drivers of “Students are more interested in learning about military careers” ($R^2 = .736$)

To have more questions about DoD and other non-military career opportunities

More excited about their futures

More comfortable with military personnel

More ready to set future educational and career goals

Attending DoD STARBASE helps students link their experience to careers in both military and non-military positions.

Attending DoD STARBASE helps students understand better how STEM skills/abilities fit job requirements for certain career fields.

Drivers of “Students are more ready to set future educational and career goals” ($R^2 = .831$)

Focus more on their future potential

More interested in learning about engineering

More goal oriented

Attending DoD STARBASE helps students link their experience to careers in both military and non-military positions.

More interested in learning about military careers

After DoD STARBASE, students have better school attendance.

I plan to incorporate DoD STARBASE teaching techniques into my daily classroom activities.

DoD STARBASE helped to improve cooperative learning in the classroom even after the program ended.

More excited about their futures

More comfortable with military personnel

Attending DoD STARBASE helps students understand better how STEM skills/abilities fit job requirements for certain career fields.

Attending DoD STARBASE helps students understand better that developing their current skills/abilities is necessary to have good future career choices.

DoD STARBASE reinforces many positive behaviors I try to teach my students.

Students that have attended DoD STARBASE seem to perform better on standardized state assessments.

Drivers of “Students seem to focus more on their future potential after DoD STARBASE” ($R^2 = .837$)

More ready to set future educational and career goals

More excited about their futures

Have more questions about DoD and other non-military career opportunities

More comfortable making decisions

Attending DoD STARBASE helps students understand better how STEM skills/abilities fit job requirements for certain career fields.

More willing to cooperate with each other

More willing to try new things

Drivers of “Students seem to have more questions about DoD and other non-military career opportunities after DoD STARBASE” ($R^2 = .705$)

More interested in learning about military careers

Focus more on their future potential

More interested in learning about engineering

After the DoD STARBASE program, the students ask more questions about technology.

After DoD STARBASE, students are more interested in using computers for class-related learning activities.

I prefer the supplemental resources DoD STARBASE provides to teachers over other similar resources.

The students talk about DoD STARBASE long after the program has ended.

My school plans to participate in the DoD STARBASE program again next year.

CONCLUSIONS

The DoD STARBASE program continues to provide participating students with STEM awareness activities that support student achievement overall, and in STEM related concepts specifically. As reported by teachers, participation in the Department of Defense program appears to create an excitement within the students about their careers and future potential that may not be available otherwise. Specifically, teachers with more than one year of experience with the DoD STARBASE program report that the students²³:

- Talk about DoD STARBASE long after the program ended (6.60)
- Understand better how STEM skills/abilities fit job requirements for certain career fields (6.57)
- Understand better that developing their current skills/abilities is necessary to have good future career choices (6.52)
- Link their experience to careers in both military and non-military positions (6.32)

Students are able to participate in activities with DoD sponsored instructors that share specialized training in STEM concepts allowing the students to link the concepts to ‘real-world’ applications. Teachers value the DoD STARBASE program to provide awareness of and hands on experience in STEM concepts that can reinforce positive attitudes and behaviors. Additionally, the program emphasizes the importance of setting goals and looking forward to career opportunities often overlooked as typical career paths for students in elementary grades. Finally, the DoD STARBASE program provides teachers with additional resources and support. This is particularly important for the teachers that may not have the background or formal education and training in STEM fields (only 19% of the teachers indicated having a major or minor college degree in a STEM-related field).

²³ Likert scale based on response options from 1 (Disagree) to 7 (Agree).



“DoD STARBASE exposes students to several STEM and Military careers which is good motivation to do well in school and to strive for a great career. Overall, DoD STARBASE provides students with opportunities, experiences and fun that may not be offered in the classroom or at home.”

Teacher participating at DoD STARBASE Arizona, Tucson, AZ

Considerations for the 2016 Program Year

The annual report traditionally concludes with a proposed list of “considerations” on all aspects of the program operation, delivery, research applications, and new program initiatives. The objective of this section is to guide planned and purposeful improvement in every dimension of the program. Therefore, it is important that considerations are obtained from multiple sources. They include the views of key participants, such as the classroom teachers, school administrators, military base personnel, base commanders, DoD STARBASE staff, students, volunteers, and interested observers of the program.

The assessment process captures valuable information from each of these key participant groups through surveys, reports on operational activities, after-action investigations, compliance activities, academy visitations, reviews of academy documents, observations of program activity, and special ad-hoc studies on newly established initiatives. The “considerations” dimension explains the implications of this data for program applications and the potential for improving operational activities.

This year, as in the past, the considerations and challenges are positioned and designed to be supportive of improving program operations, practices, policy implementation, and the integration with national strategic initiatives. The key “considerations” include:

Outreach

Collaborations with Other STEM Programs

- Continue pursuit of STEM collaborations with other community, state and national STEM organizations to create a STEM pipeline for participating DoD STARBASE students and to expand knowledge of the DoD STARBASE program and its role in raising awareness of STEM in regard to the future needs of our nation.
- Focus on STEM programs with the highest potential for collaboration. Consider a visitation by DoD STARBASE students to the program and/or invite them to the DoD STARBASE academy for a presentation to the students of the collaborative programs’ activities.
- Each DoD STARBASE location should develop a complete, vetted inventory of STEM programs in its community. Share the inventory with key participants. i.e. schools, partnerships, military base public relations officer, collaborative partners, etc.
- Review Memorandum of Understanding (MOU) protocols for collaborations and develop a standard for nationwide academy use.

Public Relations

- Develop a set of materials for directors to use to promote DoD STARBASE. Provide training and a communication strategy to enable the appropriate and effective use of these materials.
- Provide all DoD STARBASE sites a current list of national program “key facts” to insure consistent messaging in all publicity for the program.

Classroom Teachers

- Provide participant orientation for all classroom teachers who intend to bring their students to DoD STARBASE. Orientation should include:
 - Participation and operational expectations while at the DoD STARBASE facility to include student discipline and teacher involvement in classroom activities.
 - Emphasis on timely arrival and departure times for students to insure the DoD STARBASE requirements of five classroom contact hours per day is met. This may require increased participating teacher interaction with transportation providers and school administrative staff as well as involvement of the DoD STARBASE director.

Program Operations

- Begin the conversion of all DoD STARBASE programs to a full-12 month operation.
- Coordinate/Schedule with schools in advance to increase the number of students served. Each DoD STARBASE location should serve a minimum of 28 classes per year with a minimum of 20 students per DoD STARBASE class.
- Identify potential new student pools to insure full scheduling of DoD STARBASE resources.
- Continue pursuit of the addition of VTC/SKYPE capabilities for disseminating information via conference calls.
- Establish new DoD STARBASE programs in underserved locations.
- Develop and release new DoDI to document and provide current program guidelines.
- Reinstate annual DoD STARBASE directors and staff training conferences.
- Continue pursuit of partnerships and linkages with non-profit organizations to allow DoD STARBASE to benefit from additional community support and partnerships in an official (and tax deductible) capacity.
- Develop full evaluation criteria for Level III programs.
- Identify those academies that consider themselves in a Level III status and validate their status through site visitation assessment.

Curriculum

- Communicate the linkage of the DoD STARBASE curriculum to national, state and local standards to participating classroom teachers and school administrators.

DoD STARBASE 2.0

- Continue expansion of DoD STARBASE 2.0 program to include formalized partnerships with other outside-school youth programs (i.e. Big Brothers/Big Sisters, local clubs, museums, etc.) to leverage existing resources and reinforce the STEM-based 2.0 program as an active and integral part of the community.
- Continue efforts to increase the volunteer mentor pool to enhance community buy-in to DoD STARBASE 2.0 as a model after-school STEM Program.
- Consider the addition of high-school age “Junior Mentors” for middle school students. High school students would benefit from community service hours and middle school students from older student leadership. This would be in conjunction with and under close supervision of adult mentors.

“Our family believes in these extra programs with tenacity. We are in need of more of these programs to help our children not only learn about the sciences but spark interest or a directional hand to help point the way for them with a choice of a career. More of these DoD STARBASE experiences are needed for our children to gain not only more useful knowledge about math and science but future career choices. We as a country are failing in these areas and are getting passed by other countries. Statistics show that many of these countries start off their youth with educational programs that focus on or use a solid background in math and science. We need to do the same. This program is a fundamental and successful step in the right direction.”

Parent of a student at DoD STARBASE Alpena, Alpena, MI



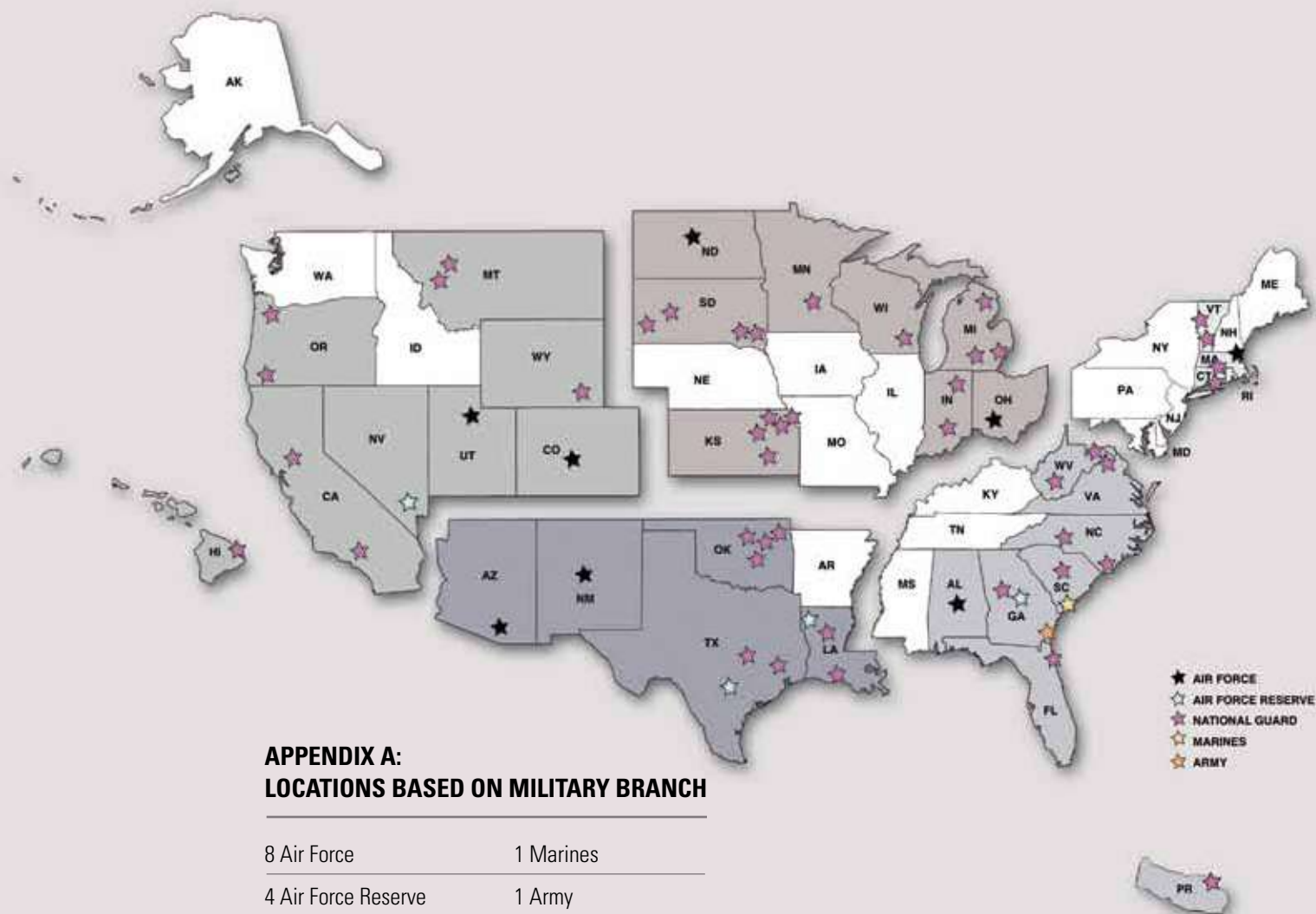
2015

DoD STARBASE APPENDICES



“DoD STARBASE is a high quality, STEM-rich program that our students look forward to every year. Each year it is a pleasure to bring students, and participants remember the experience for years.”

Teacher participating at DoD STARBASE Arizona,
Tucson, AZ



“This experience makes me feel that our children are getting an education that will stimulate their interest in science and technology that is needed in the US to maintain our world standing in innovative design and production methods.”

Mark Hecht, Parent of a participating student at DoD STARBASE Kansas, Topeka, KS

Appendix B:
Expressed Attitudinal Differences by Gender

		Pre STARBASE	Post STARBASE	Individual Gaps
		Mean	Mean	Mean
I am good at science.	Boy	5.27	5.47	0.20
	Girl	5.08	5.42	0.34
Learning about science is easy for me.	Boy	4.89	5.18	0.29
	Girl	4.81	5.11	0.30
I would like to join a science club at my school.	Boy	3.93	4.02	0.08
	Girl	3.91	4.09	0.17
I am interested in being a scientist or engineer.	Boy	4.33	4.81	0.48
	Girl	3.59	4.16	0.56
Military bases are exciting.	Boy	6.04	6.14	0.10
	Girl	5.56	5.82	0.26
I am good at math.	Boy	5.48	5.59	0.11
	Girl	5.34	5.36	0.02
I want to learn more about technology.	Boy	5.95	6.01	0.06
	Girl	5.47	5.61	0.14
I like technology.	Boy	6.07	6.17	0.10
	Girl	5.76	5.91	0.15
I would like a job in a science-related area.	Boy	4.14	4.58	0.44
	Girl	3.94	4.46	0.51
STEM jobs are exciting.	Boy	4.91	5.44	0.53
	Girl	4.89	5.39	0.49
Engineers help solve challenging problems.	Boy	5.48	5.92	0.44
	Girl	5.25	5.72	0.47
A military base is a good place to work.	Boy	5.22	5.52	0.30
	Girl	4.95	5.33	0.38
I like science.	Boy	5.48	5.54	0.06
	Girl	5.41	5.60	0.19
I would take engineering classes if offered.	Boy	4.91	5.30	0.39
	Girl	4.18	4.59	0.41
I would take classes on technology if available.	Boy	5.46	5.57	0.11
	Girl	4.79	5.08	0.30
I am aware of some STEM careers.	Boy	4.75	5.52	0.77
	Girl	4.89	5.65	0.76
I would like to take more math classes.	Boy	4.49	4.60	0.11
	Girl	4.62	4.69	0.07
I like engineering.	Boy	5.22	5.66	0.44
	Girl	4.42	5.10	0.67
Most people use STEM skills every day.	Boy	5.32	5.92	0.61
	Girl	5.40	5.95	0.55
I want to learn more about engineering.	Boy	5.23	5.53	0.30
	Girl	4.63	5.01	0.39

Continued on next page

Appendix B: (Continued)
Expressed Attitudinal Differences by Gender

		Pre STARBASE	Post STARBASE	Individual Gaps
		Mean	Mean	Mean
I like math.	Boy	5.05	5.21	0.16
	Girl	5.14	5.11	-0.03
I would like to take more science classes.	Boy	4.87	4.87	0.00
	Girl	4.95	4.95	0.00
I enjoy learning about STEM topics.	Boy	5.04	5.50	0.46
	Girl	5.01	5.44	0.42
People who work on a military base do lots of different things.	Boy	6.18	6.25	0.07
	Girl	6.07	6.16	0.09
When I finish school, I would like to get a job where I could use STEM.	Boy	4.85	5.28	0.43
	Girl	4.71	5.06	0.35
I think learning about STEM topics will help me in my daily life.	Boy	5.40	5.82	0.42
	Girl	5.48	5.82	0.34
I like figuring out how to use technology gear (tablets, smart phones, etc.).	Boy	6.26	6.36	0.09
	Girl	6.04	6.11	0.07
I do not think DoD STARBASE will help me do better in school. (Reversed Scored)	Boy	6.30	6.52	0.22
	Girl	6.36	6.41	0.05
Scientists work on things that will make life better.	Boy	5.93	6.10	0.18
	Girl	5.89	6.05	0.15
I need to do well in math to get the kind of job I want.	Boy	5.63	5.67	0.03
	Girl	5.56	5.70	0.14
People who work for the military use technology in their jobs.	Boy	6.04	6.30	0.26
	Girl	5.66	5.97	0.32
I have enjoyed coming to a military base.	Boy		6.53	
	Girl		6.45	
DoD STARBASE Instructors made learning about STEM topics fun.	Boy		6.38	
	Girl		6.37	
DoD STARBASE is boring. (Reversed Scored)	Boy		6.57	
	Girl		6.47	
At DoD STARBASE, I learned a lot of things that I can use.	Boy		6.43	
	Girl		6.41	
I would tell my friends to come to DoD STARBASE.	Boy		6.23	
	Girl		6.21	

Appendix C:
Gender Gap Score Differences 2015 Post-Program Attitudes

	Girls' Rank by Mean	Girls' Mean	Boys' Rank by Mean	Boys' Mean	Gap
DoD STARBASE is boring. (Reversed Scored)	1	6.47	1	6.57	0.10
I have enjoyed coming to a military base.	2	6.45	2	6.53	0.08
At DoD STARBASE, I learned a lot of things that I can use	3	6.41	4	6.43	0.02
DoD STARBASE Instructors made learning about STEM topics fun.	4/5	6.37	5	6.38	0.02
I do not think DoD STARBASE will help me do better in school. (Reversed Scored)	4/5	6.37	3	6.48	0.11
I would tell my friends to come to DoD STARBASE.	6	6.21	9	6.23	0.02
People who work on a military base do lots of different things.	7	6.16	8	6.25	0.08
I like figuring out how to use technology gear (tablets,smart phones,etc.).	8	6.11	6	6.36	0.25
Scientists work on things that will make life better.	9	6.05	12	6.10	0.05
People who work for the military use technology in their jobs.	10	5.97	7	6.30	0.32
Most people use STEM skills every day.	11	5.95	14	5.92	-0.03
I like technology.	12	5.90	10	6.17	0.27
I think learning about STEM topics will help me in my daily life.	13/14	5.82	16	5.82	0.00
Military bases are exciting.	13/14	5.82	11	6.14	0.32
Engineers help solve challenging problems.	15	5.71	15	5.91	0.20
I need to do well in math to get the kind of job I want.	16	5.69	17	5.67	-0.02
I am aware of some STEM careers.	17	5.64	23/24	5.51	-0.13
I want to learn more about technology.	18	5.61	13	6.00	0.38
I like science.	19	5.60	21/22	5.53	-0.08
I enjoy learning about STEM topics.	20/21	5.42	25	5.48	0.06
I am good at science.	20/21	5.42	26	5.47	0.05
STEM jobs are exciting.	22	5.38	27	5.43	0.05
I am good at math.	23	5.35	19	5.60	0.24
A military base is a good place to work.	24	5.33	23/24	5.51	0.18
Learning about science is easy for me.	25	5.11	31	5.18	0.07
I like math.	26/27	5.10	30	5.21	0.11
I like engineering.	26/27	5.10	18	5.66	0.57
I would take classes on technology if available.	28	5.07	20	5.56	0.49
When I finish school, I would like to get a job where I could use STEM.	29	5.06	29	5.28	0.22
I want to learn more about engineering.	30	5.01	21/22	5.53	0.52
I would like to take more science classes.	31	4.98	32	4.86	-0.12
I would like to take more math classes.	32	4.71	34	4.59	-0.12
I would take engineering classes if offered.	33	4.60	28	5.30	0.70
I would like a job in a science-related area.	34	4.45	35	4.58	0.13
I am interested in being a scientist or engineer.	35	4.16	33	4.82	0.66
I would like to join a science club at my school.	36	4.09	36	4.01	-0.08

Bold items show significant differences based on gender

Appendix D:
Intercorrelations Among Student Characteristics and Expressed STEM Attitude

Pearson Correlation Matrix

	Grade	Age	Gender	I am good at science.	Learning about science is easy for me.	I would like to join a science club at my school.
Grade	1.000					
Age	0.379	1.000				
Gender	0.003	-0.084	1.000			
I am good at science.	0.040	0.026	-0.018	1.000		
Learning about science is easy for me.	0.081	0.058	-0.022	0.717	1.000	
I would like to join a science club at my school.	0.010	0.014	0.020	0.420	0.469	1.000
I am interested in being a scientist or engineer.	0.050	0.031	-0.165	0.327	0.364	0.453
Military bases are exciting.	-0.057	0.020	-0.114	0.149	0.146	0.151
I am good at math.	-0.043	-0.010	-0.073	0.272	0.257	0.134
I want to learn more about technology.	-0.031	-0.020	-0.127	0.247	0.316	0.323
I like technology.	-0.012	-0.011	-0.095	0.203	0.260	0.253
I would like a job in a science- related area.	0.048	0.020	-0.034	0.431	0.475	0.555
STEM jobs are exciting.	0.089	0.007	-0.015	0.331	0.406	0.414
Engineers help solve challenging problems.	0.086	0.038	-0.071	0.273	0.329	0.211
A military base is a good place to work.	0.018	0.050	-0.060	0.145	0.177	0.185
I like science.	-0.017	0.010	0.023	0.560	0.592	0.541
I would take engineering classes if offered.	0.056	0.029	-0.189	0.324	0.375	0.446
I would take classes on technology if available.	-0.003	-0.030	-0.137	0.235	0.313	0.361
I am aware of some STEM careers.	0.161	0.069	0.041	0.322	0.329	0.268
I would like to take more math classes.	-0.054	-0.021	0.028	0.138	0.177	0.266
I like engineering.	0.095	0.047	-0.165	0.300	0.345	0.313
Most people use STEM skills every day.	0.113	0.063	0.012	0.240	0.259	0.201
I want to learn more about engineering.	0.056	0.034	-0.148	0.320	0.376	0.339
I like math.	-0.091	-0.047	-0.027	0.131	0.146	0.181
I would like to take more science classes.	0.002	0.016	0.030	0.461	0.494	0.614
I enjoy learning about STEM topics.	0.058	0.020	-0.018	0.338	0.398	0.447
People who work on a military base do lots of different things.	0.004	-0.001	-0.036	0.131	0.162	0.103
When I finish school, I would like to get a job where I could use STEM.	0.068	0.017	-0.062	0.300	0.364	0.388

Appendix D: (Continued)
Intercorrelations Among Student Characteristics and Expressed STEM Attitude

Pearson Correlation Matrix

	Grade	Age	Gender	I am good at science.	Learning about science is easy for me.	I would like to join a science club at my school.
I think learning about STEM topics will help me in my daily life.	0.054	-0.004	0.000	0.316	0.335	0.304
I like figuring out how to use technology gear (tablets, smart phones, etc.).	-0.006	-0.030	-0.093	0.137	0.175	0.196
I do not think DoD STARBASE will help me do better in school. (Reversed Scored)	0.016	-0.035	-0.039	0.102	0.093	0.068
Scientists work on things that will make life better.	-0.006	0.002	-0.020	0.304	0.275	0.206
I need to do well in math to get the kind of job I want.	-0.039	-0.020	0.008	0.155	0.181	0.209
People who work for the military use technology in their jobs.	-0.031	-0.020	-0.132	0.217	0.197	0.143
I have enjoyed coming to a military base.	-0.014	-0.004	-0.040	0.133	0.163	0.160
DoD STARBASE Instructors made learning about STEM topics fun.	0.054	0.033	-0.007	0.233	0.279	0.255
DoD STARBASE is boring. (Reversed Scored)	0.021	0.033	-0.041	0.122	0.137	0.158
At DoD STARBASE, I learned a lot of things that I can use.	-0.054	-0.048	-0.010	0.279	0.310	0.256
I would tell my friends to come to DoD STARBASE.	-0.016	0.019	-0.007	0.140	0.199	0.264

Pearson Correlation Matrix (Continued)

	I am interested in being a scientist or engineer.	Military bases are exciting.	I am good at math.	I want to learn more about technology.	I like technology.
Grade					
Age					
Gender					
I am good at science.					
Learning about science is easy for me.					
I would like to join a science club at my school.					
I am interested in being a scientist or engineer.	1.000				
Military bases are exciting.	0.181	1.000			
I am good at math.	0.163	0.154	1.000		
I want to learn more about technology.	0.393	0.211	0.200	1.000	
I like technology.	0.298	0.203	0.136	0.669	1.000
I would like a job in a science-related area.	0.622	0.207	0.161	0.383	0.303
STEM jobs are exciting.	0.482	0.275	0.213	0.389	0.294

Continued on next page

Pearson Correlation Matrix (Continued)

	I am interested in being a scientist or engineer.	Military bases are exciting.	I am good at math.	I want to learn more about technology.	I like technology.
Engineers help solve challenging problems.	0.307	0.247	0.199	0.274	0.264
A military base is a good place to work.	0.237	0.494	0.151	0.247	0.205
I like science.	0.377	0.180	0.118	0.333	0.235
I would take engineering classes if offered.	0.632	0.225	0.184	0.461	0.351
I would take classes on technology if available.	0.463	0.208	0.160	0.645	0.572
I am aware of some STEM careers.	0.337	0.154	0.187	0.232	0.222
I would like to take more math classes.	0.180	0.157	0.436	0.220	0.101
I like engineering.	0.576	0.225	0.152	0.415	0.383
Most people use STEM skills every day.	0.237	0.204	0.131	0.221	0.211
I want to learn more about engineering.	0.558	0.240	0.181	0.446	0.388
I like math.	0.146	0.170	0.650	0.195	0.110
I would like to take more science classes.	0.453	0.183	0.119	0.354	0.261
I enjoy learning about STEM topics.	0.459	0.267	0.141	0.373	0.276
People who work on a military base do lots of different things.	0.113	0.371	0.103	0.204	0.230
When I finish school, I would like to get a job where I could use STEM.	0.516	0.199	0.166	0.363	0.284
I think learning about STEM topics will help me in my daily life.	0.354	0.254	0.207	0.325	0.285
I like figuring out how to use technology gear (tablets, smart phones, etc.).	0.220	0.185	0.119	0.421	0.460
I do not think DoD STARBASE will help me do better in school. (Reversed Scored)	0.062	0.089	0.041	0.099	0.106
Scientists work on things that will make life better.	0.208	0.232	0.163	0.230	0.261
I need to do well in math to get the kind of job I want.	0.195	0.168	0.217	0.251	0.172
People who work for the military use technology in their jobs.	0.235	0.351	0.100	0.247	0.255
I have enjoyed coming to a military base.	0.179	0.509	0.143	0.221	0.187
DoD STARBASE Instructors made learning about STEM topics fun.	0.244	0.246	0.141	0.284	0.182
DoD STARBASE is boring. (Reversed Scored)	0.189	0.236	0.070	0.216	0.145
At DoD STARBASE, I learned a lot of things that I can use.	0.259	0.267	0.143	0.321	0.232
I would tell my friends to come to DoD STARBASE.	0.218	0.273	0.143	0.284	0.201

Pearson Correlation Matrix (Continued)

	I would like a job in a science-related area.	STEM jobs are exciting.	Engineers help solve challenging problems.	A military base is a good place to work.
Grade				
Age				
Gender				
I am good at science.				
Learning about science is easy for me.				
I would like to join a science club at my school.				
I am interested in being a scientist or engineer.				
Military bases are exciting.				
I am good at math.				
I want to learn more about technology.				
I like technology.				
I would like a job in a science- related area.	1.000			
STEM jobs are exciting.	0.550	1.000		
Engineers help solve challenging problems.	0.308	0.416	1.000	
A military base is a good place to work.	0.268	0.309	0.270	1.000
I like science.	0.543	0.403	0.303	0.188
I would take engineering classes if offered.	0.523	0.482	0.369	0.294
I would take classes on technology if available.	0.418	0.390	0.306	0.257
I am aware of some STEM careers.	0.413	0.457	0.360	0.174
I would like to take more math classes.	0.182	0.255	0.136	0.193
I like engineering.	0.453	0.457	0.418	0.260
Most people use STEM skills every day.	0.291	0.398	0.345	0.243
I want to learn more about engineering.	0.468	0.472	0.421	0.305
I like math.	0.140	0.191	0.151	0.155
I would like to take more science classes.	0.582	0.434	0.275	0.237
I enjoy learning about STEM topics.	0.520	0.632	0.344	0.304
People who work on a military base do lots of different things.	0.188	0.226	0.327	0.421
When I finish school, I would like to get a job where I could use STEM.	0.579	0.585	0.359	0.293
I think learning about STEM topics will help me in my daily life.	0.403	0.543	0.396	0.306
I like figuring out how to use technology gear (tablets,smart phones,etc.).	0.193	0.231	0.250	0.185

Continued on next page

Pearson Correlation Matrix (Continued)

	I would like a job in a science-related area.	STEM jobs are exciting.	Engineers help solve challenging problems.	A military base is a good place to work.
I do not think DoD STARBASE will help me do better in school. (Reversed Scored)	0.078	0.139	0.126	0.041
Scientists work on things that will make life better.	0.258	0.287	0.374	0.196
I need to do well in math to get the kind of job I want.	0.211	0.204	0.209	0.202
People who work for the military use technology in their jobs.	0.277	0.248	0.305	0.374
I have enjoyed coming to a military base.	0.180	0.223	0.178	0.334
DoD STARBASE Instructors made learning about STEM topics fun.	0.277	0.410	0.216	0.206
DoD STARBASE is boring. (Reversed Scored)	0.180	0.247	0.113	0.148
At DoD STARBASE, I learned a lot of things that I can use.	0.287	0.356	0.312	0.241
I would tell my friends to come to DoD STARBASE.	0.224	0.304	0.162	0.255

Pearson Correlation Matrix (Continued)

	I like science.	I would take engineering classes if offered.	I would take classes on technology if available.	I am aware of STEM careers.	I would like to take more math classes.
Grade					
Age					
Gender					
I am good at science.					
Learning about science is easy for me.					
I would like to join a science club at my school.					
I am interested in being a scientist or engineer.					
Military bases are exciting.					
I am good at math.					
I want to learn more about technology.					
I like technology.					
I would like a job in a science- related area.					
STEM jobs are exciting.					
Engineers help solve challenging problems.					
A military base is a good place to work.					
I like science.	1.000				
I would take engineering classes if offered.	0.406	1.000			
I would take classes on technology if available.	0.274	0.623	1.000		

Pearson Correlation Matrix (Continued)

	I like science.	I would take engineering classes if offered.	I would take classes on technology if available.	I am aware of STEM careers,	I would like to take more math classes.
I am aware of some STEM careers.	0.276	0.345	0.315	1.000	
I would like to take more math classes.	0.165	0.249	0.236	0.116	1.000
I like engineering.	0.339	0.661	0.497	0.333	0.216
Most people use STEM skills every day.	0.244	0.292	0.258	0.407	0.141
I want to learn more about engineering.	0.388	0.689	0.530	0.331	0.237
I like math.	0.158	0.169	0.175	0.094	0.695
I would like to take more science classes.	0.694	0.487	0.386	0.312	0.290
I enjoy learning about STEM topics.	0.443	0.502	0.409	0.406	0.287
People who work on a military base do lots of different things.	0.148	0.171	0.222	0.230	0.115
When I finish school, I would like to get a job where I could use STEM.	0.339	0.513	0.433	0.464	0.197
I think learning about STEM topics will help me in my daily life.	0.335	0.437	0.369	0.455	0.192
I like figuring out how to use technology gear (tablets, smart phones, etc.).	0.166	0.286	0.399	0.204	0.146
I do not think DoD STARBASE will help me do better in school. (Reversed Scored)	0.124	0.103	0.081	0.122	0.003
Scientists work on things that will make life better.	0.272	0.252	0.234	0.276	0.094
I need to do well in math to get the kind of job I want.	0.223	0.246	0.212	0.133	0.336
People who work for the military use technology in their jobs.	0.193	0.232	0.258	0.262	0.147
I have enjoyed coming to a military base.	0.195	0.236	0.189	0.170	0.145
DoD STARBASE Instructors made learning about STEM topics fun.	0.289	0.279	0.243	0.269	0.144
DoD STARBASE is boring. (Reversed Scored)	0.208	0.192	0.159	0.105	0.078
At DoD STARBASE, I learned a lot of things that I can use.	0.329	0.307	0.269	0.259	0.155
I would tell my friends to come to DoD STARBASE.	0.250	0.276	0.257	0.161	0.169

Pearson Correlation Matrix (Continued)

	I like engineering.	Most people use STEM skills every day.	I want to learn more about engineering.	I like math.	I would like to take more science classes.
Grade					
Age					
Gender					
I am good at science.					
Learning about science is easy for me.					
I would like to join a science club at my school.					
I am interested in being a scientist or engineer.					
Military bases are exciting.					
I am good at math.					
I want to learn more about technology.					
I like technology.					
I would like a job in a science- related area.					
STEM jobs are exciting.					
Engineers help solve challenging problems.					
A military base is a good place to work.					
I like science.					
I would take engineering classes if offered.					
I would take classes on technology if available.					
I am aware of some STEM careers.					
I would like to take more math classes.					
I like engineering.	1.000				
Most people use STEM skills every day.	0.307	1.000			
I want to learn more about engineering.	0.743	0.329	1.000		
I like math.	0.147	0.109	0.217	1.000	
I would like to take more science classes.	0.363	0.256	0.414	0.183	1.000
I enjoy learning about STEM topics.	0.439	0.411	0.515	0.217	0.572
People who work on a military base do lots of different things.	0.167	0.321	0.245	0.117	0.157
When I finish school, I would like to get a job where I could use STEM.	0.437	0.362	0.476	0.167	0.426
I think learning about STEM topics will help me in my daily life.	0.373	0.459	0.429	0.170	0.370
I like figuring out how to use technology gear (tablets,smart phones,etc.).	0.239	0.229	0.295	0.115	0.225

	I like engineering.	Most people use STEM skills every day.	I want to learn more about engineering.	I like math.	I would like to take more science classes.
I do not think DoD STARBASE will help me do better in school. (Reversed Scored)	0.092	0.090	0.087	0.005	0.093
Scientists work on things that will make life better.	0.247	0.321	0.280	0.064	0.258
I need to do well in math to get the kind of job I want.	0.213	0.189	0.239	0.271	0.253
People who work for the military use technology in their jobs.	0.283	0.347	0.288	0.105	0.183
I have enjoyed coming to a military base.	0.195	0.217	0.222	0.144	0.195
DoD STARBASE Instructors made learning about STEM topics fun.	0.233	0.279	0.283	0.133	0.313
DoD STARBASE is boring. (Reversed Scored)	0.142	0.153	0.184	0.095	0.197
At DoD STARBASE, I learned a lot of things that I can use.	0.263	0.253	0.340	0.168	0.304
I would tell my friends to come to DoD STARBASE.	0.220	0.205	0.297	0.193	0.266

Pearson Correlation Matrix (Continued)

	I enjoy learning about STEM topics.	People who work on a military base do lots of different things.	When I finish school, I would like to get a job where I could use STEM.	I think learning about STEM topics will help me in my daily life.
Grade				
Age				
Gender				
I am good at science.				
Learning about science is easy for me.				
I would like to join a science club at my school.				
I am interested in being a scientist or engineer.				
Military bases are exciting.				
I am good at math.				
I want to learn more about technology.				
I like technology.				
I would like a job in a science- related area.				
STEM jobs are exciting.				
Engineers help solve challenging problems.				
A military base is a good place to work.				

Pearson Correlation Matrix (Continued)

	I enjoy learning about STEM topics.	People who work on a military base do lots of different things.	When I finish school, I would like to get a job where I could use STEM.	I think learning about STEM topics will help me in my daily life.
I like science.				
I would take engineering classes if offered.				
I would take classes on technology if available.				
I am aware of some STEM careers.				
I would like to take more math classes.				
I like engineering.				
Most people use STEM skills every day.				
I want to learn more about engineering.				
I like math.				
I would like to take more science classes.				
I enjoy learning about STEM topics.	1.000			
People who work on a military base do lots of different things.	0.249	1.000		
When I finish school, I would like to get a job where I could use STEM.	0.593	0.214	1.000	
I think learning about STEM topics will help me in my daily life.	0.527	0.291	0.582	1.000
I like figuring out how to use technology gear (tablets,smart phones,etc.).	0.250	0.217	0.225	0.272
I do not think DoD STARBASE will help me do better in school. (Reversed Scored)	0.119	0.086	0.098	0.171
Scientists work on things that will make life better.	0.303	0.310	0.266	0.391
I need to do well in math to get the kind of job I want.	0.238	0.186	0.258	0.237
People who work for the military use technology in their jobs.	0.279	0.490	0.318	0.368
I have enjoyed coming to a military base.	0.271	0.282	0.165	0.244
DoD STARBASE Instructors made learning about STEM topics fun.	0.412	0.146	0.321	0.349
DoD STARBASE is boring. (Reversed Scored)	0.224	0.139	0.194	0.194
At DoD STARBASE, I learned a lot of things that I can use.	0.329	0.251	0.302	0.391
I would tell my friends to come to DoD STARBASE.	0.336	0.198	0.225	0.242

Pearson Correlation Matrix (Continued)

	I like figuring out how to use technology gear...	I do not think DoD STARBASE will help me do...	Scientists work on things that will make life better.	I need to do well in math to get the kind of job I want.
Grade				
Age				
Gender				
I am good at science.				
Learning about science is easy for me.				
I would like to join a science club at my school.				
I am interested in being a scientist or engineer.				
Military bases are exciting.				
I am good at math.				
I want to learn more about technology.				
I like technology.				
I would like a job in a science- related area.				
STEM jobs are exciting.				
Engineers help solve challenging problems.				
A military base is a good place to work.				
I like science.				
I would take engineering classes if offered.				
I would take classes on technology if available.				
I am aware of some STEM careers.				
I would like to take more math classes.				
I like engineering.				
Most people use STEM skills every day.				
I want to learn more about engineering.				
I like math.				
I would like to take more science classes.				
I enjoy learning about STEM topics.				
People who work on a military base do lots of different things.				
When I finish school, I would like to get a job where I could use STEM.				
I think learning about STEM topics will help me in my daily life.				
I like figuring out how to use technology gear (tablets,smart phones,etc.).	1.000			
I do not think DoD STARBASE will help me do better in school. (Reversed Scored)	0.154	1.000		

Pearson Correlation Matrix (Continued)

	I like figuring out how to use technology gear...	I do not think DoD STARBASE will help me do...	Scientists work on things that will make life better.	I need to do well in math to get the kind of job I want.
Scientists work on things that will make life better.	0.303	0.168	1.000	
I need to do well in math to get the kind of job I want.	0.185	0.032	0.212	1.000
People who work for the military use technology in their jobs.	0.264	0.043	0.300	0.238
I have enjoyed coming to a military base.	0.141	0.148	0.166	0.152
DoD STARBASE Instructors made learning about STEM topics fun.	0.163	0.244	0.258	0.171
DoD STARBASE is boring. (Reversed Scored)	0.127	0.334	0.154	0.096
At DoD STARBASE, I learned a lot of things that I can use.	0.239	0.244	0.315	0.231
I would tell my friends to come to DoD STARBASE.	0.174	0.216	0.159	0.162

Pearson Correlation Matrix (Continued)

	People who work for the military use technology.	I have enjoyed coming to a military base.	DoD STARBASE made learning about...	DoD STARBASE is boring. (Reversed Scored)	At DoD STARBASE learned a lot of things that I can use.
Grade					
Age					
Gender					
I am good at science.					
Learning about science is easy for me.					
I would like to join a science club at my school.					
I am interested in being a scientist or engineer.					
Military bases are exciting.					
I am good at math.					
I want to learn more about technology.					
I like technology.					
I would like a job in a science- related area.					
STEM jobs are exciting.					
Engineers help solve challenging problems.					
A military base is a good place to work.					
I like science.					
I would take engineering classes if offered.					
I would take classes on technology if available.					
I am aware of some STEM careers.					

Pearson Correlation Matrix (Continued)

	People who work for the military use technology.	I have enjoyed coming to a military base.	DoD STARBASE made learning about...	DoD STARBASE is boring. (Reversed Scored)	At DoD STARBASE learned a lot of things that I can use.
I would like to take more math classes.					
I like engineering.					
Most people use STEM skills every day.					
I want to learn more about engineering.					
I like math.					
I would like to take more science classes.					
I enjoy learning about STEM topics.					
People who work on a military base do lots of different things.					
When I finish school, I would like to get a job where I could use STEM.					
I think learning about STEM topics will help me in my daily life.					
I like figuring out how to use technology gear (tablets,smart phones,etc.).					
I do not think DoD STARBASE will help me do better in school. (Reversed Scored)					
Scientists work on things that will make life better.					
I need to do well in math to get the kind of job I want.					
People who work for the military use technology in their jobs.	1.000				
I have enjoyed coming to a military base.	0.265	1.000			
DoD STARBASE Instructors made learning about STEM topics fun.	0.177	0.451	1.000		
DoD STARBASE is boring. (Reversed Scored)	0.121	0.360	0.493	1.000	
At DoD STARBASE, I learned a lot of things that I can use.	0.257	0.386	0.537	0.382	1.000
I would tell my friends to come to DoD STARBASE.	0.170	0.399	0.541	0.511	0.514

Appendix E:
Attitudinal Items by Measurement Area and PCA Analysis of Attitude Dimensions

ATTITUDINAL ITEMS BY MEASUREMENT AREA 2014 – 2015

#	Attitudinal Survey Dimension/Item
STEM Concept Awareness	
7	I want to learn more about technology.
8	I like technology.
15	I would take classes on technology if available.
27	I like figuring out how to use technology gear (tablets, smart phones, etc.).
Science Confidence	
1	I am good at science.
2	Learning about science is easy for me.
3	I would like to join a science club at my school.
13	I like science.
22	I would like to take more science classes.
Math Confidence	
6	I am good at math.
17	I would like to take more math classes.
21	I like math.
30	I need to do well in math to get the kind of job I want.
STEM Behavior & Motivation	
11	Engineers help solve challenging problems.
16	I am aware of some STEM careers.
19	Most people use STEM skills every day.
26	I think learning about STEM topics will help me in my daily life.
29	Scientists work on things that will make life better.
Future Planning	
4	I am interested in being a scientist or engineer.
9	I would like a job in a science-related area.
10	STEM jobs are exciting.
14	I would take engineering classes if offered.
18	I like engineering.
20	I want to learn more about engineering.
23	I enjoy learning about STEM topics.
25	When I finish school, I would like to get a job where I could use STEM.
Military Settings Endorsement	
5	Military bases are exciting.
12	A military base is a good place to work.
24	People who work on a military base do lots of different things.
31	People who work for the military use technology in their jobs.
32	I have enjoyed coming to a military base.
DoD STARBASE Program Evaluation	
28	I do not think DoD STARBASE will help me do better in school. (Reversed Scored)
33	DoD STARBASE Instructors made learning about STEM topics fun.
34	DoD STARBASE is boring. (Reversed Scored)
35	At DoD STARBASE, I learned a lot of things that I can use.
36	I would tell my friends to come to DoD STARBASE.

Items were assigned to Attitude Dimensions based on their highest loadings on the seven factors shown below. Factors are listed in order of contribution to the results.

ROTATED COMPONENT MATRIX

	Component						
	Future Planning	Science Confidence	Program Evaluation	STEM Behavior & Motivation	Military Settings Endorse	STEM Concept Awareness	Math Confidence
I would take engineering classes if offered.	.736						
I am interested in being a scientist or engineer.	.723						
I like engineering.	.692						
I want to learn more about engineering.	.675						
When I finish school, I would like to get a job where I could use STEM.	.628			.421			
I would like a job in a science-related area.	.586	.500					
I enjoy learning about STEM topics.	.570						
STEM jobs are exciting.	.565			.408			
I like science.		.781					
I am good at science.		.768					
Learning about science is easy for me.		.754					
I would like to take more science classes.	.413	.670					
I would like to join a science club at my school.	.397	.629					
DoD STARBASE is boring. (Reversed Scored)			.761				
DoD STARBASE Instructors made learning about STEM topics fun.			.738				
I would tell my friends to come to DoD STARBASE.			.724				
At DoD STARBASE, I learned a lot of things that I can use			.610				
I do not think DoD STARBASE will help me do better in school. (Reversed Scored)			.516				
Most people use STEM skills every day.				.609			
I think learning about STEM topics will help me in my daily life.	.380			.605			

ROTATED COMPONENT MATRIX (Continued)

	Component						
	Future Planning	Science Confidence	Program Evaluation	STEM Behavior & Motivation	Military Settings Endorse	STEM Concept Awareness	Math Confidence
I am aware of some STEM careers.	.342			.602			
Scientists work on things that will make life better.				.554			
Engineers help solve challenging problems.				.527			
Military bases are exciting.					.731		
A military base is a good place to work.					.708		
People who work on a military base do lots of different things.				.365	.648		
People who work for the military use technology in their jobs.				.383	.586		
I have enjoyed coming to a military base.			.514		.538		
I like technology.						.784	
I want to learn more about technology.	.358					.697	
I like figuring out how to use technology gear (tablets, smart phones, etc.).						.665	
I would take classes on technology if available.	.535					.602	
I like math.							.901
I would like to take more math classes.							.806
I am good at math.							.775
I need to do well in math to get the kind of job I want.							.391

In the interest of simplicity, loadings below .34 are not shown.

Appendix F:
Intercorrelations Among Student Characteristics and Attitude Dimensions

Pearson Correlation Matrix

	Grade	Grade	Age	I heard about DoD STARBASE before I knew I was...	I know someone that went through DoD STARBASE before...	I have met military people before coming to DoD STARBASE.
Gender	1.000					
Grade	0.003	1.000				
Age	-0.084	0.379	1.000			
I heard about DoD STARBASE before I knew I was coming here.	-0.019	-0.025	0.015	1.000		
I know someone that went through DoD STARBASE before me.	-0.025	0.015	-0.011	0.408	1.000	
I have met military people before coming to DoD STARBASE.	-0.079	0.083	0.049	0.070	0.093	1.000
High Military Attitude	-0.086	0.008	0.009	0.076	0.059	0.105
Total Knowledge (post)	-0.004	0.217	0.008	0.045	0.102	0.147
STEM Concept Awareness (post)	-0.128	-0.016	-0.027	0.045	0.015	0.024
Future Planning (post)	-0.129	0.081	0.034	0.051	0.073	0.119
Science Confidence (post)	0.010	0.021	0.026	0.087	0.020	0.050
Math Confidence (post)	-0.030	-0.069	-0.028	0.060	0.051	-0.009
STEM Behavior & Motivation (post)	0.002	0.106	0.036	0.097	0.080	0.130
Military Settings Endorsement (post)	-0.103	-0.016	0.007	0.089	0.054	0.096
Program Evaluation (post)	-0.020	0.014	-0.016	0.061	0.061	0.046

“It was very rewarding to see the student’s enthusiasm and the strong rapport with the instructors/teachers. As an engineer, I am likely biased but would have to say this is one of the best experiences you could provide a child to peak their interest in science, math and engineering.”

Jason Storms, Parent of a student at DoD STARBASE Vermont - Burlington, Burlington, VT

Pearson Correlation Matrix (Continued)

	High Military Attitude	Post Total Knowledge	Post STEM Concept	Post Future Plan	Post Science Confidence
Gender					
Grade					
Age					
I heard about DoD STARBASE before I knew I was coming here.					
I know someone that went through DoD STARBASE before me.					
I have met military people before coming to DoD STARBASE.					
High Military Attitude	1.000				
Total Knowledge (post)	0.098	1.000			
STEM Concept Awareness (post)	0.362	0.124	1.000		
Future Planning (post)	0.406	0.210	0.590	1.000	
Science Confidence (post)	0.267	0.179	0.424	0.651	1.000
Math Confidence (post)	0.255	0.044	0.283	0.349	0.314
STEM Behavior & Motivation (post)	0.473	0.294	0.458	0.639	0.488
Military Settings Endorsement (post)	0.908	0.091	0.372	0.429	0.288
Program Evaluation (post)	0.288	0.130	0.311	0.388	0.352

Pearson Correlation Matrix (Continued)

	Post Match Confidence	Post STEM Behavior & Motivation	Post Military Endorse	Post Program Evaluation
Gender				
Grade				
Age				
I heard about DoD STARBASE before I knew I was coming here.				
I know someone that went through DoD STARBASE before me.				
I have met military people before coming to DoD STARBASE.				
High Military Attitude				
Total Knowledge (post)				
STEM Concept Awareness (post)				
Future Planning (post)				
Science Confidence (post)				
Math Confidence (post)	1.000			
STEM Behavior & Motivation (post)	0.281	1.000		
Military Settings Endorsement (post)	0.285	0.465	1.000	
Program Evaluation (post)	0.224	0.406	0.384	1.000

Correlations of $r \geq .008$ are statistically significant, $p < .05$

“The DoD STARBASE program helped my son make that real world connection as to the importance of math and science, more specifically math since it is the subject he struggles with. Since the start of the program, I have noticed that he puts a little more effort into learning math. Thank you for this kind of program, I’m pretty sure my son isn’t the only one showing these changes.”

Parent of a participating student at DoD STARBASE Arizona, Tucson, AZ

Appendix G:
Kendall's Tau-B Correlation Matrix for Post-Program Student Knowledge

Kendall's Tau-B Correlation Matrix

Grade		Age	Gender		1 Sodium and chloride bond to form salt (NaCl)...	2 By con- structing a 3D scale model of a car, a person...	3 Why are prototypes a key part of the engineering...
Grade	1.000						
Age	0.333	1.000					
Gender	0.003	-0.096	1.000				
1	Sodium and chloride bond to form salt (NaCl). What does this bonded substance represent?	0.206	0.034	-0.002	1.000		
2	By constructing a 3D scale model of a car, a person can learn all of the following EXCEPT:	0.061	0.006	-0.015	0.158	1.000	
3	Why are prototypes a key part of the engineering design process?	0.044	-0.021	-0.040	0.169	0.104	1.000
4	Which of the following is typically measured in nanometers?	0.045	-0.027	-0.030	0.213	0.126	0.166
5	Which pie chart represents the correct composition of air?	0.096	0.007	0.021	0.235	0.078	0.160
6	Two boats are floating by each other and passing cargo from one boat to the other. Based on Bernoulli's Principle, what happens i...	0.012	-0.009	0.042	0.106	0.156	0.112
7	You are working on a new product to melt snow and ice on walkways. You test the product by measuring the time it takes for the area...	0.109	-0.026	-0.020	0.185	0.155	0.195
8	Which of the following would be a good reason to use latitude and longitude coordinates?	0.152	-0.014	-0.006	0.130	0.132	0.177
9	In the graph above, find the letter that is at the coordinates (3,-2). Is it A, B, C, or D?	0.134	-0.018	-0.016	0.175	0.083	0.142
10	Which of the following is an example of physical change?	0.133	0.031	-0.028	0.259	0.162	0.183
11	When using computer design software to build a model, the first step is to...	0.088	-0.045	-0.004	0.107	0.101	0.123
12	Of the following, which tool would be appropriate to measure the volume of a glass of milk?	0.058	-0.002	0.004	0.209	0.072	0.139
13	What scientific law makes it important to wear a seat belt?	0.057	0.000	-0.014	0.128	0.041	0.116
14	Which of the following states of matter have the least amount of kinetic energy?	0.115	0.028	0.009	0.226	0.130	0.150

Kendall's Tau-B Correlation Matrix (Continued)

		Grade	Age	Gender Sodium and chloride bond to form salt (NaCl)...	1 By con- structing a 3D scale model of a car, a person...	2 Why are prototypes a key part of the engineering...	3
15	An engineer is testing how well three different towels absorb liquids over three trials. The data for the experiment is in the tab...	0.070	-0.016	0.070	0.130	0.085	0.123
16	STEM (Science, Technology, Engineering, and Math) jobs can involve which of the following?	0.099	-0.008	0.037	0.142	0.100	0.116
17	You start out at the star (coordinates -1,3) and walk two kilometers North, then 1 Kilometer West and stop for lunch. After lunch,...	0.120	-0.002	-0.032	0.101	0.143	0.053

Kendall's Tau-B Correlation Matrix (Continued)

		4 Which of the following is typically measured...	5 Which pie chart represents the the correct...	6 Two boats are are floating by each other and...	7 You are working on a new product to melt...
Grade					
Age					
Gender					
1	Sodium and chloride bond to form salt (NaCl). What does this bonded substance represent?				
2	By constructing a 3D scale model of a car, a person can learn all of the following EXCEPT:				
3	Why are prototypes a key part of the engineering design process?				
4	Which of the following is typically measured in nanometers?	1.000			
5	Which pie chart represents the correct composition of air?	0.240	1.000		
6	Two boats are floating by each other and passing cargo from one boat to the other. Based on Bernoulli's Principle, what happens if...	0.159	0.234	1.000	
7	You are working on a new product to melt snow and ice on walkways. You test the product by measuring the time it takes for the area...	0.185	0.174	0.130	1.000
8	Which of the following would be a good reason to use latitude and longitude coordinates?	0.146	0.166	0.098	0.226

Continued on next page

Kendall's Tau-B Correlation Matrix (Continued)

		4 Which of the following is typically measured...	5 Which pie chart represents the the correct...	6 Two boats are floating by each other and...	7 You are working on a new product to melt...
9	In the graph above, find the letter that is at the coordinates (3,-2). Is it A, B, C, or D?	0.121	0.115	0.003	0.149
10	Which of the following is an example of physical change?	0.237	0.215	0.138	0.187
11	When using computer design software to build a model, the first step is to...	0.107	0.100	0.048	0.147
12	Of the following, which tool would be appropriate to measure the volume of a glass of milk?	0.108	0.159	0.110	0.193
13	What scientific law makes it important to wear a seat belt?	0.089	0.142	0.092	0.140
14	Which of the following states of matter have the least amount of kinetic energy?	0.176	0.214	0.128	0.190
15	An engineer is testing how well three different towels absorb liquids over three trials. The data for the experiment is in the table...	0.063	0.135	0.097	0.161
16	STEM (Science, Technology, Engineering, and Math) jobs can involve which of the following?	0.071	0.147	0.057	0.174
17	You start out at the star (coordinates -1,3) and walk two kilometers North, then 1 Kilometer West and stop for lunch. After lunch,...	0.093	0.099	0.098	0.133

Kendall's Tau-B Correlation Matrix (Continued)

		8 Which of the following would be a good reason to use...	9 In the graph above, find the letter that is at the coordinates...	10 Which of the following is an example of physical...	11 When using computer design software to build a...	12 Of the following which tool would be appro...
Grade						
Age						
Gender						
1	Sodium and chloride bond to form salt (NaCl). What does this bonded substance represent?					
2	By constructing a 3D scale model of a car, a person can learn all of the following EXCEPT:					
3	Why are prototypes a key part of the engineering design process?					
4	Which of the following is typically measured in nanometers?					
5	Which pie chart represents the correct composition of air?					

Kendall's Tau-B Correlation Matrix (Continued)

	8 Which of the following would be a good reason to use...	9 In the graph above, find the letter that is at the coordinates...	10 Which of the following is an example of physical...	11 When using computer design software to build a...	12 Of the following which tool would be appro...
6	Two boats are floating by each other and passing cargo from one boat to the other. Based on Bernoulli's Principle, what happens i...				
7	You are working on a new product to melt snow and ice on walkways. You test the product by measuring the time it takes for the area...				
8	Which of the following would be a good reason to use latitude and longitude coordinates?	1.000			
9	In the graph above, find the letter that is at the coordinates (3,-2). Is it A, B, C, or D?	0.144	1.000		
10	Which of the following is an example of physical change?	0.146	0.171	1.000	
11	When using computer design software to build a model, the first step is to...	0.111	0.126	0.106	1.000
12	Of the following, which tool would be appropriate to measure the volume of a glass of milk?	0.095	0.094	0.264	0.144
13	What scientific law makes it important to wear a seat belt?	0.122	0.131	0.144	0.120
14	Which of the following states of matter have the least amount of kinetic energy?	0.140	0.157	0.242	0.126
15	An engineer is testing how well three different towels absorb liquids over three trials. The data for the experiment is in the tab...	0.095	0.076	0.136	0.099
16	STEM (Science, Technology, Engineering, and Math) jobs can involve which of the following?	0.098	0.088	0.213	0.034
17	You start out at the star (coordinates -1,3) and walk two kilometers North, then 1 Kilometer West and stop for lunch. After lunch,...	0.099	0.163	0.137	0.028

Kendall's Tau-B Correlation Matrix (Continued)

		13 What scientific law makes it important to wear a...	14 Which of the following states of matter have the...	15 An engineer is testing how well three different...	16 STEM (Science, Technology, Engineering, and Math)...	17 You start out at the star (coordinates 1, 3) and walk...
Grade						
Age						
Gender						
1	Sodium and chloride bond to form salt (NaCl). What does this bonded substance represent?					
2	By constructing a 3D scale model of a car, a person can learn all of the following EXCEPT:					
3	Why are prototypes a key part of the engineering design process?					
4	Which of the following is typically measured in nanometers?					
5	Which pie chart represents the correct composition of air?					
6	Two boats are floating by each other and passing cargo from one boat to the other. Based on Bernoulli's Principle, what happens i...					
7	You are working on a new product to melt snow and ice on walkways. You test the product by measuring the time it takes for the area...					
8	Which of the following would be a good reason to use latitude and longitude coordinates?					
9	In the graph above, find the letter that is at the coordinates (3,-2). Is it A, B, C, or D?					
10	Which of the following is an example of physical change?					
11	When using computer design software to build a model, the first step is to...					
12	Of the following, which tool would be appropriate to measure the volume of a glass of milk?					
13	What scientific law makes it important to wear a seat belt?	1.000				
14	Which of the following states of matter have the least amount of kinetic energy?	0.157	1.000			
15	An engineer is testing how well three different towels absorb liquids over three trials. The data for the experiment is in the tab...	0.115	0.112	1.000		
16	STEM (Science, Technology, Engineering, and Math) jobs can involve which of the following?	0.065	0.118	0.161	1.000	
17	You start out at the star (coordinates -1,3) and walk two kilometers North, then 1 Kilometer West and stop for lunch. After lunch,...	0.080	0.071	0.122	0.114	1.000

Appendix H: DoD STARBASE Locations by Military Component and Region

Locations Based on Military Component

AIR FORCE

Alabama – STARBASE Maxwell

Arizona – STARBASE Arizona

Colorado – STARBASE Peterson AFB

Massachusetts – STARBASE Hanscom

New Mexico – New Mexico STARBASE La Luz

Ohio – STARBASE Wright-Patt

Utah – STARBASE Hill Screaming Eagles

AIR FORCE RESERVES

Georgia – STARBASE Robins

Georgia – STARBASE Savannah

Louisiana – STARBASE Louisiana

Texas – STARBASE Kelly

MARINES

South Carolina – STARBASE MCAS Beaufort

NATIONAL GUARD

California – STARBASE of California

California – STARBASE Los Alamitos

Connecticut – STARBASE Hartford

Connecticut – STARBASE Waterbury

Florida – STARBASE Florida

Georgia – Peach State STARBASE

Hawaii – STARBASE – Hawaii, Big Island

Indiana – STARBASE Indiana

Kansas – STARBASE Kansas City

Kansas – STARBASE Manhattan

Kansas – STARBASE Salina

Kansas – STARBASE Topeka

Kansas – STARBASE Wichita

NATIONAL GUARD (Continued)

Louisiana – STARBASE Jackson Barracks

Louisiana – Pelican State STARBASE

Michigan – STARBASE Alpena

Michigan – STARBASE Battle Creek

Michigan – STARBASE One

Montana – STARBASE Fort Harrison

Montana – STARBASE Great Falls

North Carolina – STARBASE Charlotte

Oklahoma – STARBASE Oklahoma – Burns Flat

Oklahoma – STARBASE Oklahoma – Fort Sill

Oklahoma – STARBASE Oklahoma – Oklahoma City

Oklahoma – STARBASE Oklahoma – Tulsa

Oregon – STARBASE Kingsley

Oregon – STARBASE Portland

Puerto Rico – STARBASE Puerto Rico

South Carolina – STARBASE Swamp Fox

South Dakota – STARBASE NOVA Courage

South Dakota – STARBASE NOVA Honor

South Dakota – STARBASE Rapid City

South Dakota – STARBASE Sioux Falls

Texas – Texas STARBASE Austin

Texas – Texas STARBASE Houston

Vermont – STARBASE Vermont – Rutland

Vermont – STARBASE Vermont – South Burlington

Virginia – Winchester STARBASE Academy

West Virginia – STARBASE Martinsburg

West Virginia – STARBASE Martinsburg

West Virginia – West Virginia STARBASE Academy

Wisconsin – STARBASE Wisconsin

Wyoming – Wyoming STARBASE Academy

Appendix H: DoD STARBASE Locations by Military Component and Region

Locations Across DoD STARBASE Region, 2015

EAST

Connecticut – STARBASE Hartford

Massachusetts – STARBASE Hanscom

Vermont – STARBASE Vermont – Rutland

Vermont – STARBASE Vermont – South Burlington

SOUTH EAST

Alabama – STARBASE Maxwell

Florida – STARBASE Florida

Georgia – Peach State STARBASE

Georgia – STARBASE Robins

Georgia – STARBASE Savannah

North Carolina – STARBASE Charlotte

South Carolina – STARBASE Swamp Fox

MIDWEST

Indiana – STARBASE Indiana

Kansas – STARBASE Kansas City

Kansas – STARBASE Manhattan

Kansas – STARBASE Salina

Kansas – STARBASE Topeka

Kansas – STARBASE Wichita

Michigan – STARBASE Alpena

Michigan – STARBASE Battle Creek

Michigan – STARBASE One

Minnesota – STARBASE Minnesota

Ohio – STARBASE Wright-Patt

South Dakota – STARBASE NOVA Courage

South Dakota – STARBASE NOVA Honor

South Dakota – STARBASE Rapid City

South Dakota – STARBASE Sioux Falls

Wisconsin – STARBASE Wisconsin

SOUTH

Arizona – STARBASE Arizona

Louisiana – STARBASE Jackson Barracks

Louisiana – STARBASE Louisiana

Louisiana – Pelican State STARBASE

New Mexico – New Mexico STARBASE La Luz

Oklahoma – STARBASE Oklahoma – Burns Flat

Oklahoma – STARBASE Oklahoma – Fort Sill

Oklahoma – STARBASE Oklahoma – Oklahoma City

Oklahoma – STARBASE Oklahoma – Tulsa

Puerto Rico – STARBASE Puerto Rico

Texas – STARBASE Kelly

Texas – Texas STARBASE Austin

Texas – Texas STARBASE Houston

WEST

California – STARBASE Los Alamitos

California – STARBASE of California

Colorado – STARBASE Peterson AFB

Hawaii – STARBASE – Hawaii, Big Island

Montana – STARBASE Fort Harrison

Montana – STARBASE Great Falls

Oregon – STARBASE Kingsley

Oregon – STARBASE Portland

Utah – STARBASE Hill Screaming Eagles

Wyoming – Wyoming STARBASE Academy

**Appendix I:
Ratings by Measurement Area**

		2015 Mean	Standard Deviation	N
STEM Concepts	Cronbach's Alpha Reliability .882 6 Items	6.37	.758	1668
While attending DoD STARBASE, the students appear...				
... more interested in learning about technology.		6.51	.857	1668
... more interested in learning about science.		6.46	.882	1668
... more interested in learning about engineering.		6.17	1.055	1668
... more interested in learning about math.		5.93	1.258	1668
DoD STARBASE has helped to improve the students' understanding of science.		6.64	.729	1668
DoD STARBASE has helped to improve students' appreciation of how math can be applied to a variety of situations.		6.49	.862	1668
Confidence	Cronbach's Alpha Reliability .864 3 Items	6.12	.918	1668
While attending DoD STARBASE, the students appear...				
... more willing to try new things.		6.40	.918	1668
... more confident about what they can accomplish.		6.20	1.030	1668
... more comfortable making decisions.		5.77	1.146	1668
Behavioral/Motivational	Cronbach's Alpha Reliability .813 5 items	6.12	.884	1668
While attending DoD STARBASE, the students appear...				
... more excited about learning.		6.27	.982	1668
... better at following directions.		5.68	1.314	1668
DoD STARBASE reinforces many positive behaviors I try to teach my students.		6.62	.843	1668
During DoD STARBASE, students have better school attendance.		6.10	1.327	1668
The DoD STARBASE experience has influenced me to become skilled in STEM instruction.		5.94	1.294	1668
Teamwork	Cronbach's Alpha Reliability .918 3 items	5.99	1.043	1668
While attending DoD STARBASE, the students appear...				
... more willing to cooperate with each other.		6.02	1.085	1668
... better at working in groups.		5.98	1.160	1668
... more likely to encourage each other.		5.96	1.132	1668
Future Planning	Cronbach's Alpha Reliability .920 4 items	5.83	1.062	1668
While attending DoD STARBASE, the students appear...				
... more excited about their futures.		5.91	1.151	1668
... more ready to set future educational and career goals.		5.88	1.170	1668
... more goal oriented.		5.77	1.186	1668
... to focus more on their future potential.		5.77	1.222	1668

Continued on next page

Appendix I: (Continued)
Ratings by Measurement Area

		2015 Mean	Standard Deviation	N
Military and Career	Cronbach's Alpha Reliability .746 5 items	5.78	.940	1668
While attending DoD STARBASE, the students appear....				
... more comfortable with military personnel.		5.87	1.250	1580
... to have more questions about DoD and other non-military career opportunities.		5.67	1.340	1580
... more interested in learning about military careers.		5.65	1.329	1580
The students enjoyed being on a military base.		6.79	.709	1580
Because of my participation in DoD STARBASE, I am more comfortable with military personnel.		5.15	1.546	1580
Program/Resources Support	Cronbach's Alpha Reliability .784 7 items	6.35	.766	1668
My school plans to participate in the DoD STARBASE program again next year.		6.90	.593	1393
I look forward to bringing future classes to the DoD STARBASE program.		6.85	.561	1393
Parents are delighted that their children are participating in DoD STARBASE.		6.58	.825	1393
I would like more DoD STARBASE supplemental resources to take back to my classroom.		6.45	1.031	1393
My principal is a strong advocate of DoD STARBASE.		6.34	1.114	1393
I plan to incorporate DoD STARBASE teaching techniques into my daily classroom activities.		6.21	1.148	1393
I prefer the supplemental resources DoD STARBASE provides to teachers over other similar resources.		5.88	1.332	1393
Post-program Impact	Cronbach's Alpha Reliability .934 10 items	6.18	.884	1008
The students talk about DoD STARBASE long after the program has ended.		6.63	.828	648
Attending DoD STARBASE helps students understand better how STEM skills/abilities fit job requirements for certain career fields.		6.56	.857	648
Attending DoD STARBASE helps students understand better that developing their current skills/abilities is necessary to have good future career choices.		6.51	.966	648
Attending DoD STARBASE helps students link their experience to careers in both military and non-military positions.		6.38	1.018	648
After DoD STARBASE, students are more interested in using computers for class-related learning activities.		6.29	1.235	648
DoD STARBASE helped to improve cooperative learning in the classroom even after the program ended.		6.14	1.132	648
After the DoD STARBASE program, the students ask more questions about technology.		6.13	1.120	648
Students that have attended DoD STARBASE seem to perform better on standardized state assessments.		5.84	1.386	648
After DoD STARBASE attendance, there is increased participation in the Science Fair and other STEM-related challenge programs (e.g., FIRST LEGO League, Odyssey of the Mind, Team America Rocket Competition, etc.).		5.84	1.395	648
After DoD STARBASE, students have better school attendance.		5.64	1.439	648

Appendix J: Definitions for Statistical Analyses within this Report

The following section provides a list of the statistical formulas that were used to calculate the data presented in this report.

1. Mean – Average value of a variable

$$\bar{X} = \sum X / N$$

$\bar{x}$ = the sample mean; $\bar{x}$ is generally represented by a capital 'X' with a bar or line over the top

$\sum X$ = the sum of all values of X

N = the sample size

2. Standard deviation – Measure of the average deviation of each score from the mean

$$s = [\sum (x_i - \bar{x})^2 / (n - 1)]^{1/2}$$

n = the sample size

3. t-test – Tests the difference between two means

$$t = (\bar{x}_1 - \bar{x}_2) / (s_{\bar{x}_1 - \bar{x}_2})$$

$s_{\bar{x}_1 - \bar{x}_2}$ = the standard deviation of the difference between the two variables

4. Pearson's Correlation – Determines the relationship between two variables

$$r^2 = \frac{[\sum Y_1 * Y_2 - \sum Y_1 * \sum Y_2 / N] / (N - 1)}{s_{y1} s_{y2}}$$

r = the statistical relationship of two variables

Y = the values of the variables

s = the standard deviation of the variables

5. Multiple Correlation (R) – Represents the correlation or statistical relationship between a set of variables and a single variable

6. Regression Equation – Determines what combination of variables can best predict the outcome for the dependent variable

$$Y = a + b_1 X_1 + b_2 X_2 + \dots + b_p X_p$$

Y = the predicted value of the dependent variable

a = the intercept value of Y when X=0

b = the regression coefficients for the predictors

X = the value of the predictor variable

Appendix K: Glossary

Academy: See DoD STARBASE Academy.

Academy Performance Level: DoD STARBASE sites are evaluated using a performance assessment system that is composed of three progressive levels of program and organizational performance. Each level has a prescribed set of activities that range from obtaining adherence to the DoDI requirements that guide basic operating procedures and full installation of program delivery (Level I); to obtaining desirable operating applications, key planning strategies, and managerial efficiencies (Level II); and lastly, to exhibit advanced strategic program linkages and downstream relationships for promoting student skills and abilities in STEM-related activities (Level III).

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 Act: 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/At-Risk Youth: 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, having an older sibling who dropped out of high school, changing schools two or more times other than for the normal progression (e.g. from elementary to middle school), having “C” or lower grades, repeating an earlier grade, receiving welfare assistance, being from a low socio-economic status family and living in a household where the primary language spoken is other than English.

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

Computer-Aided Design (CAD): A program that prepares individuals to apply technical skills and advanced computer software and hardware to the creation of graphic representations and simulations in support of engineering projects. This includes instruction in engineering graphics, two-dimensional and three-dimensional engineering design, solids modeling, engineering animation, computer-aided drafting (CAD), computer-aided design (CADD), and auto-CAD techniques..

Pro E (Pro/ENGINEER) is the CAD program used in DoD STARBASE programs.

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

Director: DoD STARBASE staff member responsible for a 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.

DoD: Department of Defense.

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

DoD STARBASE Academy: A DoD STARBASE educational program held in a specific state location.

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

Physics

- A. Newton's Three Laws of Motion
- B. Fluid Mechanics and Aerodynamics

Chemistry Sciences

- A. Building Blocks of Matter
- B. Physical and Chemical Changes
- C. Atmospheric Properties

Technology

- A. Innovations
- B. Navigation and Mapping

Engineering

- A. Engineering Design Process (EDP)
- B. 3-D Computer-Aided Design (3.0 hours as mandated by OASD /M&RA)

Mathematics Operations & Applications

- A. Numbers and Number Relationships
- B. Measurement
- C. Geometry
- D. Data Analysis

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, math, and technology education improvement program. The office of the Assistant Secretary of Defense for Manpower & Reserve Affairs, (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.

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).

Elementary School: Elementary schools include regular schools (i.e., schools that are part of state and local school systems and private elementary, both religiously affiliated and nonsectarian); alternative schools and special education schools. Elementary schools typically host grades K–6 and do not have any grade higher than grade 8. For example, schools with grades K–6, 1–3, or K–8 are classified as elementary.

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 Non-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 or 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 2015 begins on October 1, 2014, and ends on September 30, 2015.

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. They may also be defined as a school with no grade lower than 7 and at least one grade higher than 8. This includes regular schools (i.e. schools that are part of state and local school systems and private secondary schools, both religiously affiliated and nonsectarian, alternative schools, vocational education schools, and special education.

Hispanic or Latino: A person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin, regardless of race.

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.

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.

Middle School: A school with no grade lower than 5 and no grade higher than 8. This includes regular schools (i.e. schools that are part of state and local school systems and private secondary schools, both religiously affiliated and nonsectarian, alternative schools, vocational education schools and special education.

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.

Nanotechnology: The science of manipulating materials on an atomic or molecular scale, especially to build microscopic devices.

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 child care 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 competent state authority and to which the Internal Revenue Service has given status as a 501(c)(3) tax-exempt non-profit organization.

OASD/M&RA: Office of the Assistant Secretary of Defense for Manpower & Reserve Affairs.

Operational Academies: An academy that is processing students.

Participant: A DoD STARBASE student. Participant also refers 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.

Pre/Post: 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.

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 Non-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.

School District: An education agency at the local level that exists primarily to operate public schools or to contract for public school services.

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.

STEM: Science, Technology, Engineering, and Mathematics (STEM) fields of study that are considered to be of particular relevance to advanced societies.

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 more diverse than traditional DoD STARBASE programs, are often conducted during the summer months and may be designed to reach students who 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. Supplemental programs are not required and are beyond the normal operation and obligations of the academy. 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.

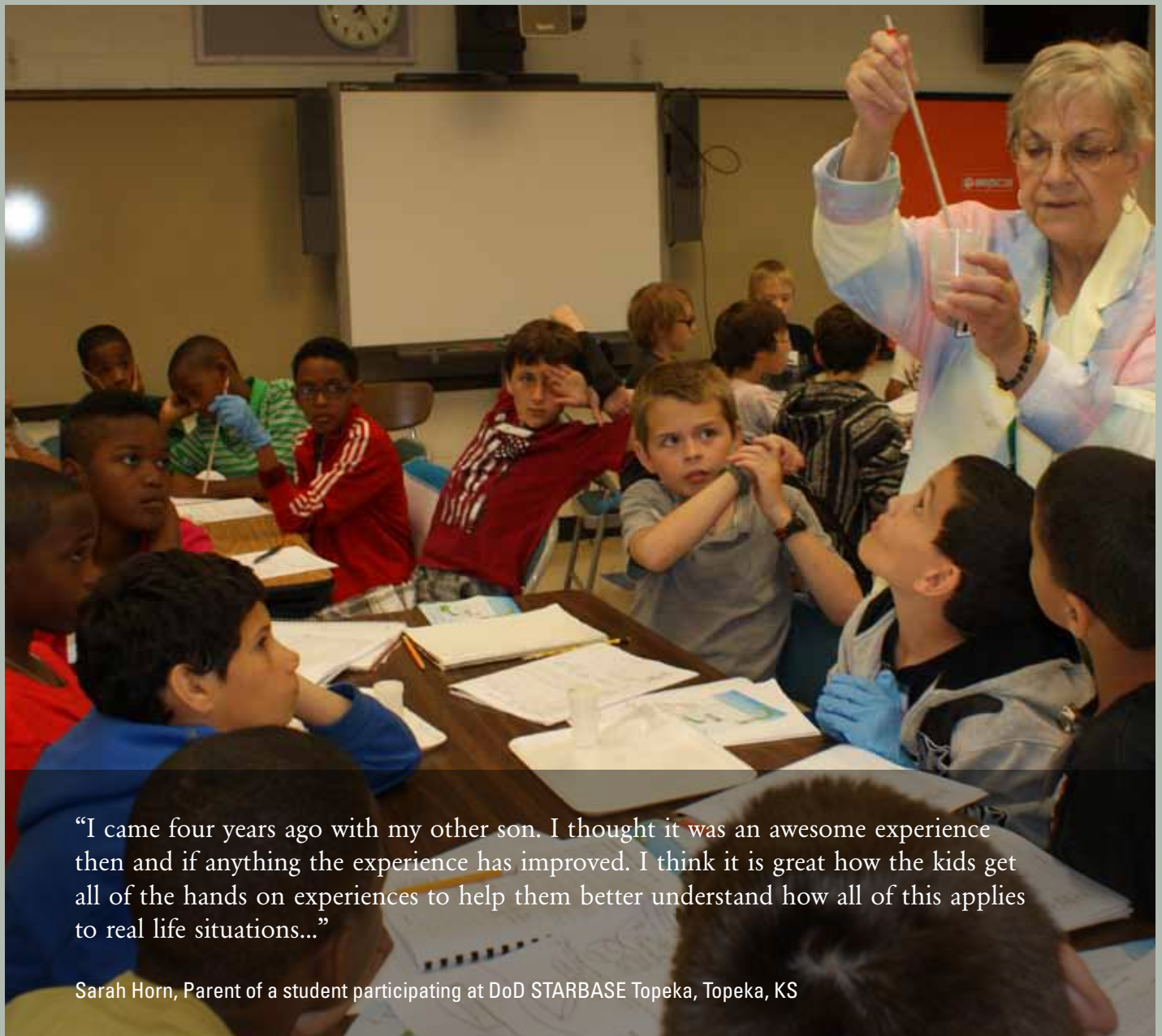
Teacher Certification: License granted by states for teachers to teach a given subject. These vary by state, but generally include: obtaining a bachelor’s degree; completing a teacher preparation program, which includes either an undergraduate, master’s, or alternative program; and getting state or national certification to teach by completing all requirements.

Title 1 or Title 1 Eligible: 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.

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.

White: A person having origins in any of the original peoples of Europe, the Middle East, or North Africa.



“I came four years ago with my other son. I thought it was an awesome experience then and if anything the experience has improved. I think it is great how the kids get all of the hands on experiences to help them better understand how all of this applies to real life situations...”

Sarah Horn, Parent of a student participating at DoD STARBASE Topeka, Topeka, KS

DoD STARBASE Directory

ALABAMA

MONTGOMERY

STARBASE Maxwell

Service Component: Air Force

Military Location: Maxwell Air Force Base

Address:

60 W. Maxwell Boulevard, Building 835

Montgomery, Alabama 36116

Tel: 334-953-4821

Fax: None

Director: Princess J. Cuthrell

Email: princess@montgomeryed.org

Website: None

Autauga County

Autaugaville

Billingsley School

Elmore County

Eclectic Middle School

Holtville Middle

Redland Elementary

Maxwell AFB, Montgomery County

Maxwell Elementary

Montgomery County

Brewbaker Intermediate

Southlawn Elementary

Vaughn Road Elementary

Wilson Elementary

ARIZONA

TUCSON

STARBASE Arizona

Service Component: Air Force

Military Location: Davis-Monthan Air Force Base

Address:

5355 E. Granite Street

Tucson, Arizona 85707

Tel: 520-228-7827

Fax: None

Director: Mikelle Cronk

Email: cronkm@vail.k12.azus

Website: www.facebook.com/starbasearizona

Amphitheater Unified School District

F.O. Holaway Elementary School

Helen Keeling Elementary School

Lulu Walker Elementary School

Presidio Charter Schools

Presidio Elementary School

Sunnyside Unified School District

Mission Manor Elementary School

Tucson Unified School District

J.B. Wright Elementary School

Vail Unified School District

Acacia Elementary School

Desert Willow Elementary School

Esmond Station K-8 School

Sycamore Elementary School

CALIFORNIA

LOS ALAMITOS

STARBASE Los Alamitos*

Service Component: National Guard

Military Location: Joint Forces Training Base Los Alamitos

Address:

11525 Freedom Way

Los Alamitos, California 90720

Tel: 562-795-1473

Fax: None

Director: Stacey Hendrickson

Email: stacey.hendrickson.nfg@mail.mil

Website: www.starbaselosalamitos.com

Compton Unified

Compton Unified School District

Fullerton Unified School District

Pacific Drive Elementary

Richman Elementary

Woodcrest Elementary

Long Beach Unified

Prisk

Los Angeles Unified

112th Street Elementary

92nd Street Elementary

93rd Street Elementary

96th Street Elementary

Bushnell Way Elementary

Christopher Dena Elementary

* Indicates location, also coordinates a DoD STARBASE 2.0 Program

Flournoy Elementary
Grape Street Elementary
Sunrise Elementary

Private School

Dolores Mission
St. Michael's Catholic School

Santa Ana Unified

Diamond Elementary
John Adams Elementary
John F. Kennedy Elementary
Lincoln Elementary
Lowell Elementary
Martin Luther King Elementary
Monte Vista Elementary
Pio Pico Elementary
Remington Elementary
Sepulveda Elementary

SACRAMENTO

STARBASE Sacramento

Service Component: National Guard
Military Location: Okinawa California National Guard Armory
Address:
8400 Okinawa Street
Sacramento, California 95828
Tel: 916-387-7405
Fax: 916-387-8309
Director: Capt Kel K. Thede
Email: kel.thede.1@ang.af.mil
Website: Pending

Elk Grove Unified

Elliott Ranch Elementary School
Florence Markofer Elementary School
John Reith Elementary School
Prairie Elementary School
Union House Elementary School

Folsom Cordova Unified

Cordova Villa Elementary School
Mather Heights Elementary School

Sacramento City Unified

Martin Luther King Junior School

COLORADO

COLORADO SPRINGS

STARBASE Peterson Air Force Base

Service Component: Air Force
Military Location: Peterson Air Force Base
Address:
710 Loring Street
Colorado Springs, Colorado 80914
Tel: 719-556-9500
Fax: 719-556-9538
Director: Patty Smathers
Email: patricia.smathers.1.ctr@us.af.mil
Website: None

Colorado Springs School District Eleven

Christa McAuliffe Elementary At Cimarron Hills
Helen Hunt Elementary School
James Monroe Elementary School
Mark Twain Elementary School

Thomas A. Edison Elementary School
Will Rogers Elementary School

CONNECTICUT

HARTFORD

STARBASE Connecticut - Windsor Locks*

Service Component: National Guard
Military Location: Bradley Air National Guard Base, Windsor Locks
Readiness Center
Address:
85 Light Lane
Windsor Locks, Connecticut 06096
Tel: 860-292-4678
Fax: None
Director: Melissa Vanek
Email: mvaneck@starbase-ct.com
Website: www.starbase-ct.com

East Hartford Public Schools

Anna E. Norris

Franklin H. Mayberry School

Gov. William Pitkin School
Hockanum School
John A. Langford School
Joseph O. Goodwin School
O'Connell School
Robert J. O'Brien Stem Academy
Silver Lane School

* Indicates location, also coordinates a DoD STARBASE 2.0 Program

Sunset Ridge School
Woodland School

Harford Public School

Alfred E. Burr School
Jumoke Academy
R. J. Kinsella School Of Performing Arts

WATERBURY

STARBASE Connecticut - Waterbury

Service Component: National Guard
Military Location: Off-Base
Address:

750 Chase Parkway
Waterbury, Connecticut 06708

Tel: 203-575-8271

Fax: None

Director: Melissa Vanek

Email: mvanek@starbase-ct.com

Website: www.starbase-ct.com

Waterbury Parochial Schools

Our Lady Of Mount Carmel
Yeshiva K'tana School

Waterbury Private School

Children's Community School

Waterbury Public Schools

Bucks Hill Elementary School
Bunker Hill Elementary School
Carrington Elementary School
Chase Elementary School
Driggs Elementary School
Duggan Elementary School
Generali Elementary School
Gilmartin Elementary School
Hopeville Elementary School
Kingsbury Elementary School
Maloney Elementary School
Reed Elementary School
Regan Elementary School
Rotella Elementary School
Sprague Elementary School
Tinker Elementary School
Walsh Elementary School
Washington Elementary School
Wendell Cross Elementary School
Woodrow Wilson Elementary School

FLORIDA

JACKSONVILLE

STARBASE Florida

Service Component: National Guard
Military Location: 125th Fighter Wing Fang
Address:

14300 FANG Drive
Jacksonville, Florida 32218

Tel: 904-741-7320

Fax: 904-741-7324

Director: Greg Stritch

Email: gregory.stritch@ang.af.mil

Website: None

Duval County Public Schools

Andrew Robinson
Center Academy
Hendricks Avenue
Jacksonville Heights
John Love
Normandy Village
Oak Hill
Parkwood Heights
Pine Estates
Ruth Upson
Seacoast Charter Academy
Sonshine Academy
Southside Estates
Susie Tolbert
West Riverside

GEORGIA

MARIETTA

Peach State STARBASE

Service Component: National Guard
Military Location: Clay National Guard Center/
Dobbins Air Reserve Base
Address:

1484 Patrol Road
Dobbins ARB, Georgia 30069

Tel: 678-569-3568

Fax: None

Director: John Mckay

Email: john.e.mckay8.nfg@mail.mil

Website: www.facebook.com/peachstatestarbase

Cobb County School District

Harmony Leland Elementary School
Labelle Elementary School
Mableton Elementary School

Russell Elementary School
Tritt Elementary School

Homeschool Group

Forsyth County Christian Homeschool Group
Great Oak Academy

Marietta City Schools

Dunleith Elementary School
Hickory Hills Elementary School
Lockheed Elementary School
Sawyer Road Elementary School

Private School

Cumberland Christian Academy

SAVANNAH

STARBASE Savannah*

Service Component: Army
Military Location: Hunter Army Air Field
Address:
134 Macarthur Circle
Savannah, Georgia 31409
Tel: 912-315-3749
Fax: 912-315-3748
Director: Betty L. G. Morgan
Email: bmormicmou@aol.com
Website: savannahstarbase.weebly.com/index.html

Candler County

Metter Intermediate

Chatham County

Calvary Day
Charles Ellis
East Broad
Hubert Middle
Jacob G. Smith
Pulaski
Ramah Jr Academy
Savannah Christian Preparatory
Thunderbolt
Virginia Heard
West Chatham

Liberty County

Brittin Elementary
Diamond Elementary

WARNER ROBINS

STARBASE Robins*

Service Component: Air Force Reserve
Military Location: Robins Air Force Base
Address:
1842 Heritage Boulevard
Warner Robins, Georgia 31098
Tel: 478-926-1769
Fax: None
Director: Wesley Fondal, Jr.
Email: wesley@starbaserobins.org
Website: www.starbaserobins.org

Bibb School District

Alexander II Elementary
Bruce Elementary
Burghard Elementary
Jones Elementary
Porter Elementary
Vineville Academy

Houston School District

Centerville Elementary
Eagle Springs Elementary
Hilltop Elementary
Lindsey Elementary
Miller Elementary
Northside Elementary
Pearl Stephens Elementary
Quail Run Elementary
Russell Elementary
Shirley Hill's Elementary
Westside Elementary

Twiggs School District

Twiggs Co. Jeffersonville Elementary

HAWAII

KEAAU

STARBASE Hawaii - Big Island

Service Component: National Guard
Military Location: Keaau Armory
Address:
16-512 Volcano Highway
Keaau, Hawaii 96749
Tel: 808-982-4298
Fax: 808-982-4241
Director: Todd Friel
Email: starbasehi@aol.com
Website: None

Hilo Complex
Waiakea Elementary

Hilo Private School
Haili Christian School
St. Joseph School

Ka'u-Kea'au-Pahoa Complex
Kea'au Elementary
Keonepoko Elementary
Mt. View Elementary
Na'alehu Elementary
Pahala Elementary
Pahoa Elementary

Puna Charter School
Hawaii Academy Of Arts And Science
Ke Kula O Nawahiokalaniopu'u
Na Wai Ola Public Charter School
Volcano School Of Arts And Science

INDIANA

FORT WAYNE

STARBASE Indiana - Fort Wayne*

Service Component: National Guard
Military Location: 122 Fighter Wing
Address:

3005 W. Ferguson Road
Fort Wayne, Indiana 46809

Tel: 260-478-3702

Fax: None

Director: Scott Liebhauser

Email: scott@starbasein.org

Website: www.starbasein.org

Diocese Of Fort Wayne
Most Precious Blood School
Saint Aloysius School
Saint Joseph Hessen Cassel
St. Elizabeth Ann Seton
St. Joseph

East Allen County Schools
Heritage Elementary

Fort Wayne Community Schools
Bloomingdale Elementary
Glenwood Park Elementary
Indian Village Elementary
John S. Irwin Elementary School
Levan Scott Academy
Maplewood Elementary

South Wayne
Study Elementary
Washington Elementary
Weisser Park Elementary (Magnet)

Fort Wayne Lutheran Schools
Emmaus Lutheran School
Saint Paul's Lutheran School
Suburban Bethlehem Lutheran

Noble County Private School
Cornerstone Christian School

INDIANAPOLIS

STARBASE Indianapolis

Service Component: National Guard
Military Location: Joint Forces Headquarters, Indiana
Address:

2002 S. Holt Road
Indianapolis, Indiana 46241

Tel: 317-245-4047

Fax: 317-245-4049

Director: Scott Liebhauser

Email: scott@starbasein.org

Website: www.starbasein.org

Catholic School
Central Catholic School

Greenwood Community School Corporation
Northeast Elementary School
Southwest Elementary School
V. O. Isom Central Elementary School
Westwood Elementary School

Indianapolis Public Schools
Cold Spring School
Francis Scott Key School 103
Frederick Douglass School 19
George Washington Carver School 87
Merle Sidener Gifted Academy

Washington Township School
Greenbriar Elementary

* Indicates location, also coordinates a DoD STARBASE 2.0 Program

KANSAS

KANSAS CITY

STARBASE Kansas City

Service Component: National Guard
 Military Location: 2-137th Infantry Regiment
 Address:
 100 S. 20th Street
 Kansas City, Kansas 66102
 Tel: 913-279-7858
 Fax: 913-279-7859
 Director: Karen Whitacre
 Email: karen@kansasstarbase.org
 Website: www.kansasstarbase.org

Basehor Linwood School District

Basehor Intermediate School
 Glenwood Ridge Elementary School
 Linwood Elementary School

Blue Valley Schools

Timber Creek Elementary School

Easton Unified School District 449

Pleasant Ridge Elementary School

Kansas City Kansas Public Schools

New Chelsea Elementary School
 Parker Elementary School
 Stony Point North Elementary School
 Stony Point South Elementary School
 T.A. Edison Elementary School
 White Church Elementary School

Lawrence Public Schools

Pinckney Elementary School

Lansing Unified School District 469

Lansing Elementary School

Leavenworth Unified School District 453

Anthony Elementary School
 David Brewer Elementary School
 Henry Leavenworth Elementary School

Private School

John Paul II Catholic School
 Kansas City Christian School
 Shawnee Mission Christian School
 Xavier Catholic School

Shawnee Mission School District

Nieman Elementary School
 Pawnee Elementary School

Prairie Elementary School
 Sante Fe Trail Elementary School

MANHATTAN

STARBASE Manhattan

Service Component: National Guard
 Military Location: 130th Field Artillery Brigade
 Address:
 721 Levee Drive
 Manhattan, Kansas 66502
 Tel: 785-560-3525
 Fax: 785-539-7810
 Director: Rebecca Catlin
 Email: becky@kansasstarbase.org
 Website: www.kansasstarbase.org

Flint Hills Christian School

Flint Hills Christian School

Geary County Schools Unified School District 475

Franklin Elementary School
 Ft. Riley Elementary School
 Milford Elementary School
 Seitz Elementary School
 Sheridan Elementary School

Kaw Valley Unified School District 321

St. Marys Grade School

Manhattan-Ogden Unified School District 383

Amanda Arnold Elementary School
 Bluemont Elementary School
 Frank Bergman Elementary School
 Lee Elementary School
 Marlatt Elementary School
 Northview Elementary School
 Ogden Elementary School
 Theodore Roosevelt Elementary School
 Woodrow Wilson Elementary School

Mill Creek Valley Unified School District 329

Alma Grade School
 Maple Hill Grade School

Manhattan Catholic Schools

Manhattan Catholic Schools

Rock Creek Schools

Westmoreland Elementary School

St. John Lutheran School

St. John Lutheran

Unified School District 384 Blue Valley
Blue Valley Randolph Middle School

Unified School District 473 Public Schools
Chapman Elementary School

Unified School District 322 Onaga, Havensville, Wheaton
Onaga Elementary School

SALINA

STARBASE Salina

Service Component: National Guard

Military Location: Great Plains Joint Training Center

Address:

3010 Arnold Street

Salina, Kansas 67401

Tel: 785-822-6602

Fax: 785-822-6600

Director: Dixie Tipling

Email: dixie@kansasstarbase.org

Website: www.kansasstarbase.org

Abilene Unified School District 435
Garfield Upper Elementary School

Central Plains Unified School District 112
Wilson Schools

Chapman Unified School District 473
Blue Ridge Elementary School
Enterprise Elementary School

Clifton - Clyde Unified School District 224
Clifton - Clyde Middle School
Concordia Unified School District 333
Concordia Middle School

McPherson Unified School District 298
Lincoln Elementary School
Lincoln Elementary School

McPherson Unified School District 418
Eisenhower Elementary School
Roosevelt Elementary School
Washington Elementary School

Moundridge School District Unified School District 423
Moundridge Middle School

Private Schools

Elyria Christian School

Mcpherson Area Home Educators

Salina Christian Academy

Sylvan Unified School District 299
Lucas / Sylvan Elementary School

Salina Unified School District 305
Coronado Elementary School
Grace E. Stewart Elementary School
Sunset Elementary School
Heusner Elementary School
Meadowlark Ridge Elementary School

Smoky Valley Unified School District 400
Smoky Valley Middle School

Southern Cloud Unified School District 334
Miltonvale Elementary School
Glasco Grade School

Twin Valley Unified School District 240
Bennington Grade School
Tescott Elementary School

Unified School District 239 North Ottawa County Schools
Minneapolis Grade School

TOPEKA

STARBASE Topeka

Service Component: National Guard

Military Location: 190th Air Refueling Wing

Address:

5920 SE Coyote Drive

Topeka, Kansas 66619

Tel: 785-861-4709

Fax: 785-861-4127

Director: Jeff Gabriel

Email: jeff@kansasstarbase.org

Website: www.kansasstarbase.org

Archdiocese Of Kansas City Ks
Christ The King Elementary
St. Matthew Catholic School

Atchison County Community Schools Unified School District 377
Atchison County Elementary School

Auburn Washburn Unified School District 437
Auburn Elementary
Farley Elementary
Indian Hills Elementary
Pauline South Intermediate

Baldwin City Unified School District 348
Baldwin Elementary Intermediate Center

Burlingame Public School Unified School District 454
Burlingame Elementary

Central Heights Unified School District 288
Central Heights Elementary

Jefferson West Unified School District 340
Jefferson West Elementary School

Kaw Valley Unified School District 321
Rossville Elementary

Lyndon Unified School District 421
Lyndon Elementary

Mission Valley Unified School District 330
Mission Valley Elementary

Santa Fe Trail Unified School District 434
Carbondale Attendance Center

Seaman Unified School District 345
Logan Elementary
North Fairview Elementary

Topeka Public Schools Unified School District 501
Eisenhower Middle School
Mceachron Elementary
Whitson Elementary

Wamego Unified School District 320
West Elementary

WICHITA

STARBASE Wichita

Service Component: National Guard

Military Location: McConnell Air Force Base

Address:

52870 Jayhawk Drive

Wichita, Kansas 67221

Tel: 316-759-8911

Fax: 316-759-8915

Director: Aaron Santry

Email: aaron@kansasstarbase.org

Website: www.kansasstarbase.org

Andover Public Schools
Cottonwood Elementary School

Archdiocese Of Wichita
Blessed Sacrament Catholic School
Holy Cross Catholic School

Bluestem Public Schools
Bluestem Elementary

Burden Public Schools
Central Elementary

Circle Public Schools
Cheney Elementary
Circle Towanda Elementary

El Dorado Public Schools
Lincoln Elementary School
Skelly Elementary School

Halstead-Bentley Public Schools
Halstead Middle School

Haysville Public Schools
Oatville Elementary
Ruth Clark Elementary

Moundridge School District
Moundridge Elementary

Private Schools
Central Christian Academy
Holy Cross Lutheran School

Rose Hill Public Schools
Rose Hill Intermediate School

Wichita Public Schools
Adams Elementary
Allen Elementary
Bostic Traditional Magnet Elementary School
Buckner Performing Arts Magnet Elementary School
Gammon Elementary
L'ouverture Computer Technology Magnet Elementary School
McCollum Elementary
Mueller Aerospace And Engineering Discovery Magnet
Elementary School

LOUISIANA

BATON ROUGE

Bayou State STARBASE

Service Component: National Guard

Military Location: Off-Base

Address:

13770 Highway 77

Rosedale, Louisiana 70772

Tel: 225-238-0250

Fax: None

Director: John J Meche

Email: johnmeche@lpsb.education

Website: None

Iberville Parish

Crescent Elementary

Iberville Math And Science Academy East

BOSSIER CITY

STARBASE Louisiana*

Service Component: Air Force Reserve

Military Location: Barksdale Air Force Base

Address:

827 Twining Drive

Barksdale AFB, Louisiana 71110

Tel: 318-529-3521

Fax: 318-529-3631

Director: Kathy Brandon

Email: kathy.brandon.2.ctr@us.af.mil

Website: www.307bw.afrc.af.mil/units/starbaselouisiana.aspx

Bossier Parish Schools

Apollo Elementary

Benton Elementary

Bossier Elementary

Carrie Martin Elementary

Central Park Elementary

Curtis Elementary

Elm Grove Elementary

Kerr Elementary

Legacy Elementary

Meadowview Elementary

Plantation Park Elementary

Princeton Elementary

Stockwell Place Elementary

W. T. Lewis Elementary

Waller Elementary

Catholic Diocese Of Shreveport

St. John Berchmans Cathedral School

St. Joseph Catholic School

Caddo Parish Schools

Cherokee Park Elementary

Claiborne Fundamental Elementary

Creswell Elementary

Judson Fundamental Magnet

Keithville Elementary

Mooringsport Elementary

North Highlands Elementary

Oil City Environmental Science Magnet

Shreve Island Elementary

Southern Hills Elementary

Summer Grove Elementary

Private Schools

First Baptist Church School

Word Of God Academy

NEW ORLEANS

STARBASE Jackson Barracks

Service Component: National Guard

Military Location: National Guard Jackson Barracks

Address:

6400 Saint Claude Avenue

New Orleans, Louisiana 70117

Tel: 504-278-8440

Fax: 504-278-8537

Director: Lisa Calabresi

Email: lisa.m.calabresi.nfg@mail.mil

Website: None

Orleans Parish School District

Ben Franklin Elementary Mathematics And Science School

Dr. King Charter School

Edgar P. Harney Spirit Of Excellence Academy

Esperanza Charter School

Martin Behrman Charter School Academy Of Creative

Arts And Sciences

St. Paul Lutheran School

Orleans School District

Edward Hynes Charter School

Fannie C. Williams Charter School

James M. Singteton Charter School

McDonogh 42 Elementary Charter School

McDonogh 32 Literacy Charter School

St. Rita Catholic School

Plaquemines Parish School District

Belle Chasse Academy

St. Bernard Parish School District

Arabi Elementary

Lynn Oaks School

Our Lady Of Prompt Succor

* Indicates location, also coordinates a DoD STARBASE 2.0 Program

*PINEVILLE***Pelican State STARBASE***

Service Component: National Guard

Military Location: Camp Beauregard

Address:

609 F. Street

Pineville, Louisiana 71360

Tel: 318-290-5252

Fax: 318-290-5937

Director: Nancy B. Force

Email: nancy.l.brinkerhoffforce.nfg@mail.mil

Website: None

Association Of Christian Schools International (ACSI)

Grace Christian

Catholic Diocese

Our Lady Of Prompt Succor

Sacred Heart

St. Francis Cabrini School

Grant Parish

Colfax Elementary

Pollock Elementary

South Grant Elementary

Rapides Parish

Acadian Elementary

Alma Redwine Elementary

Carter C. Raymond

D.F. Huddle Elementary

Glenmora School

Hadnot-Hayes Stem

Julius Patrick Elementary

L. S. Rugg Elementary

Lessie Moore Elementary

Mabel Brasher Elementary

Martin Park Elementary

North Bayourapides Elementary

Pineville Elementary

Plainview High School

Poland Jr. High

W. O. Hall

MASSACHUSETTS*BEDFORD***STARBASE Hanscom**

Service Component: Air Force

Military Location: Hanscom Air Force Base

Address:

98 Barksdale Street

Hanscom AFB, Massachusetts 01730

Tel: 781-862-4015

Fax: 781-862-4016

Director: Peter Holden Phd

Email: pholden@mass-starbase.org

Website: www.mass-starbase.org

Ayer-Shirley Regional School District

Lura A. White School

Page-Hilltop School

Boston Public Schools

Nathan Hale School

Sarah Greenwood School

Fitchburg Public Schools

Arthur M. Longsjo Jr. Middle School

Haverhill Public Schools

Dr. AB Consentino Middle School

Leominster Public Schools

Fall Brook Elementary School

Francis Drake Elementary School

Johnny Appleseed Elementary School

Northwest Elementary School

Lincoln Public Schools

Hanscom Middle School

Malden Public Schools

Linden Steam Academy

MICHIGAN

ALPENA

STARBASE Alpena

Service Component: National Guard
 Military Location: Alpena Combat Readiness Training Center
 Address:
 5884 A Street
 Alpena, Michigan 49707
 Tel: 989-354-6332
 Fax: 989-354-6353
 Director: Steven Tezak
 Email: stezak@starbasealpena.org
 Website: www.starbasealpena.org

Alcona Community Schools
 Alcona Elementary School

Alpena Public Schools
 Besser Elementary School
 Ella M. White School
 Hinks School
 Lincoln Community School
 Sanborn School
 Wilson Community School

Bingham Arts Academy
 Bingham Arts Academy

Hillman Community Schools
 Hillman Elementary School

Posen Consolidated School District No. 9
 Posen Elementary School

Private Schools
 All Saints Catholic School
 Cooperative Of Alpena-Area Christian Homeschoolers
 Immanuel Lutheran School
 Saint John Lutheran School
 Seventh-Day Adventist Elementary School Of Alpena

Rogers City Area Schools
 Rogers City Elementary School

BATTLE CREEK

STARBASE Battle Creek*

Service Component: National Guard
 Military Location: 110th ATKW Battle Creek National Guard
 Address:
 3595 Mustang Avenue
 Battle Creek ANG Base, Michigan 49037
 Tel: 269-969-3219
 Fax: 269-969-3251
 Director: Bruce Medaugh
 Email: bmedaugh@starbasebattlecreek.org
 Website: None

Albion Public Schools
 Altec

Battle Creek Public Schools
 Franklin Elementary
 Fremont Elementary
 Urbandale Elementary School
 Valley View Elementary
 Venona Elementary

Bellevue Public Schools
 Bellevue Elementary

Colon Public Schools
 Colon Elementary

Delton Kellogg Public Schools
 Delton Kellogg Middle School

Hastings Community Schools
 Central Elementary School
 Northeastern Elementary
 Southeastern Elementary
 Star Elementary

Lakewood Public Schools
 Clarksville Elementary
 Sunfield Elementary
 West Elementary
 Woodland Elementary

Mar Lee School
 Mar Lee

Maple Valley Schools
 Fuller Street Elementary

Parchment Public Schools
 Northwood Elementary

Pennfield Schools
 Dunlap Elementary

* Indicates location, also coordinates a DoD STARBASE 2.0 Program

Thornapple Kellogg Public Schools
Page Elementary

Three Rivers Community Schools
Park Elementary

MOUNT CLEMENS

STARBASE One*

Service Component: National Guard
Military Location: Selfridge National Guard Base
Address:
27310 D Street
Selfridge ANGB, Michigan 48045
Tel: 586-239-4884
Fax: 586-239-5663
Director: Rick Simms
Email: rsimms@starbaseone.org
Website: www.starbaseone.org

Anchor Bay Public Schools
Ashley Elementary School
Great Oaks Elementary School
Lottie Elementary School
Maconce Elementary School
Naldrett Elementary School
Sugarbush Elementary School

Armada Public Schools
Krause Later Elementary School

Charter - Detroit
Allen Academy
Plymouth Educational Center

Charter - Centerline
Michigan Math & Science Academy

Charter - New Haven
Merritt Academy

Detroit Public Schools
Bennett Elementary School
Carver Stem Academy
Chrysler Elementary School
Clippert Academy
Davison Elementary School

Lamphere Public Schools
Hiller Elementary School

L'anse Creuse Public Schools
Donald J. Yacks Elementary School
Emma V. Lobbstaël Elementary School
Francis S. Higgins Elementary School

Joseph M. Carkenord Elementary School
South River Elementary School

New Haven Community Schools
Endeavour Elementary School
New Haven Elementary School

Mt. Clemens Public Schools
Seminole Academy

Private School - Clinton Twp
Trinity Lutheran School

Private School - St. Clair Shores
St. Germaine Catholic School

Richmond Community Schools
Richmond Middle School

MINNESOTA

ST. PAUL

STARBASE Minnesota*

Service Component: National Guard
Military Location: 133rd Airlift Wing
Address:
659 Mustang Avenue
St. Paul, Minnesota 55111
Tel: 612-713-2530
Fax: 612-713-2540
Director: Kim Van Wie
Email: kvanwie@starbasemn.org
Website: www.starbasemn.org

Anoka-Hennepin Public Schools
University Avenue School Aces

Community Of Saints
Community Of Saints

Hopkins Public Schools
Gatewood Elementary
Meadowbrook Elementary

Minneapolis Public Schools
Bryn Mawr Community School
Cityview
Emerson Silc (Spanish Immersion Learning Center)
Jefferson Community School
Lake Nokomis - Keewaydin
Loring
Pillsbury Elementary

* Indicates location, also coordinates a DoD STARBASE 2.0 Program

North St. Paul-Maplewood-Oakdale Public Schools

Carver Elementary
 Cowern Elementary
 Oakdale Elementary
 Skyview Elementary
 Weaver Elementary

Private Schools

Frassati Catholic Academy
 Maternity Of Mary - St. Andrew
 Risen Christ Catholic School
 St. Jerome School
 St. John The Baptist
 St. Rose Of Lima Catholic School

Rosemount-Apple Valley-Eagan Public Schools

Cedar Park Stem School
 Westview Elementary

St. Paul Charter School

Achieve Language Academy
 Community Of Peace Academy

St. Paul Public Schools

Battle Creek Elementary
 Como Park Elementary School
 Farnsworth Aerospace Elementary Magnet School 5-8
 Farnsworth Aerospace Elementary Magnet School Pre K-4
 Frost Lake Elementary
 Galtier
 Phalen Lake Hmong Studies Magnet

MONTANA***GREAT FALLS*****STARBASE Great Falls**

Service Component: National Guard
 Military Location: Montana National Guard 120th Airlift Wing
 Address:
 2800 Airport Avenue B
 Great Falls, Montana 59404
 Tel: 406-791-0806
 Fax: 406-791-0339
 Director: Wendy Fechter
 Email: wendyfechter@mt.gov
 Website: None

Centerville Public School District

Centerville Elementary School

Great Falls Public School District

Chief Joseph Elementary School

Lewis & Clark Elementary School
 Lincoln Elementary School
 Longfellow Elementary School
 Loy Elementary School
 Meadowlark Elementary School
 Morningside Elementary School
 Mountain View Elementary School
 Riverview Elementary School
 Roosevelt Elementary School
 Sacajawea Elementary School District
 Sunnyside Elementary School
 Valley View Elementary School
 West Elementary School
 Whittier Elementary School

Highwood Public School District

Highwood Elementary School

Private Schools

Foothills Community Christian School
 Holy Spirit Catholic School

HELENA**STARBASE Fort Harrison**

Service Component: National Guard
 Military Location: Fort Harrison National Guard
 Address:
 1956 Mt Majo Street
 Fort Harrison, Montana 59636
 Tel: 406-324-3727
 Fax: 406-324-3735
 Director: Wendy Fechter
 Email: wendyfechter@mt.gov
 Website: None

East Helena Public Schools

Robert H. Radley Elementary

Helena Public Schools

Broadwater Elementary School
 Central Elementary School
 Four Georgians Elementary School
 Hawthorne Elementary School
 Kessler Elementary School
 Rossiter Elementary School

NEVADA

LAS VEGAS

STARBASE Nellis

Service Component: Air Force Reserve

Military Location: Nellis Air Force Base

Address:

2841 Kinley Drive, Building 1619, Nellis AFB

Las Vegas, Nevada 89191

Tel: 702-575-3837

Fax: None

Director: Myles Judd

Email: mjudd@starbasenellis.com

Website: none

Clark County

Joseph Neal

Lomie Heard

Manch

Moapa Indian Reservation

Ute V. Perkins

Vail Pittman

NEW MEXICO

ALBUQUERQUE

New Mexico STARBASE La Luz*

Service Component: Air Force

Military Location: Kirtland Air Force Base

Address:

1401 Maxwell Street SE,

Albuquerque, New Mexico 87117

Tel: 505-846-8042

Fax: 505-846-8932

Director: Ronda Cole

Email: ronda.cole.ctr@us.af.mil

Website: www.afrlnewmexico.com/afrl-la-luz-academy

21st Century Public Academy - Charter School

21st Century Public Academy

Albuquerque Public Schools

Chaparral Elementary School

Dolores Gonzales Elementary School

East San Jose Elementary School

Emerson Elementary School

Lowell Elementary School

North Star Elementary School

Painted Sky Elementary School

Petroglyph Elementary School

Sandia Base Elementary School

Archdiocese of Santa Fe

Our Lady of the Assumption Catholic School

Christ Lutheran Church & School

Christ Lutheran Church & School

Eastern Navajo Education Line Office School District

Baca/Dlo'ay Azhi Community School

Grants-Cibola County Schools

Mesa View Elementary School

Hope Christian Schools

Hope Christian Elementary School

Los Lunas Public Schools

Peralta Elementary School

Sundance Elementary School

Magdalena Municipal Schools

Magdalena Elementary School

Moriarty-Edgewood Schools

Moriarty Elementary School

Seven Bar Elementary School

Seven Bar Elementary School

South Mountain Elementary School

South Mountain Elementary School

Wherry Elementary School

Wherry Elementary School

NORTH CAROLINA

CHARLOTTE

STARBASE Charlotte

Service Component: National Guard

Military Location: National Guard 145th Airlift Wing

Address:

4930 Minuteman Way

Charlotte, North Carolina 28208

Tel: 704-398-4819

Fax: 704-398-4822

Director: Barbara Miller

Email: barbara.h.miller6.ctr@mail.mil

Website: None

Charlotte-Mecklenburg Schools

Barringer Academic Center

Devonshire Elementary School

Highland Renaissance Academy

Idlewild Elementary School

* Indicates location, also coordinates a DoD STARBASE 2.0 Program

John M. Morehead STEM Academy
Long Creek Elementary School
Sedgefield Elementary School
Torrence Creek Elementary School

Elkin City Schools

Elkin Elementary School

Lincoln Charter School District

Lincoln Charter School

Lincoln County School System

Kiser Intermediate School
Rock Springs Elementary School
St. James Elementary School

Madison County Schools

Mars Hill Elementary School

Polk County Schools

Polk Central Elementary School

Union County School System

Rea View Elementary

Thomasville City Schools

Liberty Drive Elementary School

KURE BEACH

STARBASE Ft. Fisher

Service Component: National Guard
Military Location: North Carolina National Guard Training Center
Address:

116 Air Force Way
Kure Beach, North Carolina 28449

Tel: 910-251-7333, #5, #1

Fax: None

Director: Barbara Miller

Email: barbara.h.miller6.ctr@mail.mil

Website: None

Brunswick

Jessie Mae Monroe Elementary

Lincoln

Kiser Intermediate School

Mecklenburg

John M. Morehead STEM Academy

New Hanover County Schools

Bradley Creek Elementary School
Carolina Beach Elementary School
Castle Hayne Elementary School

Codington Elementary School
College Park Elementary
Eaton Elementary School
Forest Hills Elementary School
John J. Blair Elementary School
Mary C. Williams Elementary
Murrayville Elementary School
Pine Valley Elementary School
Rachel Freeman School of Engineering

NORTH DAKOTA

MINOT

STARBASE North Dakota

Service Component: Air Force

Military Location: Minot Air Force Base

Address:

101 C Street

Minot AFB, North Dakota 58704

Tel: 701-727-3439

Fax: None

Director: Jenica R. Swenson

Email: jenica.swenson@minot.k12.nd.us

Website: www.minot.k12.nd.us/group/02f6f3d8-95ce-42dd-aae7-ad9038d43a1d

Minot Public Schools

Bel Air

Bell

Dakota

Edison

Lewis & Clark

Longfellow

McKinley

North Plains

Perkett

Roosevelt

Sunnyside

Washington

OHIO

*DAYTON***STARBASE Wright-Patt***

Service Component: Air Force

Military Location: Wright-Patterson Air Force Base

Address:

156 Spinning Road

Dayton, Ohio 45433

Tel: 937-938-4859

Fax: 937-904-8033

Director: Daniel Andrews

Email: daniel.andrews.1@us.af.mil

Website: edoutreach.wpafb.af.mil/starbase/index.html

Beavercreek City Schools

Parkwood Elementary

Dayton Public Schools

Kiser Pre K-8 Elementary

Westwood Pre K-9 School

World Of Wonder Elementary

Wright Brothers Pre K-8 School

Fairborn Intermediate School

Fairborn City Schools

Huber Heights City Schools

Charles Huber Elementary School

Monticello Elementary

Rushmore Elementary School

Valley Forge Elementary School

Wright Brothers Elementary School

Jefferson Township Local Schools

Blairwood Elementary School

Kettering City Schools

Beavertown Elementary School

Kettering Middle School

Mad River Local Schools

Mad River Middle School

Spinning Hills Middle School

Miamisburg City Schools

Miamisburg Middle School

New Lebanon Local Schools

Dixie Middle School

Valley View Local Schools

Valley View Junior High School

Vandalia-Butler Schools

Morton Middle School

Wright State University

Dayton Regional STEM School

Xenia Community Schools

Arrowood Elementary School

Cox Elementary School

McKinley Elementary School

Shawnee Elementary School

Tecumseh Elementary School

Yellow Springs Village Schools

Mills Lawn Elementary School

OKLAHOMA

*OKLAHOMA CITY***STARBASE Oklahoma - Oklahoma City***

Service Component: National Guard

Military Location: Tinker Air Force Base

Address:

3001 S. Douglas Boulevard

Oklahoma City, Oklahoma 73145

Tel: 918-833-7757

Fax: 918-833-7769

Director: Pamela Kirk

Email: pamela@starbaseok.org

Website: www.dodstarbase.org

Arapaho/ Butler Public Schools

Arapaho/Butler Elementary School

Boone-Apache Public Schools

Boone-Apache Elementary School

Canute Public Schools

Canute Elementary School

Choctaw-Nicoma Park Schools

Choctaw Elementary School

James Griffith Intermediate School

Nacoma Park Intermediate School

Westfall Elementary School

Crutcho Public Schools

Crutcho Elementary School

Cyril Public Schools

Cyril Elementary School

* Indicates location, also coordinates a DoD STARBASE 2.0 Program

Duncan Public Schools

Horace Mann Elementary School

Fletcher Public Schools

Fletcher Elementary School

Flower Mound Public Schools

Flower Mound Elementary School

Empire Public Schools

Empire Elementary School

Erick Public Schools

Erick Elementary School

Hammon Public Schools

Hammon Elementary School

Indiahoma Public Schools

Indiahoma Elementary School

Lawton Public Schools

Almor West Elementary School
 Crosby Park Elementary School
 Eisenhower Elementary School
 Geronimo Road Elementary School
 Hugh Bish Elementary School
 John Adams Elementary School
 Lincoln Elementary School
 Mark Twain Elementary School
 Park Lane Elementary School
 Pat Henry Elementary School
 Pioneer Park Elementary School
 Ridgecrest Elementary School
 Sheridan Road Elementary School
 Sullivan Village Elementary School
 Swinney Elementary School
 Washington Elementary School
 Whittier Elementary School
 Wilson Elementary School
 Leedey Public Schools
 Leedey Elementary School

Merritt Public Schools

Merritt Elementary School

Mid-Del Public Schools

Schwartz Elementary School

Millwood Public Schools

Millwood Arts Academy Middle School
 Millwood Middle School

Mountain View-Gotebo Public Schools

Mountain View-Gotebo Elementary School

Oklahoma City Public Schools

Sequoyah Elementary School

Private Schools

Bishop John Carroll Catholic School
 Lawton Academy of Arts & Sciences
 Mercy Elementary School
 St. Mary's Catholic School
 St. Philip Neri Catholic School
 Trinity Christian Academy

Sentinal Public Schools

McMurray Elementary School

Sweetwater Public Schools

Sweetwater Elementary School

Thomas Fay Custer Schools

Thomas Fay Custer Elementary School

*TULSA***STARBASE Oklahoma – Tulsa***

Service Component: National Guard

Military Location: Tulsa National Guard Base

Address:

9131 E. Viper Street
 Tulsa, Oklahoma 74115

Tel: 918-833-7757

Fax: 918-833-7769

Director: Pamela Kirk

Email: pamela@starbaseok.orgWebsite: www.dodstarbase.org*Anderson Public Schools*

Anderson Elementary School

Avant Public Schools

Avant Elementary School

Caney Valley Public Schools

Caney Valley Elementary School

Owasso Public Schools

Barnes Elementary School
 Mills Elementary School
 Stone Canyon Elementary School

Private Schools

All Saints Catholic School
 Home School
 Rejoice Christian Elementary School
 St. John's Catholic School
 St. Joseph's Catholic School
 Sts. Peter & Paul Catholic School

* Indicates location, also coordinates a DoD STARBASE 2.0 Program

Pryor Public Schools

Jefferson Elementary School

Sequoyah Schools

Sequoyah School

Tulsa National Guard Base

Tech Kids Summer Camp

Tulsa Public Schools

Marshall Elementary School

McClure Elementary School

Peary Elementary School

Walt Whitman Elementary School

Wright Elementary School

Union Public Schools

Union Public Schools Johnson O'Malley Program

Verdigris Public Schools

Verdigris Upper Elementary School

OREGON

*KLAMATH FALLS***STARBASE Kingsley***

Service Component: National Guard

Military Location: Kingsley Field National Guard Base

Address:

302 Bong Street, Suite 19

Klamath Falls, Oregon 97603

Tel: 541-885-6472

Fax: None

Director: Denise Kortess

Email: denisekortess@yahoo.com

Website: None

Butte Valley Unified School District

Butte Valley Elementary School

Klamath County School District

Bonanza Elementary School

Chiloquin Elementary School

Ferguson Elementary School

Henley Elementary School

Keno Elementary School

Peterson Elementary School

Shasta Elementary School

Stearns Elementary School

Klamath Falls City Schools

Conger Elementary School

Mills Elementary School

Pelican Elementary School

Roosevelt Elementary School

Private Schools

Hosanna Christian Academy

New Horizons Christian Fellowship School

Triad School

Tulelake Basin Joint Unified School District

Tulelake Basin Elementary School

PORTLAND**STARBASE Portland**

Service Component: National Guard

Military Location: Portland National Guard

Address:

6801 NE Cornfoot Road

Portland, Oregon 97218

Tel: 503-972-8630

Fax: None

Director: Denise Kortess

Email: starbaseportland@gmail.com

Website: None

Beaverton

Chehalem Elementary

McKay Elementary

Vose Elementary

Canby

Lee Elementary

Portland Public Schools

Astor Elementary

Cesar Chavez

Creston Elementary

Faubion Elementary

Harrison Park

Jason Lee Elementary

Rosa Parks

Scott Elementary

Sitton Elementary

Vernon Elementary

Woodlawn Elementary

Reynolds

Alder Elementary

Wilkes Elementary

* Indicates location, also coordinates a DoD STARBASE 2.0 Program

PUERTO RICO

CAROLINA

STARBASE Puerto Rico

Service Component: National Guard
 Military Location: 156AW Muniz ANG Base
 Address:
 200 Jose A. Tony Santana Avenue.
 Carolina, Puerto Rico 00979
 Tel: 787-253-5100 X-2539502
 Fax: 787-253-2513
 Director: Urbano Ayala
 Email: urbano.starbasepr@gmail.com
 Website: None

Aguadilla

Liceo Aguadillano

Bayamón

Cristobal Colon

Carolina

PRNG dependants Summer Camp
 Canóvanas
 Félix Sánchez Cruz

Corozal

Fidel López Colón

Florida

Ricardo Rodríguez

Guaynabo

El Conquistador

Gurabo

Luis Muñoz Grillo
 SU Sandalio Marcano

Las Piedras

Antonio Rosa Guzmán
 Antonio Rosa Guzmán
 Manuel Surrillo Sánchez
 Matías Rivera

San Juan

Liga Atlética Policiaca Summer Camp
 Rafael Lopez Sicardo

Vega Alta

Alfonso López García

Yabucoa

María T. Delgado
 Quebrada Honda
 Quemados

Yauco

Lena M. Franceschi Irizarry

SOUTH CAROLINA

BEAUFORT

STARBASE MCAS Beaufort

Service Component: Marine Corps
 Military Location: Marine Corps Air Station Beaufort, South Carolina
 Address:
 STARBASE MCAS Beaufort
 Beaufort, South Carolina 29904
 Tel: 843-524-1320
 Fax: 843-524-1322
 Director: Robert W. Semmler
 Email: semmlerrw@gmail.com
 Website: None

Beaufort County School District

Beaufort Elementary School
 Beaufort Elementary School Academy of Math, Engineering
 and Science
 Broad River Elementary School
 Hilton Head Island Elementary School
 Joesph S. Shanklin Elementary School
 Lady's Island Elementary School
 Mossy Oaks Elementary School
 Okatie Elementary School
 Port Royal Elementary School
 Pritchardville Elementary School
 Riverview Charter School
 Robert Smalls International Academy
 Saint Helena Elementary School
 Whale Branch Middle School

Catholic

St. Gregory the Great Catholic School
 St. Peters Catholic School

Private School

Beaufort Academy
 Bridges Preparatory School
 Holy Trinity Classical Christian School
 Low Country Home School
 Thomas Heyward Academy

South Carolina/Fort Stewart/DoDDS-Cuba District DDESS
 Bolden Elementary School

EASTOVER

STARBASE Swamp Fox

Service Component: National Guard
 Military Location: McEntire Joint National Guard Base
 Address:
 1325 South Carolina Road
 Eastover, South Carolina 29044
 Tel: 803-647-8126
 Fax: 803-647-8195
 Director: John M. "Coach" Motley, Jr.
 Email: john.m.motley.nfg@mail.mil
 Website: www.scstarbase.org

Calhoun County Public Schools
 Sandy Run K-8 School

Diocese of Charleston
 St. John Neumann Catholic School
 St. Joseph Catholic School
 St. Peter's Catholic School

Lexington School District Two
 B. C. Grammar School

Lexington-Richland School District Five
 H. E. Corley Elementary School
 Irmo Elementary School
 Nursery Road Elementary School

Richland School District One
 A.C. Moore Elementary School
 Burnside Elementary School
 Carver-Lyon Elementary School
 Forest Heights Elementary School
 Gadsden Elementary School
 Hopkins Elementary School
 Horrell Hill Elementary School
 Millcreek Elementary School
 Webber Elementary School

Richland School District Two
 Catawba Trail Elementary School
 Forest Lake Elementary School

Sumter School District
 F. J. Delaine Elementary School
 Willow Drive

SOUTH DAKOTA

RAPID CITY

STARBASE NOVA Honor

Service Component: National Guard
 Military Location: Camp Rapid
 Address:
 2823 West Main Street,
 Camp Rapid, Building 801
 Rapid City, South Dakota 57702
 Tel: 605-737-6083
 Fax: None
 Director: Polly Unterbrunner
 Email: polly@sdstarbase.org
 Website: sdstarbase.org

Custer School District 16-1
 Custer Elementary School
 Hermosa Elementary
 Eagle Butte School District 20-1
 Cheyenne Eagle Butte Elementary School

Hot Springs School District 23-2
 Hot Springs Elementary

Kadoka Area School District
 Kadoka Elementary

Meade School District 46-1
 Piedmont Valley Elementary School
 Sturgis Elementary
 Whitewood Elementary School

New Underwood School District 51-3
 New Underwood Elementary

Pierre Indian Learning Center
 Pierre Indian Learning Center

Private School on Pine Ridge Indian Reservation
 Red Cloud Indian School

Shannon County School District 65-1
 Batesland Elementary
 Wolf Creek Elementary School

St. Joseph's Indian School
 St. Joseph's Indian School

Stanley County Public Schools 57-1
 Stanley County Elementary

STARBASE Rapid City

Service Component: National Guard

Military Location: Camp Rapid

Address:

2823 West Main Street,
Camp Rapid, Building 801

Rapid City, South Dakota 57702

Tel: 605-737-6803

Fax: None

Director: Polly Unterbrunner

Email: polly@sdstarbase.org

Website: sdstarbase.org

Douglas School District

Vandenberg Elementary School

*Rapid City Area Schools*Canyon Lake Elementary School
General Beadle Elementary School
Horace Mann Elementary School
Knollwood Heights Elementary School
Rapid Valley Elementary School
Robbinsdale Elementary School
South Park Elementary School
Valley View Elementary School*SIOUX FALLS***STARBASE NOVA Courage**

Service Component: National Guard

Military Location: South Dakota National Guard

Address:

801 W. National Guard Drive
Sioux Falls, South Dakota 57104

Tel: 605-367-4930

Fax: 605-367-4926

Director: Vonny Revell

Email: vonny@sdstarbase.org

Website: www.sdstarbase.org

Andes School District

Andes Central School

Armour School District

Armour Elementary School

Big Stone School District

Big Stone Elementary School

Day County School District

Enemy Swim Day School

Huron School District

Huron Elementary Schools

Sisseton School District

New Effington Elementary School

Rosholt Elementary School

Sisseton Elementary School

Summit School District

Summit Elementary School

Wagner School District

Wagner Community School

Waubay School District

Waubay School

Webster School District

Webster Elementary School

Wilmont School District

Wilmont Elementary School

Tiospa Zina Tribal School

Tiospa Zina Tribal School

STARBASE Sioux Falls*

Service Component: National Guard

Military Location: South Dakota National Guard

Address:

801 W. National Guard Drive
Sioux Falls, South Dakota 57104

Tel: 605-367-4930

Fax: 605-367-4926

Director: Vonny Revell

Email: vonny@sdstarbase.org

Website: www.sdstarbase.org

Garretson School District

Garretson Elementary

*Sioux Falls School District*All City Elementary
Anne Sullivan Elementary
Eugene Field Elementary
Garfield Elementary School
Hawthorne Elementary School
Hayward Elementary School
Horace Mann Elementary
Laura B. Anderson Elementary School
Longfellow Elementary School
Lowell Elementary School
Renberg Elementary School
Robert Frost Elementary School
Sioux Falls Lutheran School
St. Lambert Elementary School
Terry Redlin Elementary School

* Indicates location, also coordinates a DoD STARBASE 2.0 Program

TEXAS

AUSTIN

Texas STARBASE-Austin

Service Component: National Guard

Military Location: Camp Mabry

Address:

2200 W. 25th Street

Austin, Texas 78703

Tel: 512-782-3554

Fax: None

Director: Patrick Yonnone

Email: patrick@starbaseaustin.org

Website: starbaseaustin.org

Austin Independent School District

Davis Elementary

McBee Elementary

Norman Elementary

Sunset Valley Elementary

Travis Heights Elementary School

Del Valle Independent School District

Creedmoor Elementary

Del Valle Elementary

Hillcrest Elementary

Hornsby-Dunlap

Popham Elementary

Smith Elementary

Hays Cindependent School District

Fuente Elementary School

Science Hall Elementary School

Tobias Elementary School

Hutto Independent School District

Hutto Elementary

Nadine Johnson Elementary

Private Schools

Our Savior Lutheran School

Redeemer Lutheran School

St. Austin Catholic School

St. Francis School

St. Ignatius Martyr Catholic School

St. Paul Lutheran School

St. Theresa's Catholic School

The Girl's School of Austin

HOUSTON

Texas STARBASE Houston*

Service Component: National Guard

Military Location: 147th Reconnaissance Wing, Ellington Field

Address:

14657 Sneider Street, Building #1055 & 1056

Houston, Texas 77034

Tel: 281-929-2034

Fax: 281-929-2036

Director: Loraine Guillen

Email: loraine.guillen@us.af.mil

Website: None

Galena Park Independent School District

Cimarron Elementary School

Cloverleaf Elementary School

Dr. Shirley J. Neeley Williamson Elementary

Galena Park Elementary

Green Valey Elementary School

Havard Elementary School

Jacinto City Elementary School

MacArthur Elementary

Normandy Crossing Elementary School

North Shore Elementary School

Purple Sage Elementary School

Pyburn Elementary School

Sam Houston Elementary School

Tice Elementary School

Woodlands Acres Elementary School

Galveston-Houston Dioceses

Our Lady of Lourdes Catholic School

St. Mary of the Purification Catholic School

St. Rose of Lima Catholic School

True Cross Catholic School

Home Schools

Faith Home School

Gulf Coast Christian Home School Scholars

Houston Independent School District

Cornelius Elementary School

George L. Sanchez Elementary School

James H. Law Elementary School

Leeona Pugh Elementary School

Park Place Elementary School

Pleasantville Elementary School

Valley West Elementary School

Humble Independent School District

Whispering Pines Elementary School

Pasadena Independent School District

Bailey Elementary School

Bobby Shaw Middle School

* Indicates location, also coordinates a DoD STARBASE 2.0 Program

Carter Lomax Middle School
 Dr. Dixie Melilo Middle School
 Earnesteen Milstead Middle School
 Fisher Elementary School
 L. F. Smith Elementary School
 Lonnie B. Keller Middle School
 Morris Middle School
 Williams Elementary School

Sheldon Independent School District
 Garrett Elementary School

SAN ANTONIO

STARBASE Kelly

Service Component: Air Force Reserve
 Military Location: JBSA-Lackland
 Address:
 203 Galaxy Road
 JBSA-Lackland, Texas 78236
 Tel: 210-925-3708
 Fax: 210-925-3702
 Director: Ronald N. Jackson
 Email: starbasekelly@gmail.com
 Website: None

Archdiocese of San Antonio Catholic Schools
 Mount Sacred Heart Catholic School
 St. Leo the Great Catholic School

Edgewood Independent School District
 Cisneros Elementary School
 Gardendale Elementary School
 Henry B. Gonzalez Elementary School
 Las Palmas Elementary School
 Loma Park Elementary School
 Roosevelt Elementary School
 Stafford Elementary School
 Winston Elementary School

Southwest Independent School District
 Elm Creek Elementary School
 Sky Harbour Elementary School

South San Antonio Independent School District
 Carrillo Elementary School
 Five Palms Elementary School
 Frank Madla Elementary School

UTAH

OGDEN

STARBASE Hill Screaming Eagles*

Service Component: Air Force
 Military Location: Hill Air Force Base
 Address:
 5731 E Avenue
 Hill AFB, Utah 84056
 Tel: 801-586-7494
 Fax: None
 Director: Frances Bradshaw
 Email: frances.bradshaw@starbasehill.com
 Website: www.starbasehill.com

Davis County School District
 Adelaide Elementary
 Antelope Elementary
 Crestview Elementary
 Doxey Elementary
 Eagle Bay Elementary
 Endeavour Elementary
 Heritage Elementary
 King Elementary
 Layton Elementary
 Lincoln Elementary
 Meadowbrook Elementary
 Sand Springs Elementary
 South Clearfield Elementary
 Sunset Elementary
 Tolman Elementary
 Washington Elementary
 West Point Elementary

VERMONT

RUTLAND

STARBASE Vermont - Rutland

Service Component: National Guard
 Military Location: Armed Forces Reserve Center
 Address:
 2143 Post Road
 Rutland, Vermont 05701
 Tel: 802-786-3820
 Fax: 802-786-3822
 Director: Dan Myers
 Email: dan@starbasevt.org
 Website: www.starbasevt.org

** Indicates location, also coordinates a DoD STARBASE 2.0 Program*

Addison Central Supervisory Union

Benson Village School
 Castleton Elementary School
 Orwell Village School
 Salisbury Community School
 Shoreham Elementary School

Rutland Central Supervisory Union

Rutland Town School
 Wardsboro Elementary
 West Rutland Central School
 Windham Elementary

Rutland City School District

Rutland Intermediate School

Rutland Diocese

Rutland Area Christian School
 Christ The King School

Rutland Northeast Supervisory Union

Barstow Elementary School
 Lothrop School
 Neshobe School

Rutland Northwest Supervisory Union

Poultney School
 Rochester School
 Stockbridge Central School

Rutland South Supervisory Union

Wallingford Elementary School

Southwest Vermont Supervisory Union

Shaftsbury Elementary

Windham Central Supervisory Union

Jamaica Village School

Windsor Southeast Supervisory Union

Alberts Bridge School
 Killington Elementary School
 Mount Holly Elementary
 Proctor Elementary
 Ripton Elementary School
 Wells Village School

Windsor Southwest Supervisory Union

Cavendish Town Elementary School

SOUTH BURLINGTON

STARBASE Vermont - South Burlington

Service Component: National Guard
 Military Location: Vermont National Guard
 Address:

62 NCO Drive
 South Burlington, Vermont 05403

Tel: 802-660-5201

Fax: 802-660-5940

Director: Dan Myers

Email: dan@starbasevt.org

Website: www.starbasevt.org

Addison Northeast Supervisory Union

Lincoln Community School

Addison Northwest Supervisory Union

Vergennes Elementary

Burlington Diocese

Christ The King School
 Saint Francis Xavier School
 Saint Michaels

Burlington School District

C. P. Smith School
 Integrated Arts Academy
 John J. Flynn Elementary

Franklin Central Supervisory Union

Saint Albans Town Educational Center

Franklin Northwest Supervisory Union

Swanton Central

Franklin West Supervisory Union

Bellows Free Academy Fairfax
 Fletcher Elementary

Grand Isle Supervisory Union

Folsom Education & Community Center
 Grand Isle School

Lamoille North Supervisory Union

Cambridge Elementary School

South Burlington School District

Orchard Elementary School

Washington Central Supervisory Union

East Montpelier Elementary School

Winooski School District

John F. Kennedy School

VIRGINIA

WINCHESTER

Winchester STARBASE Academy

Service Component: National Guard

Military Location: Virginia National Guard; 3rd Battalion; 116th Infantry Regiment

Address:

181 Pendleton Road

Winchester, Virginia 22602

Tel: 540-686-4964

Fax: None

Director: Susan Corrigan

Email: susan.b.corrigan.nfg@mail.mil

Website: starbasewinchester.webs.com

Clarke County Public Schools

D. G. Cooley Elementary

Frederick County Public Schools

Apple Pie Ridge Elementary

Bass-Hoover Elementary

Gainesboro Elementary

Greenwood Mill Elementary

Indian Hollow Elementary

Redbud Run Elementary

Independent

Randolph-Macon Academy

Reach Homeschool

Sacred Heart Academy

Winchester Public Schools

Frederick Douglass Elementary

Garland Quarles Elementary

Virginia Avenue Charlotte DeHart Elementary

Shenandoah County Public Schools

Signal Knob Middle School

WEST VIRGINIA

CHARLESTON

West Virginia STARBASE Academy

Service Component: National Guard

Military Location: McLaughlin ANGB

Address:

1679 Coonskin Drive

Charleston, West Virginia 25311

Tel: 304-341-6440

Fax: None

Director: Robin Barnette

Email: robin.d.barnette.nfg@mail.mil

Website: www.wvstarbase.org

Kanawha County

Alum Creek Elementary School

Anne Bailey Elementary School

Belle Elementary School

Bible Center Elementary School

Bridge Elementary School

Cedar Grove Elementary School

Central Elementary School

Chamberlain Elementary School

Chesapeake Elementary School

Clendenin Elementary School

Dunbar Elementary School

Edgewood Elementary School

Elk Center Elementary School

Grandview Elementary School

Holtz Elementary School

Kanawha City Elementary School

Kenna Elementary School

Mary Ingles Elementary School

Midland Trail Elementary School

Montrose Elementary School

Nitro Elementary School

Overbrook Elementary School

Pinch Elementary School

Richmond Elementary School

Ruffner Elementary School

Ruthlawn Elementary School

Sharon Dawes Elementary School

Shoals Elementary School

Weberwood Elementary School

Weimer Elementary School

*MARTINSBURG***STARBASE Martinsburg***

Service Component: National Guard

Military Location: 167th Airlift Wing

Address:

222 Sabre Jet Boulevard

Martinsburg, West Virginia 25405

Tel: 304-616-5501

Fax: 304-616-5478

Director: Sherra Triggs

Email: sherra.l.triggs.civ@mail.mil

Website: www.starbasemartinsburg.webs.com

Berkeley County Schools

Eagle School Intermediate

Faith Christian Academy

Mill Creek Intermediate

Mountain Ridge Intermediate

Orchard View Intermediate

Potomack Intermediate

St. Joseph School

Tomahawk Intermediate

Jefferson County Schools

C.W. Shipley Elementary

Ranson Elementary

T.A. Lowery Elementary

Wright Denny Intermediate

WISCONSIN

*MILWAUKEE***STARBASE Wisconsin**

Service Component: National Guard

Military Location: U.S. Army Reserve Center

Address:

5130 W. Silver Spring Drive

Milwaukee, Wisconsin 53218

Tel: 414-535-5786

Fax: None

Director: John W. Puttre

Email: jputtre@starbasewi.org

Website: www.starbasewi.org

Milwaukee Public Schools

Auer Elementary School

Browning Elementary School

Cass Street Elementary School

Congress Elementary School

Cooper Elementary School

Downtown Montessori

Early View Elementary School

Engleburg Elementary School

Fifty-third Street Elementary School

Grantosa Drive Elementary School

Hampton Elementary School

Hawthorne Elementary School

Hopkins-Lloyd Elementary School

Kilbourn Elementary School

Klug Elementary School

Manitoba Elementary School

Metcalf Elementary School

Milwaukee Spanish Immersion School

Neeskara Elementary School

Parkview Elementary School

Riley Elementary School

Samuel Clemens Elementary School

Sherman Elementary School

Stuart Elementary School

Townsend Elementary School

Walt Whitman Elementary School

Westside Elementary School

Zablocki Elementary School

WYOMING

*CHEYENNE***Wyoming STARBASE Academy***

Service Component: National Guard

Military Location: Wyoming National Guard

Address:

5410 Bishop Boulevard

Cheyenne, Wyoming 82009

Tel: 307-777-8191

Fax: 307-777-8190

Director: Barbara Marquer

Email: barbm@starbasewy.org

Website: starbase.wyo.gov

Laramie County School District #1

Afflerbach Elementary

Alta Vista Elementary

Anderson Elementary

Arp Elementary

Baggs Elementary

Bain Elementary

Buffalo Ridge Elementary

Cole Elementary

Davis Elementary

Dildine Elementary

Fairview Elementary

Freedom Elementary

Gilchrist Elementary

Goins Elementary

Hebard Elementary

* Indicates location, also coordinates a DoD STARBASE 2.0 Program

Henderson Elementary
Hobbs Elementary
Jessup Elementary
Miller Elementary
Pioneer Park Elementary
Poder Academy Charter School
Rossman Elementary
Saddle Ridge Elementary
Sunrise Elementary
Willadsen Elementary

Laramie County School District #2

Burns Elementary
Carpenter Elementary
Pine Bluffs Elementary

Private Schools

Noah Webster Christian Academy
St. Mary's Catholic School



“I am so happy that this program is available! As I’m sure you know, science takes a major back burner to Math and Reading in the classroom (even though it provides the context to make pure Math way more interesting). It’s hard to teach many of these topics in depth... Thanks for providing hands-on STEM experiences, and for the in-depth, rigorous content. Most of all, thanks for giving the kids things to think and wonder about for the future!”

Beth McKay, Teacher participating DoD STARBASE Topeka, Topeka, KS



For more information contact:

**Office of the Assistant Secretary of Defense for Manpower and Reserve Affairs (OASD/M&RA)
1500 Defense Pentagon
Washington, DC 20301-1500**

www.DoDSTARBASE.org