

2017 ANNUAL REPORT



OUTREACH =
invest. inspire.
ignite.



“DoD STARBASE is a terrific program that engages students in practical, hands-on applications of so many different areas of scientific study. It transforms mind-boggling complicated ideas into tangible and exciting experiments for fifth graders. Teams work on robotics, rocketry, cartography, physics, chemistry, and so much more. Our Military Intelligence personnel have really enjoyed meeting with students and sharing how STEM supports every area of their daily careers.”

— LT. COL. WILLIAM DETLEFSEN, HQ INDIANA NATIONAL GUARD, STARBASE INDIANA - INDIANAPOLIS

TABLE OF CONTENTS

INTRODUCTION

Vision and Mission Statements of DoD STARBASE.....	1
DoD STARBASE Locations	2
An Issue of National Importance & National Security - Addressing the Nation's Science, Technology, Engineering and Math (STEM) Challenges.....	4
A letter from DoD STARBASE Kansas Graduate, Erin Black Schmaderer.....	6
A letter from DoD STARBASE Sioux Falls Graduate, Cassandra Aegerter	8
A letter from Major General Glenn H. Curtis, The Adjutant General of Louisiana	10
A letter from Major General Matthew T. Quinn, The Adjutant General of Montana	11
A letter from Major General Robert E. Livingston, Jr., The Adjutant General of South Carolina	12
A letter from Major General James A. Hoyer, The Adjutant General of West Virginia.....	14
DoD STARBASE Launched at Goodfellow Air Force Base.....	16
A letter from Hastings Area School System (MI) Superintendent Carrie P. Duits, PhD	18
A letter from Darin Gray, USC Viterbi School of Engineering.....	19
A letter from Mad River School District (OH) Superintendent Chad Wyen	20
A letter from Redbud Run Elementary School (VA) Principal Joseph Strong.....	22
A letter from Indian Hollow Elementary School (VA) Principal Sharon Cooley.....	23
Bossier Parish School District Benefits From Their Long-Term Partnership with DoD STARBASE Louisiana	24
A letter from DoD STARBASE Oklahoma Graduate, Airman First Class (A1C) Andrew Pranger	26
A letter from DoD STARBASE Graduate Gazment Sosoli.....	28
STARBASE Connecticut 2.0 Program Addresses the Plight of the Chimney Swift Through FIRST LEGO League Competition	30
Wyoming DoD STARBASE Shares STEM Expertise With The Community In Unique Ways	32
NSTA TV Case Study Film on DoD STARBASE Robins	34
A letter from DoD STARBASE Indiana Board Advisor Walter O'Brien, Founder and CEO of Scorpion Computer Services and the Inspiration for CBS television show "Scorpion"	37
Changing Students' Outlook on STEM through Robotics: DoD STARBASE Robins (GA) and FIRST	38

2017 ASSESSMENT

Executive Summary.....	42
DoD STARBASE Program Overview.....	46
The Program Elements of DoD STARBASE	48
Volunteers and Military Support.....	52
Outreach.....	52
DoD STARBASE 2.0 Program	53
The DoD STARBASE Curriculum	56
Program Oversight.....	58
Fiscal Analysis.....	61
Student Assessment	62
Overview	62
Instrument Design	62
Study Logistics.....	63
Student Demographic Information	64
Students' Attitudinal Responses	66
Assessment of Student Knowledge and Skills.....	84
Participating Teacher Assessment.....	92

CONSIDERATIONS FOR THE 2018 PROGRAM YEAR	112
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APPENDICES	115
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GLOSSARY	139
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2017 DoD STARBASE DIRECTORY	145
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“The DoD STARBASE program brings out the best in the children. It is inspiring to see these students demonstrating such strong enthusiasm about learning. My colleagues and I feel privileged to be able to share our experiences with them!”

– CW4 KEN DYSON, GEORGIA ARMY NATIONAL GUARD,
PEACH STATE STARBASE



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 advanced technological requirements of the Department of Defense.

Mission Statement

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

DoD STARBASE Curriculum

Physics and Chemistry

- A. Motion and Force
- B. Fluid Mechanics
- C. Building Blocks of Matter

Energy

- A. Energy Fundamentals

Technology

- A. Current and Emerging Technologies
- B. Applying Technology

Engineering

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

Mathematics Operations and Applications

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

Science, Technology, Engineering and Mathematics (STEM) Careers

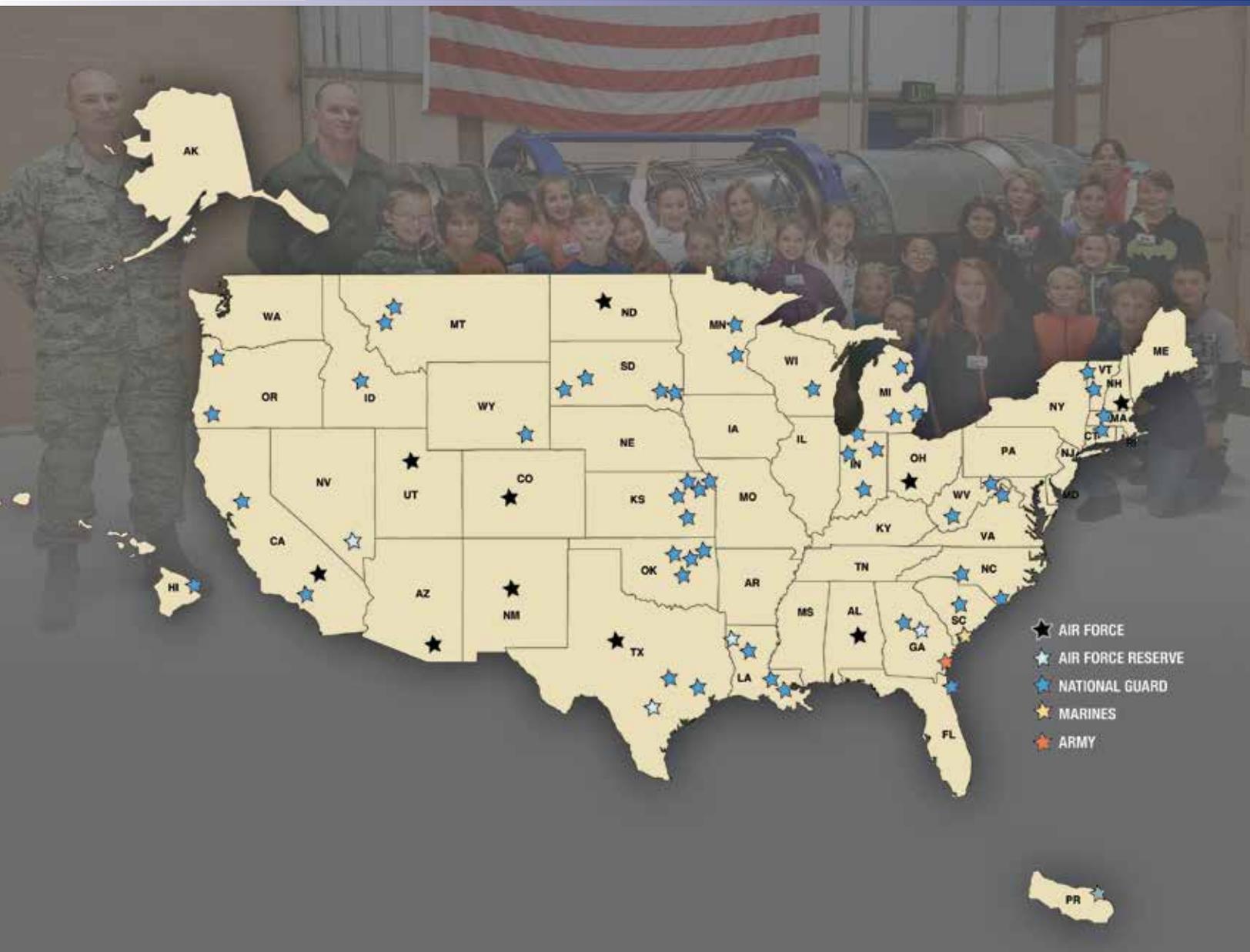
- A. STEM Careers on Military Facilities
- B. Personal Investigations



"It pleases me that the military is doing so much to help promote education among our youth. DoD STARBASE is a wonderful opportunity!"

— CINDY HALL, PARENT OF A STUDENT AT SYCAMORE ELEMENTARY SCHOOL, ATTENDING PEACH STATE STARBASE

DoD STARBASE AT A GLANCE



66

Number of DoD STARBASE locations in 33 states and one territory

72

Number of DoD STARBASE 2.0 Outreach programs in 22 states

1,110,590

Number of students since 1993

83,098

Number of students served in 2017

\$27,300,000

Program operating budget

\$359,000

Median operating cost per location

“At DoD STARBASE, I have enjoyed that we rarely are idly sitting and filling things out. I have enjoyed that we use a large variety of equipment that we don’t get to use at school. My experience at DoD STARBASE has been amazing and I would go back if I had the choice.”

– STUDENT AT BASS-HOOVER ELEMENTARY SCHOOL ATTENDING WINCHESTER STARBASE ACADEMY



AN ISSUE OF NATIONAL IMPORTANCE AND NATIONAL SECURITY

Addressing the Nation's Science, Technology, Engineering and Math (STEM) Challenges

STEM skills continue to be among the highest in demand in the American workforce in recent years and the foreseeable future. STEM underpins the Department of Defense's ability to defend the Nation and to assure the vitality of our Defense Industrial Base (DIB). The U.S. military, Homeland Security and the DIB face serious challenges in filling some of the best and most critical technical jobs in our country. 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 as a competitive civilian workforce or sustain a strong all volunteer military.

Engagement is part of the larger process of learning, and research supports that student engagement must occur in primary and secondary school youth education to inspire coursework and extracurricular activities to ignite and foster a desire to pursue STEM involvement.¹ It is a critical component for capturing the learner's interest and involvement and for inspiring further quest of knowledge, understanding, and potential commitment. To ensure a STEM-skilled workforce of the future positioned with the right competencies, the Federal Government has considerable assets that can engage youth and create pathways through their education, leading to the challenging STEM-related careers of tomorrow and to a "culture of STEM" in the public.²

DoD STARBASE is a premiere foundational educational outreach awareness and workforce development program that highlights STEM awareness as a core component, sponsored by the Office of the Assistant Secretary of Defense for Manpower and Reserve Affairs. At DoD STARBASE students engage in challenging "hands-on, minds-on" activities in STEM. DoD STARBASE excites students about STEM and introduces them to technological foundations grounded in computer science, such as coding, which is critical to the cyber domain in national security. Since its inception in 1993, DoD STARBASE continues to provide a proven curriculum and remarkable STEM experiences for students and teachers. The program provides students with 25 hours of stimulating experiences at National Guard, Marine, Air Force Reserve, Army and Air Force bases and facilities across the nation.

DoD STARBASE is one of the Department's primary outreach tools as it continues to support and contribute to the Department's STEM Goals: INSPIRE youth and community engagement in STEM education and outreach in the K-12 domain by supporting and enhancing student and educator participation in DoD-sponsored STEM events, and PROMOTE increased participation of underserved groups in STEM activities and education programs. The 2013 report from the Committee on STEM Education (CoSTEM) of the National Science and Technology Council noted that investing in STEM education and outreach is critical to the Nation and its economic future for the following reasons:

"I've had the pleasure of attending DoD STARBASE as a parent, as a principal and now as a teacher. I'm always amazed at the updates and changes you've made. You keep it exciting, motivating and up-to-date. This program really does get kids thinking about future careers."

— DEBRA WEBSTER, EDUCATOR AT BLUESTEM ELEMENTARY SCHOOL,
ATTENDING STARBASE WICHITA

¹Hossain, M., & G Robinson, M. (2012). *How to Motivate US Students to Pursue STEM (Science Technology, Engineering and Mathematics) Careers*. Online Submission.

²(Committee on STEM Education National Science and Technology Council, 2013)



- The demand for STEM professionals will exceed the expected supply over the next decade.
- Our K-12 education system and the students it produces are “middle of the pack” when evaluated in a group of 33 Organizations for Economic cooperation and Development (OECD) countries.
- Participation and achievement of underrepresented groups (women and minorities) is lower than desired.³

Many of the students attending a DoD STARBASE program have no prior exposure to the various opportunities the STEM field and military services have to offer. Students and their respective teachers are exposed to the technological environments and positive role models provided by military, industrial, and educational professionals, while exploring careers and observing STEM applications in the “real world”. In FY 2017, DoD STARBASE supported 2,952 schools in 396 school districts across the Nation and Puerto Rico. It is

an outstanding outreach program that strengthens the relationships between the military, community (including industrial partners) and school districts, as well as raising the interest of students traditionally underrepresented in STEM education programs and pursuing such careers.

DoD STARBASE has the ability to inspire and influence, thereby increasing the quantity and quality of future STEM professionals interested in supporting the Department of Defense, the DIB, and our national security strategy. The future of the Nation’s STEM workforce depends on the vitality of the STEM talent pool, receptiveness of the youth to consider DoD as a formidable career option, and variety of opportunities to reach diverse populations that have been historically underrepresented in STEM or low-socioeconomic populations who may not otherwise have access to these STEM opportunities and pathways that serve as significant academic milestones for tailoring the needs of tomorrow’s future STEM talent.

³Office of the Assistant Secretary of Defense for Research and Engineering (ASD(R&E), 2016)

DoD STARBASE GRADUATES: WHERE ARE THEY NOW?

A Letter from DoD STARBASE Kansas Graduate, Erin Black Schmaderer



Recently I was made aware that the DoD STARBASE program was still going strong, and it brought back so many fond memories that I wanted to let you know how important DoD STARBASE was in helping me find my career path.

When I was in fourth grade at West Elementary School in Wamego, Kansas, my class got to go to DoD STARBASE once a week for several weeks. I absolutely loved it! Programming the robots and launching rockets are among some of my favorite memories. I remember memorizing the phonetic alphabet. I would study all week long so I could be the very best at the different challenges they gave us. It was during this time I thought it would be amazing to join the Air Force. That following summer I got the opportunity to go to Kennedy Space Center and I was completely hooked! I wanted to be able to design rockets and use science and engineering to change the world.



After graduating from high school I was unable to pursue my original dream of joining the Air Force due to a medical diagnosis. However, I still wanted to pursue my dream to become an engineer. I enrolled in the engineering program at Kansas State University (KSU) in Manhattan, Kansas. At the end of my senior year I was awarded the "Extraordinary Leadership and Service Award" by Dr. William Dunn, the head of the Mechanical Engineering Department at KSU.

After graduating from Kansas State University in 2014, I was hired by Vortex Valves in Salina, Kansas where I enjoyed designing a variety of valves for dry goods. In the summer of 2016, I made the change to Great Plains Manufacturing in Salina, Kansas where I currently work as a design engineer. I am so glad I chose this path as I love using my mind and science to make new innovations and equipment for the betterment of us all. DoD STARBASE is where I got my start! I loved attending DoD STARBASE and I am glad it is still around showing others the wonder of STEM careers. For all of you out there, find your passion and go for it.



"DoD STARBASE 2.0 is a great opportunity for kids to really get involved with robotics. It acts as a spring board for developing key learning traits that these kids are going to need for starting high school, college, and their career."

— 2ND LT. LAYNE HENRY, TINKER AIR FORCE BASE, STARBASE OKLAHOMA - OKLAHOMA CITY

DoD STARBASE GRADUATES: WHERE ARE THEY NOW? (cont.)

A Letter from DoD STARBASE Sioux Falls Graduate, Cassandra Aegerter



As a young child growing up in the Midwest, exposure to the STEM fields was limited. The one prominent experience that I can recall happened as a 4th grader attending an elementary school in Sioux Falls, South Dakota. I was young at the time, yet I can still recall the excitement of being led into a darkened room where a projection of all of the constellations in our galaxy surrounded me, the amazement at seeing an F-16 jet up close, learning how to build projectiles and the satisfaction that came along with watching my project shoot toward the sky, not to mention the wild ride in a military Humvee that concluded the most exciting field trip my younger self would experience. These were just a few of the activities that I can recall as a young child being exposed to the world of science and engineering at the DoD STARBASE program held at the South Dakota National Guard Base in Sioux Falls.

It has been somewhere around 20 years since that experience and I attribute many of my current interests and career goals to those few days that were spent exploring, asking questions, being engaged in the sciences, all while understanding the impacts and benefits the STEM fields have on our communities and the world. After graduating high school, I spent some time exploring different career fields such as environmental activism, nursing, and medicine. Eventually, my interest in medicine piqued when I began working for a major hospital taking on positions in hospice care, as well as clinical and emergency medicine. It was then that I decided my desire to make an impact in the lives of others could be done through my interest in science and medicine.

In 2016, I received my Bachelor of Arts degree in biology from Augustana University. It was during my time as an undergraduate student that I was exposed to the field of biomedical research. I was intrigued by the idea that basic biomedical research could not only impact medicine on an individual patient level, but it had the ability to impact science and medicine on a global scale. Since then, I have been working as a laboratory manager for a biomedical research laboratory at Sanford Research. Currently, my role

“DoD STARBASE is excellent in providing a wide range of topics in a hands-on environment. As an engineer myself I don’t think we have near enough hands-on experiences for our youth to discover a love for the sciences. Any time we can make it fun and interesting to become involved we can gain more interest into these technical fields. Thank you for allowing me to participate and I look forward to do it again with my younger children.”

— DEAN HAVERKAMP, PARENT OF A STUDENT AT BERRYTON ELEMENTARY SCHOOL, ATTENDING STARBASE TOPEKA

is to investigate redox signaling in nervous and endocrine tissues, which could have translational impacts on diseases such as type II diabetes and obesity. Eventually, my hope is to further my education and career through completion of either graduate or medical training in order to more effectively utilize my skills and passion for science to further advance medicine and patient care.

DoD STARBASE gave me a rare opportunity to explore science in a real-world setting. It gave me an early exposure to critical thinking, teamwork, and the ability to apply science to real-world problems. It is because of DoD STARBASE that I was able to see the sciences as enjoyable and applicable to my desire to help those around me. I am glad to see that DoD STARBASE is going strong in my community. As a parent of young children, I look forward to sending my young daughters off to experience and discover the same love of science that I did at DoD STARBASE.



A Letter from Major General Glenn H. Curtis, President, Adjutants General of Association of the United States (AGAUS)



The need for specialized, technical workers in our country continues to grow, especially in light of the retirement of our aging, experienced workforce. The U.S. Bureau of Labor Statistics along with the President's Council Advisor on Science and Technology predict a shortage of approximately one million science, technology, engineering and math (STEM) professionals in the upcoming years. Growing and grooming a population of skilled/trained professionals to fill this shortage has never been more important to our nation's defense. The Louisiana National Guard has embraced this task by taking part in the DoD STARBASE program. The future of our nation's security and economy depends on our military strength and the education of our youth in STEM career fields to fill critical civilian and military positions.

Department of Defense programs like STARBASE and Youth Challenge provide these educational opportunities to our youth. Through the eyes of my own son, Jacob, who attended DoD STARBASE in fifth grade and is now majoring in Engineering at Louisiana Tech, I have experienced how that first-hand exposure to STEM and its related military careers have had an impact. The Louisiana National Guard has been a proud supporter of the DoD STARBASE programs for the past 18 years, establishing three locations, strategically placed throughout our state at Jackson Barracks, Camp Beauregard and Baton Rouge. Over that time, we have educated and graduated close to 19,000 students.

As the President of the Adjutants General Association of the United States (AGAUS) and The Adjutant General of the State of Louisiana, I believe that supporting the DoD STARBASE program is an important part of our overall mission. It provides our nation's youth that important STEM exposure that is not always available at their school and introduces them to the positive role models typically found at a military installation. It helps build the workforce of tomorrow, not only for the military, but also for our communities and country. DoD STARBASE is working today to help build our future and has my full support.

Glenn H. Curtis

Major General, Louisiana National Guard

"DoD STARBASE is a wonderful experience that provides so many rich lessons that we can't even come close to providing back at our site. Children are allowed to explore and question. Inquiry based learning doesn't happen nearly enough in the regular education classroom."

— KELLI RUSH, EDUCATOR AT ACACIA ELEMENTARY SCHOOL, ATTENDING STARBASE ARIZONA

A Letter from Major General Matthew T. Quinn, The Adjutant General of Montana

Educating our nation's youth is the biggest investment we as a country can make. Our partnership between the Montana National Guard and DoD STARBASE is centered on that investment. Montana DoD STARBASE locations, Fort Harrison (Helena) and Great Falls, have served nearly 15,000 students since the Helena site was established in 2007. DoD STARBASE has hosted students from nearly 15 school districts throughout Montana to include urban and rural communities as well as public and private institutions.

DoD STARBASE programs and staff are dedicated to inspiring students using STEM curriculum as a vehicle. We have expanded the DoD STARBASE classroom to Montana's American Indian reservations by hosting week long summer camps throughout the state. Furthermore, the DoD STARBASE team provides week long summer camps for the children of our Montana Guardsmen and women, strengthening the partnership between DoD STARBASE and our Montana National Guard community.



The DoD STARBASE classroom is unique in that it is centered on hands-on learning. Students are taught lifelong skills by being actively involved in their education. Students visit the Montana Highway Patrol communication center, the MTANG Combined Support Maintenance Shop in Helena, the MANG Fire Station, C130 support facilities in Great Falls, and tour C130 aircraft. Military and civilian volunteers assist the students in a variety of capacities.

Students are challenged. They are allowed to fail and learn from their mistakes. Students who are low achieving or had behavioral issues in their traditional classrooms thrive at DoD STARBASE. They are exposed to real world role models and occupations that utilize STEM skills. They work individually and in teams, perform experiments, program robots, record and interpret data, and direct powerful CAD software. Teachers and students consistently report major improvements in enthusiasm for math, science and engineering once students leave. DoD STARBASE sparks students' interest in STEM and builds an understanding of STEM careers, military and civilian, available to them.

Through the DoD STARBASE program, students who may not excel in a traditional classroom setting or students may not have the opportunity to explore STEM are given that opportunity. DoD STARBASE expands students' knowledge of STEM and empowers them to pursue STEM careers. The program leaves a lasting impact on the students and is a great asset to our Montana youth.

Sincerely,

A handwritten signature in black ink, appearing to read "Matthew T. Quinn".

Matthew T. Quinn

Major General, Montana National Guard
Director of Military Affairs

A Letter from Major General Robert E. Livingston, Jr., The Adjutant General of South Carolina

The State of South Carolina
Military Department



Office of the Adjutant General



I enthusiastically support the Department of Defense STARBASE program. Over the past ten years, STARBASE Swamp Fox has grown tremendously and now reaches over 1,100 students per year, from twenty one schools and nine school districts. STARBASE Swamp Fox has certainly enabled us to reach our communities and students in a unique and meaningful way.

The partnerships between the South Carolina National Guard and DoD STARBASE support and greatly enhance Science, Technology, Engineering and Mathematics (STEM) for all involved. Our military volunteers who assist the full time staff provide great role models and our students are introduced, usually for the first time in their lives, to this military culture. Their excitement is beyond measure as they launch model rockets they built themselves or feel the vibrations as they witness the roaring takeoff of an F-16 heading out on a training mission. Afterwards, they visit the hangar and see a fighter aircraft "up close and personal" and visit the Army Aviation Support Facility and learn about the operation of Apache and

Blackhawk helicopters. This is an environment that cannot be duplicated in a traditional classroom setting .

I am encouraged and excited that our program continues to expand. This school year, we are moving into the Middle School arena with the DoD STARBASE 2.0 program. Many of the students that came through the program as fifth graders will now have the opportunity to continue the "hands-on, minds-on" approach to learning in STEM areas. Our basic program is increasing the number of classes being offered each week, allowing more schools and students to attend. STARBASE Swamp Fox also collaborated with their Air Guard hosts last summer to provide a STEM-day activity prior to our weekend Air and Ground Expo in which over 5,000 students attended and encouraged planning a similar opportunity in the spring in conjunction with our Air National Guard Family Day.

I am enthusiastic about DoD STARBASE and look forward to seeing STARBASE Swamp Fox continue to grow and serve our communities. I fully support the Department of Defense efforts to ignite and cultivate STEM interests in the youth of our state and nation - an interest that will help us to meet the demands of the future.

Sincerely,

A handwritten signature in black ink that reads "Robert E. Livingston, Jr.".

Robert E. Livingston, Jr.

Major General, South Carolina Army National Guard
The Adjutant General

“DoD STARBASE gives my students a chance to answer the burning question, “When am I ever going to use this?” Throughout our week at DoD STARBASE, I watch the students grow through challenges that push them to the brink. The fact that not everyone succeeds allows for more critical thinking in the classroom, I often use DoD STARBASE as an example of how failure is just another way of learning. Most importantly, DoD STARBASE allow my students to see that STEM careers are in their reach and pushing them to learn more about Science, Technology, Engineering, and Math.”

– TONY NAPOLETANO, EDUCATOR AT CENTRAL ELEMENTARY SCHOOL, ATTENDING STARBASE FORT HARRISON



A Letter from Major General James A. Hoyer, The Adjutant General of West Virginia



Enhancing the skills of and encouraging the future generation of leaders through programs such as DoD STARBASE are critical for the future success of our state and nation. By increasing interest in science, technology, engineering and mathematics (STEM) fields, students in West Virginia and beyond are gaining access to the tools and mentorship they need to be successful in and out of the classroom.

As the leader of the West Virginia National Guard, I have witnessed firsthand the direct impact that the DoD STARBASE program has on our youth and communities in which our Airmen and Soldiers live and serve. It has helped to foster a positive relationship between local communities and the military as well as enhance integral partnerships in education with local school systems. Since its inception, DoD STARBASE programs in West Virginia have helped to raise the interest and improve the knowledge and skills of students throughout our great state in STEM fields. With locations in Charleston and Martinsburg, more than 17,000 elementary students have benefitted from the program state-wide to date.

DoD STARBASE programs in West Virginia and its associated mentoring programs and camps are specifically designed to develop student awareness of and excitement about critical STEM subjects. Students attending West Virginia STARBASE and STARBASE Martinsburg garner exceptional STEM instruction and have access to afterschool mentoring programs that provide excellent hands-on learning activities allowing them to develop and apply STEM skills to real world situations. In the last year alone, both DoD STARBASE programs provided 140 academies and two afterschool mentoring programs for more than 3,500 students and are projected to offer 161 academies and 6 mentoring programs next year impacting over 4,700 students.

I cannot underscore the importance of DoD STARBASE for West Virginia students and the opportunity it brings for developing the next generation through critical thinking and hands-on instruction in vital STEM fields. Through dedicated and devoted instructional

staff and administrators, this program has remained a successful endeavor and will continue to be well into the future.

The West Virginia National Guard will continue to support this exceptional program and we look forward to future of DoD STARBASE in West Virginia and the impact it will have on our citizens and their children. I offer my full endorsement for DoD STARBASE to continue to deliver educational opportunities to students in the great state of West Virginia and expand its outreach, where possible.

Sincerely,

James A. Hoyer

Major General, The Adjutant General of West Virginia

STARBASE West Virginia students explain to MG James Hoyer the importance of testing during the Engineering Design Process.



DoD STARBASE Launched at Goodfellow Air Force Base



Colonel Ricky L. Mills
Commander, 17th Training Wing
Goodfellow Air Force Base

DoD STARBASE Goodfellow opened its doors to their first class of students in October 2017. Located in west-central Texas, they plan to serve over 1200 students from 17 San Angelo Independent School District schools during the upcoming school year. A partnership between Goodfellow Air Force Base (AFB) and the San Angelo Museum of Fine Arts made it all happen.

Students from the San Angelo community are hours away from most large Texas cities. And, while Goodfellow AFB is one of the largest employers in the area, students who have lived near the base their entire lives do not know what goes on inside the gates. DoD STARBASE Goodfellow will give them that opportunity while teaching them about science, technology, engineering and math (STEM) as it relates to base operations.

Students are able to tour the 312 TRS Fire School, learn from the Special Instruments Training (SPINSTRA) flight, the medical field, and the daily tasks of the Civil Engineering Squadron. Goodfellow AFB trains military students every day in STEM related careers and it is only natural to share a little bit of this with the youth who will one day make a decision about a career and hopefully remember their experience at DoD STARBASE Goodfellow.

Both permanently assigned and transient student military personnel assisted with program set-up and continue to volunteer as tour guides and career-day speakers. During program set-up, tech training students volunteered on the weekends and one volunteer who helped get the computers ready for the students was a DoD STARBASE graduate himself. He mentioned that even though he thought DoD STARBASE was cool when he went



through the program, he felt it is way better now, especially seeing all that is involved in setting up such a program. All volunteers were like kids in a candy shop with all the cool science gadgets and many lamented that it would have been awesome to have a program like this when they were in elementary school. Rocket launches always bring out a swarm of military volunteers who want to continue to assist the students now that the site is open.

At the official ribbon cutting, Colonel Ricky L. Mills, Commander of the hosting 17th Training Wing said: "There was a quote from Benjamin Franklin; it was 'Tell me and I'll forget, teach me and I'll remember, involve me and I'll learn. And I think this is exactly what the DoD STARBASE program is, that hands-on opportunity to be exposed to something that's important in the STEM fields."

"Learning at DoD STARBASE is fun and important because I personally love science and engineering. We get to do amazing experiments, problem solving, and much much more. DoD STARBASE has inspired me to be a chemical engineer! Going to DoD STARBASE is important because kids don't learn about STEM a lot at school. It's a great learning experience."

— STUDENT AT CENTRAL ELEMENTARY SCHOOL ATTENDING STARBASE FORT HARRISON

A Letter from Hastings Area School System (MI) Superintendent Carrie P. Duits, PhD



HASTINGS AREA SCHOOL SYSTEM

232 West Grand Street • Hastings, Michigan 49058 • (269) 948-4400 • FAX (269) 948-4425
Web Site: www.hassk12.org



The culminating experience for our elementary science program is attending DoD STARBASE. Students, teachers and volunteers have raved about the hands-on, powerful learning, and high level thinking that goes into each lesson. Students are highly engaged, while using critical and creative thinking skills to tackle problems. Students also experience a true sense of working collaboratively as young scientists in the field. DoD STARBASE is a program that will stay with students for a lifetime.

As our students move into middle school and high school, they continue a love for science and math. We have many students participating in STEM-related classes and clubs, with outstanding results at local, regional and state competitions. Our assessment data also suggests a strength in post-secondary aspirations in STEM fields.

When determining how to move forward with the new science standards, the ideals of DoD STARBASE launched us into designing a science curriculum in partnership with a local science institute, Pierce Cedar Creek Institute. We met with our elementary principals and representatives from Pierce Cedar Creek Institute to explore ideas based on one central question, "How can we design a world-class science program, K-5, that will be as unique, authentic, engaging and powerful as DoD STARBASE?" DoD STARBASE became more than a culminating experience; it became a model for learning science in our district, K-5.

Students of all ages love science with the DoD STARBASE philosophy of minds-on, hands-on learning. The Hastings Area School System continues to develop our partnership program with labs, projects and problem solving. Science education fulfills the natural curiosity that young students have about their world. Through hands-on experiences, students discover, make connections, and remember their learning. More importantly, students become thirsty for more. We are growing both science education and a passion for learning. Many thanks to DoD STARBASE for leading us to this new design for science education in our district. Our students are becoming "Science Strong" with much gratitude to DoD STARBASE.

Sincerely,

Carrie P. Duits, Ph.D.

Superintendent

A Letter from Darin Gray, USC Viterbi School of Engineering



ADMISSION & STUDENT AFFAIRS
STEM Educational Outreach Programs

We are looking forward to working with DoD STARBASE Los Alamitos in conjunction with our new initiative: Upgrading Programs With Aircraft, Rockets, Drones and Satellites (UPWARDS). UPWARDS has been made possible through a grant from the California Community Foundation. The objective of UPWARDS is to better incorporate aeronautics education and training into existing USC Viterbi STEM Educational Outreach Programs. I believe our collaboration with DoD STARBASE for the Team America Rocketry Challenge as well as our visits to STARBASE Los Alamitos were instrumental in us being awarded this two-year grant. I look forward to working with you and your team as we endeavor to increase the number of underrepresented and educationally disadvantaged students who pursue careers in science, technology, engineering and mathematics (STEM).

Yours truly,

A handwritten signature in blue ink, appearing to read "Darin Gray".

Darin Gray

USC Viterbi School of Engineering
Director, STEM Educational Outreach Programs Instructor, Discover Engineering and Mission Engineering

"The DoD STARBASE program has had a huge impact on our community's interest in the areas of science and mathematics. It has deepened our ability to reach out to the local community and provide opportunities to the youth that would not otherwise be available."

– CMSGT, SOUTH CAROLINA AIR NATIONAL GUARD, STARBASE SWAMP FOX

A Letter from Mad River School District (OH) Superintendent Chad Wyen



Mad River Local Schools

801 OLD HARSHMAN ROAD □ RIVERSIDE, OHIO 45431



The Mad River School District, located in Riverside, Ohio, lies within feet of arguably one of the largest, most diverse, and organizationally complex bases in the Air Force - Wright Patterson Air Force Base (WPAFB). Spanning over five decades, the District has had a unique relationship with the Base and the Federal Government.

Recently, I had the opportunity to meet with the 88th Air Base Wing Commander, Col. McDonald, and key staff at the WPAFB 2017 Superintendent Showcase. The meeting focused on WPAFB's missions along with the partnerships the base has established with local public school districts. In Mad River, we are fortunate that WPAFB is in our "backyard" and we can capitalize on the opportunities the base provides for our staff and students.

Staff and students in the district can participate in a multitude of programs aimed at educating, entertaining and guiding our students into 21st-century learning through the Air Force Research Lab (AFRL) educational outreach programs. The most impactful program is DoD STARBASE and DoD STARBASE 2.0. Fourteen years ago, during the school year 2004-2005, Mad River Local Schools was the very first school district to enter the door of STARBASE Wright-Patt. Eight years ago, Spinning Hills Middle School was one of the trial schools for DoD STARBASE 2.0. Since then, the relationship we have built with DoD STARBASE has offered our students STEM-based educational experiences and opportunities that align with our district mission as we identify and deploy strategies to provide students a platform to develop 21st-century skills. To give perspective of the impact, over 3,000 students have participated in DoD STARBASE, and over 270 students have participated in STARBASE 2.0 since the partnership began.

STARBASE Wright-Patt has also been a key partner in assisting two of our

"I will never forget DoD STARBASE. You have changed countless lives with the teaching of engineering, tech, and most of all kindness. You have changed my point of view of everything. Thank you for devoting your lives to teaching us. Thank you for letting us follow our dreams, and reach for the stars."

– ELLIOT, STUDENT AT TRINITY LUTHERAN ATTENDING STARBASE ONE

school buildings earning the coveted Ohio Department of Education STEM school designation, which further emphasizes the impact of the relationship between DoD STARBASE and Mad River Local Schools. Our schools have embedded the strategies and knowledge gained from DoD STARBASE to deploy six new Project Lead the Way courses offered in grades 5-8 to introduce and encourage Mad River students to go into STEM-related fields while connecting college and career readiness into our programming.

Wright Patterson Air Force Base and the military community are much bigger than simply being the largest single-site employer in the state of Ohio. Wright Patterson is a community partner and resource that directly influences our students in a positive way evidenced by our partnership with programs such as DoD STARBASE. I would encourage Congress to continue to support the DoD STARBASE programming. I have authentically experienced the positive outcomes the program has on our students and community.

Sincerely,



Chad Wye Superintendent

Mad River Local Schools



A Letter from Redbud Run Elementary School (VA) Principal Joseph Strong

Redbud Run Elementary School

Phone: (540) 678-1868
Fax: (540) 678-0703

250 First Woods Drive
Winchester, VA 22603
www.rbe.frederick.k12.va.us



It is with great appreciation that I write this letter in support of the Winchester DoD STARBASE Program. I have had the opportunity to send hundreds of students to DoD STARBASE over the last many years as a principal for multiple schools. I have seen the benefit to our students and the excitement it creates for math, science, and technology. Students are able to make connections to the state standards through their hands-on experiences at DoD STARBASE, increasing students' cognitive depth of the content.

One of our division goals is to prepare students for a 21st century world with a focus on communication, collaboration, critical thinking, and creativity. DoD STARBASE is the perfect match for us to promote these four skills in our students. The engaging activities encourage students to collaborate with one another as they work in groups to explore the inquiry based content and projects. Through that collaboration students must communicate with one another during the missions to ensure that all students are engaged, productive, and responsive to the tasks. The inquiry-based activities challenge students to think critically while exploring math and science standards that support what our students are learning in the classrooms. Finally, in order to be successful with the missions, students must use creativity as they work with one another and think critically to solve the tasks given to them.

Our students always return to school excited to share their experiences that are focused on science, math, and technology. DoD STARBASE provides resources to enhance the students' experiences that we cannot easily provide in the school setting. To completely understand the positive impact that DoD STARBASE has on our students and teachers, all you simply need to do is speak with them about their experiences and they will gladly tell you how much they enjoy and benefit from their week at DoD STARBASE.

Thank you for providing this opportunity for our students. Our students and teachers are grateful.

Sincerely,

A handwritten signature in black ink that reads "J Strong".

Joseph Strong Principal

A Letter from Indian Hollow Elementary School (VA) Principal Sharon Cooley

The Winchester DoD STARBASE program has made a huge impact on the fifth grade students in my school and in other schools in the Frederick County and Winchester area. The program provides much needed access to quality STEM instruction which is so valuable in preparing our students for future education and career opportunities.

While at the program, our students have opportunity to collaboratively solve problems and explore scientific, mathematical, and engineering concepts using various technologies and equipment that they do not have available within the school system. This excites and engages students, leaving lasting impressions that help develop interests and skills for future careers.

As a Title I school, many of my students do not have opportunities to experience activities of this kind without access to a program such as this. The skills learned in this program teach, reinforce, and enhance the standards of learning in science and math.

I have spent time at the DoD STARBASE facility every time my students have participated. The quality of the instructional program is superb. The staff is always patient, helpful, and professional, making this a meaningful and valuable experience for my students.

In addition to accessing the program at the DoD STARBASE facility, the staff from the Winchester DoD STARBASE has been willing to participate in outreach at special events at my school. Most recently they participated in a math-science night by bringing and sharing a STEM activity with my students and their families. This type of outreach allows families (many of which have limited knowledge about STEM) to experience and broaden their understanding of science and engineering.

I sincerely hope every effort is made to continue to fund this quality program. The students we have today will become the scientists and engineers of the future provided they are exposed to the opportunities available to them. The Winchester DoD STARBASE enhances those opportunities. I hope we can continue to send students to this program for many years to come.

Sincerely,



Sharon Cooley,

Principal, Indian Hollow Elementary School, FCPS, VA

"The DoD STARBASE program has evolved into a truly valuable program... It will leave a lasting impact on [the kids'] renewed perspective of the world we live in and stretch their minds to grow even further."

— CURT GRAVES, PARENT OF A STUDENT AT SACAJAWEA ELEMENTARY, ATTENDING STARBASE GREAT FALLS

Bossier Parish School District Benefits from Their Long-Term Partnership with DoD STARBASE Louisiana



DoD STARBASE Louisiana 2.0 mentor, Nathan Ennis, helps students, William Peoples-Askew and Jordan Kelly, from Rusheon Middle School, analyze and prepare a rocket before launch.

As a member of the pilot cohort in 1999, Bossier Parish School District recognized the potential benefits of the DoD STARBASE program for their students and unreservedly turned over valuable instructional minutes for their most struggling and at-risk schools. After several years of participation, the proven success of the DoD STARBASE program and its measurable impact on these students was the driving force behind the district's desire to expand the partnership and include more Bossier Parish students. "At Bossier Schools, we put our money where our mouth is" said Scott Smith, District Superintendent. "More than 10 years ago, our district recognized the direction the world was moving toward and the need to prepare students for careers in STEM fields". To meet the high demand for service, Bossier Schools assigned one full-time teacher to the DoD STARBASE staff enabling the program to reach twice as many students per year. Cathi Slack, Elementary Science Supervisor for the district explained, "The DoD STARBASE program is an important part of the 5th grade Science curriculum, so much so that the parish provides a teacher, including salary and benefits, to be a part of the team."

In 2011, Bossier Schools embraced a new district improvement plan and cited DoD STARBASE participation as a key strategy in reaching district goals for strengthening mathematics and science instruction. That same year, federal expansion of DoD STARBASE program operations, coupled with Bossier's investment of a full-time teacher, allowed DoD STARBASE to begin reaching

EVERY 5th grader in the district. "The fact that Bossier Schools has been able to send every fifth grade student through the DoD STARBASE program for several years has had a profound effect throughout the district" said Superintendent Smith. "The hands-on lessons our students receive during their time at DoD STARBASE make science, technology engineering and math both relevant and applicable to what they learn in the classroom. Science scores in 2016-17 among Bossier Parish students were 10-percent higher than the state average and seven percent higher in math. We attribute those gains, in large part, to DoD STARBASE getting our children fired up about STEM."

Extending the STEM pipeline is a common goal for both Bossier Parish Schools and DoD STARBASE Louisiana. In 2012, DoD STARBASE Louisiana launched its first 2.0 Middle School STEM club in Bossier Parish with twenty-four 6th, 7th and 8th grade students and eight STEM mentors. After only two years, the 2.0 initiative was expanded into the middle and high school as part of the Bossier Parish updated district improvement plan. The program currently reaches over 250 6th -12th grade Bossier students each year and has 12 clubs in five locations meeting both during school and after school. The clubs are supported by over 75 partner teachers and local STEM mentors. Dr. Nichole Bourgeois, Assistant Superintendent of Curriculum has seen the value of DoD STARBASE programming and feels it is helping ensure the districts meet the goals of its STEM initiatives.

“The manner in which DoD STARBASE integrates science and math concepts into hands-on activities that spark students’ interest in STEM careers is a vital part of our comprehensive K-12 STEM initiative. We are excited to offer the opportunity for our elementary, middle and high school students to participate in the different phases of the DoD STARBASE program.”

The Bossier Parish School System has demonstrated remarkable gains in student achievement over the past decade, and attributes some of that change to DoD STARBASE. In September 2017, they achieved a district performance score of “A” in the state-wide assessment and were one of only 17 districts in Louisiana to do so. DoD STARBASE influence is felt throughout the parish through exemplifying best practices essential in STEM. This includes modeling effective instructional techniques, presenting complex and creative problem-based experiences and engineering projects, and providing additional high-quality STEM resources for teachers to continue down the STEM teaching path. Bossier Parish principal, Amy Gates, stresses that DoD STARBASE participation doesn’t just change the students, but it changes the teachers as well. “DoD STARBASE has greatly impacted our 5th grade students AND teachers . . . not only academically, but also by supporting our goal of promoting a ‘Growth Mindset’. Often, students identify strengths, creativity and establish future educational goals as a result of the DoD STARBASE experience! I am always excited to observe student and teacher gains at the end of the program.” Jana Evans, participating teacher from one of Bossier’s rural, high poverty areas stated “There has been a huge improvement in my class’s attitude toward science. Even the students who struggle with classwork were able to follow the program and succeed. DoD STARBASE has given ME a number of ideas to captivate all of my students. The presentation of the material is superior to anything I’ve seen before!” By helping teachers throughout the district create a STEM-rich environment in their own classrooms, the benefits of DoD STARBASE participation ripple out far beyond the confines of the DoD STARBASE campus. “I’m a huge DoD STARBASE supporter” said Principal Terri Bird. “It is what education is meant to be.”

Bossier Parish School System’s district improvement plan has a clear vision statement – “To ensure all students acquire 21st century skills to be successful in a global society.” Strategically partnering with DoD STARBASE is helping their students develop the STEM knowledge, critical and innovative thinking, and collaboration skills necessary to navigate the future as productive citizens. “At Bossier Schools, we place an incredible emphasis on STEM” said Superintendent Smith. “Our community partners, such as DoD STARBASE, are preparing our students for the work force of the future.”



Cope Middle School students Richie Jennings and Jackson Ballew work with mentor, Kerby Witman, to design a parachute for a water balloon drop as part of their DoD STARBASE Louisiana 2.0 engineering design challenge.

A Letter from DoD STARBASE Oklahoma Graduate, Airman First Class (A1C) Andrew Pranger



As the son of a military mom and military dad, I had many opportunities to be involved in activities at the Tulsa Air National Guard Base during my school-age years. My parents, sister and I lived just outside of Tulsa, Oklahoma, in the small town of Mannford. I grew up on a small acreage, raised animals and participated in showing livestock. I loved helping my dad work on cars, tinkering with them even today!

STARBASE Oklahoma offered programs specifically for military families during the summer. I jumped at the chance to go and my sister assisted with the class. I attended DoD STARBASE in 2008 while in the 5th grade. I loved taking things apart, seeing how they worked and then trying to figure out how it all went back together. My curiosity always got the best of me when we built the model rockets at DoD STARBASE. I tried to make sure it was put together well and was well balanced. I knew the lighter it was, the higher it would go. So, in order to make it fly higher, I limited any trimmings. I tried to see if there was a way to achieve more power from the one engine and thought about what difference it might make if I mounted two.... This was one of my favorite memories. And, I learned that this curiosity of mine was a big part of something called the Engineering Design Process. Yes, I had a love for military, the planes and DoD STARBASE Oklahoma!

Upon graduation from high school, I thought about what my choices were and what I could do with this passion I had for the military and planes. How could I use the knowledge and inspiration I had gained from DoD STARBASE Oklahoma? I decided to enlist in the United States Air Force with hopes of working on airplanes. My dream came true at my first duty station, Nellis Air Force Base, Nevada, as a crew chief on the F-35 aircraft.

My job at Nellis is to maintain the aircraft, which is still in a testing phase, making improvements and investigating ways to

“DoD STARBASE is a progressive program that enables our young minds to explore possibilities within our ever more technical world. STEM is an integral part of our society and we continue to grow in our reliance upon it as technology advances. This program provides valuable exposure to key concepts in an enjoyable, informative way for our future scientists, technologists, engineers, and mathematicians.”

– TSGT ALEXANDER WHALTON, WEST
VIRGINIA AIR NATIONAL GUARD, STARBASE
MARTINSBURG

increase the power output. As I sat through the training to become a crew chief, I kept thinking about how the concepts I had experienced in the DoD STARBASE classes were coming full circle.

Learning about the STEM career fields is a must in today's society. I cannot think of any career where STEM doesn't play a part. Participating in activities as a team contributes to being able to work together as a team in your career and broaden the think tank with a variety of ideas and inventions. I believe in DoD STARBASE and know that it played an invaluable part in my future.

Respectfully,

Andrew J. Pranger



A Letter from DoD STARBASE Connecticut Graduate Gazment Sosoli



What do you want to become when you grow up? – That is the question we are asked during our elementary and teenage years, and the answer is often influenced by our interests and exposure to what is possible. Fortunately for me, attending DoD STARBASE was the first spark that led me to pursue a challenging and rewarding career in science, technology, engineering and math (STEM).

A whole new world of possibilities opened for me when my family moved from Albania to the United States in 2005. I was halfway through 5th grade when I enrolled at Driggs Elementary school in downtown Waterbury, Connecticut. I can still remember the excitement when we attended DoD STARBASE, because it allowed me to use my math skills and become a problem solver within my team, despite the challenge of speaking broken English. The sense of pride I felt running out in the field to catch the rocket I had built, as it was descending from a successful launch, will always be an incredible feeling for me. I kept the rocket for months in my room as a trophy.

The experience I had at DoD STARBASE just a couple of months after arriving to the United States amplified my imagination to what I could become and later led me to take on engineering electives in high school. Thanks to an amazing teacher, I was fortunate to compete in the Real World Design Challenge and Sikorsky STEM Challenge as my team designed the fuselage and tail wings of a business jet and redesigned the engine mount of a WWII Vought-Sikorsky F4U Corsair fighter plane that held the Pratt and Whitney engine, respectively. The passion to working in a STEM field kept building up with each STEM project in which I was involved. This passion led me to successfully earn a Mechanical Engineering degree at the University of Connecticut.

While pursuing my engineering degree at UConn, I interned at Sikorsky Aircraft as a Reliability and Maintainability (R&M) Engineer. At Sikorsky, I played an important role in tracking the S-92 Helicopter flight hours and calculating MTBUR's (Mean Time Before Unit Replacement) for the S-92 and S-76 helicopters parts, enabling the R&M team to initiate improvement projects.

Now, I'm in the Commercial Leadership Program at General Electric—a two-year program that fosters the development of commercial and technical skills in the GE Power business. I spent the first six months on program as an Application Engineer in Burlington, Iowa where I designed high voltage electrical equipment for critical applications in Oil and Gas, Mining, Data Centers, Pulp and Paper, Renewables,



“Watching the children perform the Egg Seatbelt experiment at DoD STARBASE was very enlightening. I didn’t realize just how much small experiments like that assist children with their learning experience. Now being in the Marines and observing the kids do it as an adult, makes it clear to me that programs like that are crucial to their childhood experience. Seeing the glow on their faces when they successfully protected the egg was motivating.”

– SGT FUNDERBURG, UNITED STATES MARINE CORPS, STARBASE INDIANA - SOUTH BEND

Healthcare, and many other industries. I then spent the next six months as a Commercial Operations Manager in Plainville, Connecticut where I created big data analytics dashboards using Six Sigma methodologies. Now, I’m a Project Manager in Cary, North Carolina and am working with cross functional teams in engineering, product management, and sales, to develop and launch a new equipment visualization product. This will help companies in the various industries reduce their energy use, reduce downtime with predictive analytics, and keep engineers safe with remote equipment control. Having the opportunity to work with equipment that brings power to the world is a rewarding experience. I’m thankful for the early influence that DoD STARBASE had on my path to pursuing a career in STEM.

It is of the utmost importance that young generations learn about STEM and are exposed to STEM related fields through programs like DoD STARBASE, because it will help them realize what is possible with STEM so they can drive forward the future of our society.

Sincerely,

Gazment Sosoli

DoD STARBASE COLLABORATIONS, CREATING COMMUNITY PARTNERS

STARBASE Connecticut 2.0 Program Addresses the Plight of the Chimney Swift Through FIRST LEGO League Competition



The C-Birds FLL team along with mentor/coaches Julian Rose (Jumoke teacher), Ted Garner (STARBASE staff), Melissa Vanek (STARBASE staff) show off their Grand Champions trophy after the "Where's Wolcott?" Regional FLL competition. Students shown are: Arianna Acevado, Tamia Percy, Tsheann Benjamin, Michael McKoy, Richelle Powell, Josiah Adams.

Amy Beardsworth, Dean of Students at Jumoke Honors SMaRT Academy in Hartford had a goal for the 2016-17 school year to have her students participate in the Connecticut FIRST LEGO League (FLL) program and DoD STARBASE Connecticut-Windsor Locks offered them the perfect opportunity through their 2.0 afterschool program. In collaboration with Ms. Beardsworth and Mr. Julian Rose, a first year Jumoke Honors SMaRT teacher, DoD STARBASE established a strong team of students to tackle the 2016 FLL challenge - to find a unique solution to improve animal-human interactions.

Through a process of debate, elimination, and in-depth discussion, the team finally decided to focus their attention on the plight of the Chimney Swift. This bird, while not endangered, has been suffering catastrophic decline for decades because of losing their nesting territory to modern chimney construction methods. With the aid of mentors such as Ed Torres and Jeff Santos, the students committed themselves fully to offering a solution which would allow people to actively help the Chimney Swift. Artificial chimneys/towers were a solution but price was found to be a drawback, and if a person decided to build a Swift Tower, it became a permanent fixture in their yard. The students then focused on finding simple ways to offer a more flexible, cost effective solution. Using more inexpensive materials, the students came up with their product, the "Swift Sanctuary". This less expensive tower could be sold as a kit that individuals could construct easily in early Spring before Swifts returned to Connecticut and it could be easily dismantled in the Fall after the Swifts returned to the Amazon River Basin for the Winter.

As part of their research, the team met with Shannon Kearney of the Connecticut Department of Energy and Environmental Protection to learn more about the behavior of Chimney Swifts and its habitat needs. This project and research was only part of the FLL Challenge. The team also had to address the FLL CORE Values and the robot table competition. They designed, built and programmed a robot from the LEGO EV3 kit. The group had prior exposure to programming from when they attended DoD STARBASE and like the engineering project portion of the competition; they took the robotics challenge head on! They divided and worked to conquer the challenge board for the 2016 competition.

At last it was tournament time. In November, they participated in the



C-Bird team members Michael McKoy and Arianna Acevado run the robot during table competition while team members Tsheann Benjamin, Josiah Adams and mentor Ed Torres cheer them on.

“Where’s Wolcott?” Regional FLL Tournament feeling confident that they had a unique solution to a unique problem and a solid plan for the robotics portion of the competition. They had even developed a prototype “Swift Sanctuary” using the DoD STARBASE computer-aided design program and printed it out on a 3D printer for the judges to see.

The team masterfully attacked each component of the competition with poise and grace. They blew the judges away with their knowledge of the CORE Values and how well they were able to work together as a team. They literally left judges speechless with the presentation of their project, which included: a pantomime, a skit, a song and dance routine, and a formal presentation of the problem and solution that all fit into a five minute time frame. At the end of the day, despite a lesser than hoped for result in robotics, they walked away with the GRAND CHAMPIONSHIP prize and a golden ticket to the Connecticut State FLL Tournament where they would compete with the top teams from across the State.

While they performed admirably and showcased their project well at State, they did not place. They did, however, walk away knowing they had done something no one else in the history of their school had done. They were the first team out

of Hartford schools to win a FLL Grand Champion Trophy and earn a golden ticket to compete at a state FLL tournament. As a result, their team was honored at a Jumoke School Board meeting for their accomplishments and were able to reprise their presentation and field questions from the school board members who were very impressed by the knowledge and poise shown by the team.

With the FLL competition season over, the team moved on to other STEM enrichment activities as part of the 2.0 programs but STARBASE staff received a request from Ms. Beardsworth to work with the team to build a final product from their prototype. Over the next four months, the team and their mentors worked hard to build their own Swift Sanctuary. They measured and screwed plywood together, painted the outside, stapled wire to the bottom, insulated the chimney with straw and helped to install the final product at their school. The only thing better than the teamwork that the students showed, was seeing their faces as they heard Chimney Swifts flying in the sky near their school. The excitement and pride in using their STEM skills and completing their Swift Sanctuary is a memory that will stay with them forever.

DoD STARBASE COLLABORATIONS, CREATING COMMUNITY PARTNERS

Wyoming DoD STARBASE Shares STEM Expertise with the Community in Unique Ways

One typically thinks of “rodeo” when Cheyenne Wyoming is mentioned – not scientific bed races or radio controlled aircraft. Wyoming DoD STARBASE has stepped out in different ways to share their STEM expertise. In August 2017, DoD STARBASE Wyoming Deputy Director Mark Nowotny, presented at the Wyoming Department of Education’s “Road Map to STEM” educator’s conference on “Using Model Airplanes to Demonstrate Bernoulli’s Principle and Newton’s Three Laws of Motion”. Derived from a lesson used by Wyoming STARBASE Academy during Summer Camp, this hands-on lesson introduced these laws and principles, using a series of engaging activities where students can gain an understanding of how airplanes fly and experienced flying a radio controlled airplane safely.

The participating teachers discussed the four forces affecting an aircraft and participated in some experiments that demonstrated Bernoulli’s Principle and Newton’s Three Laws of Motion. They built a simple glider and discussed the different control surfaces of an airplane. Each participant

tested their aircraft by manipulating each control surface and observed how the airplane responds.

Afterwards, they practiced flying a radio-controlled (RC) aircraft on a flight simulator. They discussed flying RC aircraft models and reviewed the rules and regulations of their flight. Finally, the participants flew an actual RC aircraft, with Nowotny acting as the instructor pilot. This introductory STEM professional development session took participants full cycle learning the basic laws/principles of flight and motion and then applying them by building and flying a RC aircraft under the wing of an experienced instructor.

Student participants in the DoD STARBASE Wyoming 2.0 afterschool program applied their STEM skills in a different way and took first and second place in the Junior Division of the 2017 Great Cheyenne Bed Race sponsored by Big Brothers/Big Sisters of Wyoming. The annual race requires each team to build a bed, and then race them through a course in downtown Cheyenne.



The “Servo Sychos” celebrate their victory in the 2017 Great Cheyenne Bed Race with McGruff the Crime Dog. (Pictured R-L: Coach Mark Nowotny, Laura Bond, Riley Elliott, Trowa Armstrong, Brandon Schwab, Kade Smith)

The student FIRST Tech Challenge (FTC) teams designed and built their beds during their weekly team meetings at Wyoming DoD STARBASE. The teams used the Engineering Design Process, a cyclical method of problem solving to build their beds. They had to research ideas on building the bed, develop possible solutions, choose the best solution, create their bed, test and evaluate the bed, communicate with their teammates and then redesign the bed, if necessary. At race time, each team required five participants, one sitting on the bed and the other four pushing through a competition course.

The “Servo Sychos”, took first place in the speed category and most creative for the Junior Class with their “War Wagon”. The team is a mix of high school and junior high school students. The members are Brandon Schwab, Riley Elliott, Kade Smith, Laura Bond, and Trowa Armstrong. The “S.T.E.M. -Super Terrific Engineering Maniacs” team took second place navigating their creation called the “The Tin Foil Tantrum”. This team is made up of junior high school students Luke Constantino, Mark Constantino, Kat Bishop, Cameron Bishop, and Dillion Denton.

Both teams are coached by Wyoming STARBASE Academy’s Deputy Director, Mark Nowotny, along with mentors Reagan Elliott, Dan Bond, Joe Constantino, and Kimberly Constantino.



Team S.T.E.M. (Super Terrific Engineering Maniacs) from Wyoming DoD STARBASE are relaxed and ready to participate in the 2017 Great Cheyenne Bed Race. (Pictured L-R : Dillion Denton, Luke Constantino, Mark Constantino, Cameron Bishop, Kat Bishop)



Wyoming DoD STARBASE Deputy Director and bed race Coach Mark Nowotny and “Servo Sycho” team member Brandon Schwab show off the first and second place trophies won in the 2017 Great Cheyenne Bed Race.

DoD STARBASE COLLABORATIONS, CREATING COMMUNITY PARTNERS

NSTA TV Case Study Film on DoD STARBASE Robins

The National Science Teachers Association (NSTA) is the largest organization of science educators in the world. It boasts over 55,000 members who include educators, scientists, business and industry leaders.

NSTA is again partnering with the international film and broadcasting company WebsEdge to bring the NSTA TV back to its national conference to be held in Atlanta, Georgia in March 2018. NSTA TV brings conference news and workshop highlights to the conference participants. A beneficial feature of NSTA TV is its concise documentary style films which highlight programs, case studies, and best practices from the science education field. This year WebsEdge and NSTA TV sought out DoD STARBASE Robins as one of the programs they wish to feature. Huw Harries, Program Director, NSTA TV, states "STARBASE Robins was one of the unique programs that reaches across the three themes of the conference that can be easily communicated in a short film." The three primary 2018 NSTA Conference themes include:

- Focusing on 3D Learning - shifts the focus of the science classroom where students use disciplinary core ideas, crosscutting concepts with scientific practices to explore, examine, explain and design solutions to problems.
- Imagining Science as the Foundation for STEM - provide today's students with the real-world, innovative skills that they will need to be successful in tomorrow's world.
- Reflecting On Access for All Students - equitably meet the needs of and engage ALL learners.

Once the DoD STARBASE Robins film is edited and produced, it will premiere at the March 2018 NSTA Conference. WebsEdge will also screen the film via a dedicated cable television channel in selected delegates' hotels in the area and WebsEdge will stream the short film through its dedicated web player on the NSTA conference website accessible to all NSTA members and affiliates. "This is a great opportunity to showcase the national DoD STARBASE Program, DoD STARBASE Robins and how we contribute to the STEM education field" said DOD STARBASE Executive Director Wesley Fondal, Jr. "We are proud to be a part of this initiative and to share the DoD STARBASE story with this distinguished group of educators."

“DoD STARBASE was an amazing experience for my son Gabriel. He has trouble relating or getting interested in regular school subjects. For the first time he came home wanting to ‘be something’. An engineer.”

– AMBER TIZYA, PARENT OF A STUDENT AT BLUE JACKET FLINT ELEMENTARY SCHOOL, ATTENDING STARBASE KANSAS CITY





“DoD STARBASE is a wonderful program. I like how we as military members can relate our jobs to the STEM program and give students first-hand knowledge of its importance. I wish every military installation had a program like DoD STARBASE.”

— MSGT CHRIS BELGRAVE, DAVIS-MONTHAN AIR FORCE BASE, STARBASE ARIZONA

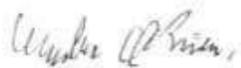
A Letter from DoD STARBASE Indiana Board Advisor Walter O'Brien, Founder and CEO of Scorpion Computer Services and the Inspiration for CBS television show "Scorpion"

As the newest member of the DoD STARBASE team, I am honored to be a Board Advisor for STARBASE Indiana, Inc. In 2015, I had the privilege of visiting Fort Wayne, Indiana with STARBASE Indiana Executive Director Dr. Scott Liebhauser and Board Member Colonel (Ret) David Augustine. During this tour, I was the guest speaker at multiple military, business, and academic venues and gave a presentation to a large group of DoD STARBASE students at St. Elizabeth Ann Seton Catholic School. After engaging with students and staff, I was amazed at the work this group is doing in creating STEM awareness and appreciation for thousands of students throughout Indiana.

As an expert in computer coding and artificial intelligence, I am excited to see a new generation of young people interested in experiential STEM education. STARBASE Indiana has touched the lives of over 12,000 students over its brief 6-year tenure. During this time, they have debuted three successful academies in Fort Wayne, Indianapolis, and South Bend, and a fourth location will be opening its doors in Gary, Indiana this spring. I look forward to consulting with the STARBASE Indiana Board of Directors to help in continuing its ubiquitous program successes. STARBASE Indiana, as part of a network of DoD STARBASE programs around the nation, has instructed over 1 million students in just over two decades, benefiting America's economy for years to come. As more and more young people enter challenging and rewarding STEM careers based on the spark of interest generated at DoD STARBASE, our nation will have better days ahead.

For these reasons, I am pleased to write this letter in support of DoD STARBASE Indiana and look forward to being part of a great organization making a difference in the lives of young people throughout the state of Indiana and the nation.

Sincerely,



Walter O'Brien

Founder and CEO, Scorpion Computer Services



DoD STARBASE COLLABORATIONS, CREATING COMMUNITY PARTNERS

Changing Students' Outlook on STEM through Robotics: DoD STARBASE Robins and FIRST

In the summer of 2003, STARBASE Robins began introducing students in the Middle Georgia Area to the world of robotics. Little did they know that what began as several summer academies teaching students about building toy robots would become a key vehicle to introduce STEM. They are now in their 13th year of hosting FIRST LEGO League (FLL) competitions and support 12 DoD STARBASE 2.0 FLL robotics teams, becoming a major player in the Georgia FLL program.

Wesley Fondal, Jr., Executive Director of DoD STARBASE Robins, said that the introduction of robotics into the summer curriculum was to enhance students' STEM learning. Because there was not much professional development for his staff in delivery of STEM through robotics in 2003, he partnered with the Mercer University School of Engineering to find a capable student to help develop and deliver curriculum to a very willing group of participants in the Middle Georgia Area.

Fondal was introduced to the FIRST (For Inspiration and Recognition of Science and Technology) program in 2004 when he attended the FIRST Peachtree Regional FLL Robotics Tournament. His enthusiasm for this platform was immediately recognized and DoD STARBASE Robins was courted by the Peachtree Regional Board to help increase FIRST participation in the Middle Georgia Area.

DoD STARBASE Robins was already using LEGO Mindstorms robotic kits in their summer programming, and Fondal recognized that the FLL Challenge would be a good way to utilize the DoD STARBASE Robins robotics program and



STARBASE Robins 2.0 Team competing in the Central Georgia FIRST LEGO League Super Regional Competition in 2017.



Teams competing in the STARBASE Robins Central Georgia FIRST LEGO League Super Regional Competition at the Robins Air Force Base Museum of Aviation, Warner-Robins, Georgia

combine it with the delivery of STEM education. Students involved in the DoD STARBASE Robins Summer Robotics Academy were excited to start FLL teams at their schools. Hence, the first FLL team was born in Middle Georgia.

In January 2005, STARBASE Robins hosted the inaugural Central Georgia FLL Regional Qualifier, in partnership with Georgia Tech University with seven teams in attendance. Only two years later, the DoD STARBASE Robins qualifier grew into the Central Georgia FLL Robotics Super Regional Qualifier and hosted 40 teams. The "Super Regional" is a second round competition for teams leading directly to the Georgia State FLL tournament. According to Jeff Rosen, Georgia Institute of Technology Program Director for Engineering, Robotics, and Advanced Technologies and FLL Operational Partner, "DoD STARBASE Robins has been a catalyst for student engagement and growth of FLL in the middle Georgia area. Their participation in the FLL through sponsorship of teams and hosting competitions has grown

to support over 700 students annually and provides an amazing environment for growth and development of the next generation of STEM learners and professionals."

Not only will DoD STARBASE Robins host its 13th annual FLL Super Regional Qualifier this year, but will also sponsor 12 FLL Teams through their afterschool STARBASE 2.0 Clubs. Interest in robotics has grown beyond the FLL level and two of the local school districts have also stepped up to the challenge. Bibb and Houston County school districts, both served by DoD STARBASE Robins, have now formed district wide FIRST Robotics Competition (FRC) teams for 9th-12th grade students that have aged out of the FLL teams which serves 4th-8th graders. Fondal states, "FLL is the hook that we use at these 12 middle schools to capture their attention. Then we can use that hook to introduce them to different STEM activities, pathways and careers that can literally change their lives."



“DoD STARBASE is an invaluable program that presents a well-developed introduction to STEM curriculum and activities in an engaging manner to young students. These students will remember their participation in this program throughout their remaining years in education.”

– BG PAUL F. GRIFFIN, VIRGINIA NATIONAL GUARD, WINCHESTER STARBASE ACADEMY



Assessment

2017

Executive Summary

The Department of Defense (DoD) sponsored STARBASE program provides Science, Technology, Engineering, and Math (STEM) learning and occupational awareness experiences to American youth at more than sixty military affiliated installations across the United States. Each year, conduct and effectiveness of the DoD STARBASE program is evaluated in several ways, including: structured interviews, questionnaires, program visits, and conversations with program participants. The program also is evaluated annually in terms of measuring basic STEM knowledge gained from program participation and improvements in student attitudes toward STEM subjects in the contexts of school, the military, and career opportunities. Assessments, interviews, and/or questionnaires were received from 1,611 students, 2,639 teachers, and all DoD STARBASE directors. A brief overview of the assessment highlights some of the key findings of the analysis.

Highlights

DOD STARBASE PROGRAM

- DoD STARBASE programs are located at a variety of military installations including: Air Force (10 locations), Air Force Reserve (4 locations), Army (1 location), National Guard (50 locations), and Marine Corps (1 location). The DoD STARBASE program conducted 2,952 classes serving 1,381 schools, in 396 school districts, across the United States and Puerto Rico during FY 2017.
- DoD STARBASE programs served primarily students from public schools (80 percent) in urban areas (73 percent), with 72 percent of the schools participating with DoD STARBASE meeting Title 1 requirements. The majority of the DoD STARBASE locations (88 percent) serve school districts within a 50-mile radius of their program site.
- Over 71,568 students attended the five-day program, and over 11,500 students participated in supplemental programs in FY 2017.
- The majority of DoD STARBASE students (88 percent) are 5th graders.
- The ratio of male students to female students is 1:1.
- The average instructor to student ratio for FY 2017 was 1:16.
- The average class size for FY 2017 was 25 students.
- The median operating cost per location was \$359,000.

DOD STARBASE STAFFING

- Contractor affiliations made up the majority (55 percent) of the DoD STARBASE employment relationships followed by state and federal affiliations, which are at 41 percent and 4 percent, respectively.
- Of the 66 DoD STARBASE locations, nine operate with the DoD prescribed manning model of four staff members. Most locations have restructured to increase instructional support in order to serve more students.
- The majority (80 percent) of the DoD STARBASE workforce are full-time employees. Part-time DoD STARBASE positions included: DoD STARBASE 2.0 coordinators, teaching assistants, tech assistants, substitute instructors, and modified deputy director/office manager.

- There was a 6 percent decrease in the number of employees from FY 2016 resulting in 42 percent of all DoD STARBASE staff having 2 – 4 years of DoD STARBASE experience.
 - o DoD STARBASE instructors (80 percent) have between 1 to 4 years of DoD STARBASE experience. Directors and deputy directors tend to have 2 – 7 years of DoD STARBASE experience at 63 percent and 64 percent respectively. Office managers (59 percent) have 1 – 4 years of DoD STARBASE experience.
- Out of 315 positions, there were 58 staff departures in FY 2017. Twenty nine departures were at the instructor level.
 - o Directors reported the most common reasons that staff members who left the DoD STARBASE program gave was because of moving (17 percent) and a better opportunity at another academic institution (13 percent). Of the 58 departures, 3 remained unfilled at the end of FY 2017.

DOD STARBASE PROGRAM VOLUNTEERS AND OUTREACH

- DoD STARBASE locations documented participation of 8,187 volunteers who contributed a total of 89,928 hours, worth an estimated \$2,067,565.
- DoD STARBASE directors reported 8,719 hours of support by 2,654 military personnel.
- Many DoD STARBASE locations (62 percent) 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, 26 percent of the teachers may use this training towards their certification requirements.
- DoD STARBASE locations (48 out of 66) report that they have relationships with other outreach programs in their area to include: STEM Forward, FIRST LEGO League, FIRST Robotics, Project Lead the Way, Civil Air Patrol, Girl Scouts, and Boy Scouts.
- In FY 2017, 31 DoD STARBASE locations in 22 states and Puerto Rico reported coordinating a total of 72 DoD STARBASE 2.0 programs and 89 – 2.0 clubs.
- The average student retention rate within the 2.0 program was 87 percent. Directors reported several reasons why students discontinued the program. Relocations, time conflicts, and lack of interest in the chosen curriculum are cited as the main reasons why students drop from the program.
- Former DoD STARBASE students made up 50 percent of the DoD STARBASE 2.0 program participants.
- The 2.0 program participants included 38 percent females and 62 percent males.
- Mentors from a variety of professions participated in the DoD STARBASE program to include: military (23 percent), non-military/DoD Professionals (12 percent), industry professionals (13 percent), college students (8 percent), staff members for the school hosting the 2.0 program (25 percent), and STARBASE staff members (14 percent). Two programs reported that they did not use mentors.
- The DoD STARBASE 2.0 programs operate through a combination of federal and private funds. Of the 31 DoD STARBASE locations coordinating a 2.0 program, 37 percent receive funding from both sources and 60 percent operate using only their federal DoD STARBASE funds.

EXECUTIVE SUMMARY (CONT.)

STUDENT ASSESSMENT

- Most respondents were between 10 and 11 years-old (94 percent).
- Approximately equal proportions of the respondents were girls (49 percent) or boys (51 percent).
- Seventy seven percent of the attitudinal items showed an increase in favorability from pre- to post-program; moreover, seventy-one percent of the changes were statistically significant. Some of the largest shifts occurred in attitudes about STEM, the military and future careers.
- Performance on the knowledge items increased significantly, with a 28 percent gain in the number of correct answers from pre- to post-program.
- Physics once again showed the largest improvement among curriculum areas (average increase of 47 percent in the number of correct answers).
- Chemistry also showed a strong gain, with 37 percent more correct answers.
- Mathematics scores improved substantially as well, with a 27 percent gain in the average number of correct answers.
- Gender: Although boys' attitude scores were more positive than girls' scores on the pre-program assessment, the gap was reduced in the post-program assessment. Boys and girls did not significantly differ on half (18/36) of post-program items measuring favorable attitudes toward STEM and the DoD STARBASE program; boys were more favorable on 14 items and girls more favorable on four items. Similarly, boys' knowledge scores were 10 percent higher than girls' at the pre-program assessment, but the gap was reduced to just a 3.9 percent difference by the post-program test administration, which represents a 60 percent reduction in the gender difference on STEM topics.
- Grade: There were few effects associated with student grade level. Yet, students in higher grades tended to express less confidence in their mathematics ability, and less enjoyment learning about STEM in both the pre-test and post-test assessments. Students at the lower grades also expressed more appreciation of military bases in the post-test. Because the grade relations are small it would be unwise to draw strong conclusions, but these results may underscore the importance of early exposure to STEM concepts and careers.
- Military Attitudes: Those students entering the program with less favorable attitudes toward the military had lower pre-program STEM knowledge scores, lower knowledge gain scores, and less favorable overall attitudes for both the pre- and post-program than students entering the program with more favorable attitudes toward the military.
- Knowledge and Experience: Students with prior knowledge of, and indirect 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-program Knowledge Test as well as on the pre- and post-program attitude survey, compared to their lower performing counterparts. More specifically, high performers improved by 38 percent in STEM knowledge from pre- to post-program, while low performers improved by 9 percent from pre- to post-program. High performers also showed greater gains in favorability on the attitude items than did low performers, although the differences were not as striking as those seen in the Knowledge Test items.

TEACHER ASSESSMENT

- 2,638 teachers from 61 academies responded to the survey. This represents a 15 percent increase in the number of teachers responding compared to last year.
- Teachers reported meaningful changes in students' attitudes and behaviors following DoD STARBASE participation. These changes included: students talk about the program long after the program has ended; students understand better how STEM skills/abilities fit job requirements for certain career fields, or similarly that DoD STARBASE helps students understand better the link between skill sets they develop and future career choices; also, that students are more interested in using computers for learning activities after attending a DoD STARBASE academy.
- Attending DoD STARBASE helps students better understand that developing their current skills/abilities is necessary to having good future career choices.
- Over ninety nine percent (2,628) of the teachers indicated they will recommend DoD STARBASE to other teachers, principals, or school administrators.
- Ninety percent of participating teachers report that participating in DoD STARBASE has influenced them to become skilled in STEM instruction.
- Eighty eight percent (2,329) 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.
- The number of teachers who are "Very Likely" or "Extremely Likely" to recommend the DoD or the military as a career option to students jumped by 31 percentage points after teachers participated in the DoD STARBASE program (Pre-program 39 percent "Very or Extremely Likely" to recommend versus 70 percent "Very or Extremely Likely" to recommend post-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 (83 percent) did not major or minor in a STEM-related discipline, but only two percent of teachers (42 out of 2,639) reported lack of confidence in teaching STEM-related topics.
- In a comment, one teacher shared having attended DoD STARBASE as a student.

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
- Program Oversight
- Fiscal Analysis
- Assessment Results
- Considerations
- Appendices

DoD STARBASE Program Overview

The Participants

DoD STARBASE programs operate under the auspices of the Department of Defense (DoD) through the Office of the Assistant Secretary of Defense (OASD) for Manpower and Reserve Affairs (M&RA). A Congressional Appropriation to the DoD funds the operation of DoD STARBASE. Synergy between the local military base, schools, and surrounding communities enhance and strengthen the program.

During FY 2017, the DoD STARBASE program conducted 2,952 classes serving 1,381 schools, in 396 school districts, across the United States and Puerto Rico. More than 71,000 students attended the five-day program in FY 2017. With the exception of school districts, all statistics have increased slightly from FY 2016 with a 3 percent increase in the number of students served, a 5 percent increase in the number of schools, and a 2 percent increase in classes. There was a 2 percent decrease in the number of districts participating in a DoD STARBASE program indicating that more students from the remaining 396 districts participated in the 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 students participating in supplemental programs during FY 2017 more than doubled from FY 2016 (a 117 percent increase). The number of locations offering supplemental programs also increased by 26 percent from FY 2016 with 24 DoD STARBASE locations (up from 19) offering some type of supplemental program. This large increase in supplemental offerings may be due to increased communication during site visitations on the expectations of OASD/M&RA regarding supplemental programs. Supplemental programs provided in FY 2017 included: STEM camps, aerospace education, robotics programming, computer-aided design, and engineering challenges. The majority (70 percent) of the students participating in supplemental programs are in the 4th, 5th, 6th, and 7th grades.

THE MILITARY

The military hosts and supports DoD STARBASE programs. Programs are located at various military installations⁴ including: Air Force (10 locations), Air Force Reserve (4 locations), Army (1 location), National Guard (50 locations), and Marine Corps (1 location).

The majority of the DoD STARBASE locations (88 percent) serve school districts within a 50-mile radius of the programs' duty station.⁵ 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 in South Dakota or the sparsely populated area surrounding Kingsley Field in Oregon. The demand for DoD STARBASE is so great that students travel from all over the island of Puerto Rico to participate in the program located in San Juan. 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. 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 in their own classrooms. 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

⁴ Most of the STARBASE academies operate within the confines of a military base. A few operate in an affiliate site contiguous to the military installation but under the property management of the base. 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. STARBASE Oklahoma – Burns Flat, STARBASE NOVA Courage and STARBASE NOVA Honor are outreach units that serve Native Americans in Oklahoma and South Dakota. STARBASE Connecticut – Waterbury is currently located at Naugatuck Community College because space became limited at the Waterbury Armory.

⁵ STARBASE Wright-Patt, STARBASE Vermont – Rutland, STARBASE New Mexico, STARBASE Vermont - South Burlington, STARBASE Kingsley, STARBASE Great Falls, and STARBASE Charlotte serve students beyond 50 miles of their host facility.

military personnel to positively interface with their community. As such, 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 of STEM concepts in their missions and giving students access to military facilities and operations. Military volunteers share unique, informative, and highly varied experiences with 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. In FY 2017, 1,381 schools from 396 school districts participated in the DoD STARBASE program which includes schools from Title 1 eligible, public, private, urban, and rural districts (see Table 1).

Table 1: DoD STARBASE 2017 Participating School Demographics⁶

School Type	Number of Schools	Percentage of Total Schools
Title 1 Eligible	994	72
Public	1,103	80
Private	165	12
Urban	1,007	73
Rural	289	21

As shown in Table 1, DoD STARBASE programs served primarily students from public schools (80 percent) in urban areas (73 percent) with 72 percent of the schools participating with DoD STARBASE meeting Title 1 requirements. The Title I program provides financial assistance through state educational agencies (SEAs) to local educational agencies (LEAs) and public schools with high numbers or percentages of economically disadvantaged children to help ensure that all children meet challenging state academic content and student academic achievement standards.⁷

School districts enter a formal agreement with the military base hosting the program in order to participate in DoD STARBASE. Accompanied by their classroom teacher, entire elementary classes are transported to their DoD STARBASE location to attend the 25-hour program over five consecutive days or on a weekly basis over five consecutive weeks. As such, DoD STARBASE exposes a richly diverse population of students to content and careers in STEM fields. As a result of the school's participation in DoD STARBASE, the school's curriculum is enhanced; students are better prepared for standardized state testing, and they are excited about continued STEM education and STEM careers.

⁶ Numbers shown are for five-day programs and do not include other supplemental programs. Some schools may be counted in more than one category. 113 schools were not classified as Public or Private.

⁷ U.S. Department of Education, Office of State Support. (2015). *Improving Basic Programs Operated by Local Educational Agencies (Title I, Part A)*. Retrieved from <https://www2.ed.gov/programs/titleiparta/index.html>.

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

The 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 student grade level, class size, scheduling hours, curriculum guidelines, 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 12th grade. Because of the dramatic decline in math and science performance by U.S. students after the 4th grade, the DoD STARBASE curriculum and standards are developed for the 5th grade level. Some locations (23) reported serving students in other grade levels in addition to the 5th grade,⁸ but most DoD STARBASE students are 5th graders (88 percent). Table 2 shows the number of students at each grade level. The total number of students served in FY 2017 was 71,568.

Table 2: Grade Level of FY 2017 DoD STARBASE Students

Grade Level	Number of Students
Kindergarten through 3rd Grade	0
4th Grade	2,914
5th Grade	65,771
6th Grade	2,436
7th Grade	140
8th Grade	186
9th Grade and Above	121
Total Number of Students	71,568

⁸ The locations serving grades other than the 5th grade are: Pelican State STARBASE, STARBASE Connecticut - Windsor Locks, STARBASE Fort Harrison, STARBASE Hill Screaming Eagles, STARBASE Minnesota, STARBASE Oklahoma - Oklahoma City, STARBASE Hawaii, STARBASE Indiana - Indianapolis, STARBASE Kansas City, STARBASE Manhattan, STARBASE Oklahoma - Tulsa, STARBASE One, STARBASE Salina, STARBASE Topeka, STARBASE Vermont - Rutland, STARBASE Vermont - South Burlington, STARBASE Wichita, Winchester STARBASE Academy, STARBASE Savannah, STARBASE Alpena, STARBASE Peterson, STARBASE Kingsley and STARBASE Puerto Rico.

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 1:1 with 50 percent female and 50 percent male.

Race and Ethnicity

As stated previously, in FY 2017, DoD STARBASE programs primarily served students from public schools (80 percent) in urban areas (73 percent). The concentration of students in these areas differs by race and ethnicity. The most recent data from The National Center for Education Statistics (NCES) documents a higher percentage of minority students⁹ (65 percent) attended schools in the central city with White students attending schools in mostly rural areas (79 percent).¹⁰ DoD STARBASE presents a unique opportunity to expose groups of students that have been historically underrepresented in STEM fields to STEM content and STEM careers.

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 2017 program year was 1:16, making the average class size for the FY 2017 program year 25 students. Two locations reported averages below 20 students.¹¹ The highest reported average class size was 33 students by STARBASE Kansas City.

Classroom size has decreased in public schools across the country and many DoD STARBASE locations have increased their efforts to service more students by opening additional DoD 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 2017, 39 DoD STARBASE locations (about 67 percent) operated simultaneous classes ranging from two 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.

⁹ Hispanics and Latinos, African Americans, American Indians, Alaska Natives, Native Hawaiians and Pacific Islanders

¹⁰ National Center for Education Statistics (2007). Status and Trends in the Education of Racial and Ethnic Minorities. Retrieved from https://nces.ed.gov/pubs2007/minoritytrends/tables/table_7_1.asp?referrer=report.

¹¹ STARBASE MCAS Beaufort and STARBASE NOVA Courage reported averages of less than twenty students.

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 55 percent of the employment relationships, followed by state and federal affiliations which are at 41 percent and 4 percent, 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 66 DoD STARBASE locations, 9 operate with the 4 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 2 instructors, eliminate the administrative position, and hire retirees who require fewer benefits. In FY 2017 other instructional support DoD STARBASE positions included: DoD STARBASE 2.0 coordinators, teaching assistants, tech assistants, principal oversight, accountants, and project managers. 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.

Of the 66 DoD STARBASE locations in FY 2017, 39 operated with more than 4 staff members with an average of 2 additional staff. Table 3 describes the FY 2017 staffing profile for full-time and part-time personnel. Full time is defined as an employee working more than 125 days per year.

Table 3: FY 2017 Staffing Profile

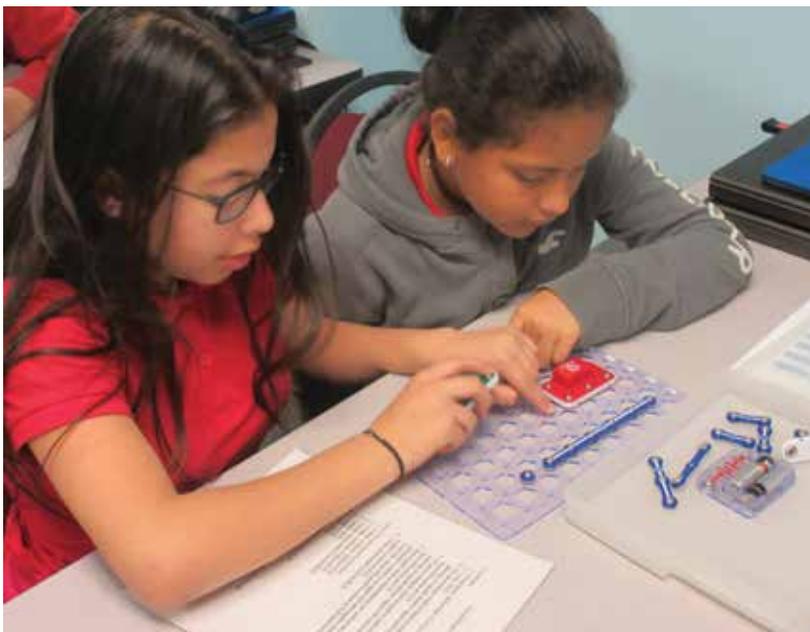
Position	Number of Staff	Full-Time	Part-Time
Director	51	50	1
Deputy-Director/Instructor	50	48	2
Instructor	141	109	32
Office Manager	46	32	14
Instructional Support	27	14	13
Total	315	253	62

Table 3 also shows there are fewer staff directors than DoD STARBASE locations. Some directors manage more than one location, some DoD STARBASE locations are new and have not hired a director yet, and other DoD STARBASE locations are in the process of replacing directors who have left the program.¹²

Staff Changes and Departures

Many (42 percent) of DoD STARBASE staff have 2-4 years of DoD STARBASE experience. Office managers (59 percent) have typically worked with DoD STARBASE for 1 – 4 years. Directors and deputy directors tend to have 2-7 years of DoD STARBASE experience at 63 percent and 64 percent respectively. Instructors (80 percent) have the least amount of DoD STARBASE experience at 1-4 years. 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.

There was a 6 percent decrease in the number of employees from FY 2016 with 58 staff departures in FY 2017. The majority (29 departures) were at the instructor level. Office Managers were the next highest with 10 departures followed by teaching assistants at 7 departures. The overall turnover rate in FY 2017 was 20 percent, which is down from last fiscal year's turnover rate of 23 percent. Directors reported the most common reasons that staff members who left the DoD STARBASE program gave was because of moving (17 percent) and a better opportunity at another academic institution (13 percent).¹³ A few of these positions (3 vacancies) remained unfilled at the end of FY 2017.



“The student materials reveal the depth of content and hands-on discovery learning that is research-based and motivating. The real-life experiences bring science to life! Our teachers see the results in student learning and as importantly, student excitement about learning. As teachers see this engagement, they are motivated to bring more STEM into their own classrooms.”

— GLEN COLVIN, PRINCIPAL AT SHREVE ISLAND ELEMENTARY SCHOOL, ATTENDING STARBASE LOUISIANA

¹² Directors in Connecticut, North Carolina, Indiana, Oklahoma, Oregon, South Dakota, and Vermont operate multiple STARBASE locations.

¹³ Other reasons reported for leaving: Better Financial Opportunity (10 percent), Further Education (5 percent), Non-Academic Career Change (3 percent), Personal (3 percent), Retired (5 percent), Reason Unknown (38 percent).

Volunteers and Military Support

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

The DoD STARBASE locations documented a total of 8,187 volunteers who contributed a total of 89,928 hours, worth an estimated \$2,067,564¹⁴ contribution, to the program during FY 2017 (see Table 4). Parents account for the greatest amount of volunteers, followed by teachers. Teachers participate in the DoD STARBASE program along with their students. Teachers provide instructional support to the DoD STARBASE classroom and gain valuable classroom techniques that can be applied to activity based education. It is estimated that teachers provide a volunteer value of \$1,057,333 to the program in FY 2017. The amount of time donated by this field of experts (over 45,000 hours) is a testament to the schools commitment and support of the DoD STARBASE program.

Table 4: FY 2017 Volunteer Participation

	Volunteers	Hours	Value
Teachers	2,584	45,522	\$1,057,333
Parents	4,807	37,825	\$856,406
Community/Other ¹⁵	796	6,581	\$153,825

As part of the objectives outlined under the “Inspire” goal of the DoD STEM Education and Outreach Strategic Plan¹⁶, military personnel are encouraged to support the DoD STARBASE program as mentors, expert speakers, tour guides, and other support activities. DoD STARBASE directors reported 8,719 hours of support by 2,654 military personnel.

Outreach

Many DoD STARBASE locations provide resources and training to local teachers. Of the 66 locations, 22 locations provided some kind of training to local teachers in FY 2017. Many DoD STARBASE locations (62 percent) 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, 26 percent of the teachers may use this training towards their certification requirements.

Students may attend DoD STARBASE at the 5th 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 48 of the 66 DoD STARBASE locations report that they have relationships with other outreach programs in their area to include: FIRST LEGO League, FIRST Robotics, 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.

¹⁴The value of volunteer time presented here is the average wage of non-management, non-agricultural workers by state found at: https://www.independentsector.org/volunteer_time.

¹⁵Other volunteers include STEM groups, firefighters, board members, etc.

¹⁶DoD STEM Development Program Office. (2016). DoD STEM Strategic Plan FY2016 – FY2020. Retrieved from: https://www.acq.osd.mil/rd/publications/docs/DoD_STEM_Strategic_Plan_2015_1022_final.pdf.

DoD STARBASE 2.0 Program

2.0 PROGRAM ELEMENTS

DoD STARBASE 2.0 is a STEM-based afterschool mentoring program that is based at a collaborating school system.¹⁷ 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 has expanded to 22 states and Puerto Rico. In FY 2017, 2.0 programs were organized by 31 DoD STARBASE locations who reported coordination of 72 DoD STARBASE 2.0 programs.¹⁸ Throughout FY 2017, directors of the 31 locations were interviewed during site visitations and surveyed to obtain data on program requirements, participants, curriculum, staff, and funding to help determine the overall operational status of the DoD STARBASE 2.0 program.

PROGRAM REQUIREMENTS

DoD STARBASE 2.0 maintains a unique school-based afterschool program that targets at-risk 6th to 8th 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; 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. The basic guidelines are:

- DoD STARBASE 2.0 meetings are held at a school
- There is ample space for meetings
- Meetings are held after school hours
- Parking is provided for mentors
- A nutritional snack is provided for the students
- The students are in 6th, 7th and/or 8th grades

PARTICIPANTS

In FY 2017, school districts and schools partnered with DoD STARBASE at 72 locations to operate 89 - 2.0 clubs. The number of DoD STARBASE sites electing to coordinate a 2.0 program has increased by seven sites resulting in a 41 percent increase in the number of 2.0 clubs. Many of the FY 2017 DoD STARBASE 2.0 students were former DoD STARBASE students (50 percent) and most were males (62 percent). The average club size was 17 students. In FY 2017, the DoD STARBASE 2.0 program served 1,515 student participants with a retention rate of 87 percent. This is nearly twice the number of student participants from FY 2016 but more importantly, the retention rate is up 7 percent from FY 2016. Directors reported several reasons why students discontinued the program. Relocation, time conflicts, and lack of interest in the chosen curriculum were cited as the main reasons why students drop from the program.

¹⁷In FY 2017, DoD STARBASE 2.0 programs were offered in Alabama, California, Colorado, Connecticut, Florida, Georgia, Indiana, Kansas, Louisiana, Massachusetts, Michigan, Minnesota, Montana, New Mexico, Ohio, Oklahoma, Oregon, Puerto Rico, Texas, Utah, Virginia, Wisconsin, and West Virginia.

¹⁸A 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.

2.0 CURRICULUM

Over the course of three to five months, DoD STARBASE 2.0 students work with a STEM mentor on a team project at their school 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 culminate with some sort of related competition, such as FIRST LEGO League competitions¹⁹ and Team America Rocketry Challenge.²⁰

STAFF

STEM Mentor Coordinator

DoD STARBASE 2.0 is primarily a volunteer program. The participation of volunteer STEM mentors and volunteer classroom teachers is 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 duties of the STEM Mentor Coordinator play an invaluable role in the success of DoD STARBASE 2.0. 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
- Selecting program curriculum

¹⁹FIRST LEGO League is a global competition where elementary and middle-school students build LEGO-based robots to complete tasks on a thematic playing surface.

²⁰The 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.

STEM Mentors

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

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 check
- Volunteer approximately six hours per month through the club duration

The 438 mentors who participated in the 2.0 program came from a variety of STEM professions and included military, non-military, DoD professionals, industry professionals, and college students (see Table 5). Working with a mentor, participating students are exposed to the lifelong benefits of higher education and a career in a STEM-related field.²¹ They may also receive guidance about educational and career options. The number of mentors participating in a DoD STARBASE 2.0 program has significantly increased from FY 2016 by 70 percent.

Table 5: Mentor Types

Type	Number of Mentors
Military	99
Non-Military, DoD, Professionals	54
Industry Professionals	59
College Students	34
STARBASE Staff Members	60
Host School Staff Members	108
Other ²²	24
Total Number of Mentors	438

Funding

The DoD STARBASE 2.0 programs operate through a combination of federal and private funds. Of the 31 DoD STARBASE locations coordinating a 2.0 program, 37 percent receive funding from both sources and 60 percent operate solely using their federal DoD STARBASE funds.

²¹ Programs coordinated by STARBASE One and STARBASE Savannah did not report using mentors.

²² Other types of mentors include: high school students, parents and police officers.

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.

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.
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.



"DoD STARBASE is an excellent scholastic program. The program nurtures unity between the military and surrounding communities."

– SGM (RET) GREG WILSON AND CPT VILLERE,
LOUISIANA NATIONAL GUARD, STARBASE
JACKSON BARRACKS

Program Oversight

COMPLIANCE

The Office of the Assistant Secretary of Defense (OASD) for Manpower and Reserve Affairs (M&RA) has the overall responsibility for the management of the DoD STARBASE program. The Department of Defense Instruction (DoDI) 1025.7 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 and is comprised of three progressive levels of program and organizational performance. Each level has a prescribed set of activities that range from obtaining adherence to 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 following sections outline details of the performance assessment system.

For each DoD STARBASE location, the assessment system requires the attainment of each of the objectives at each level and their maintenance and sustainability over time to retain their status level. Performance level is determined through site visitations, academy reporting requirements, and periodic surveys using detailed criteria that is established and reviewed annually by the evaluation team.²³ 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 had been successfully achieved.

The successful attainment of these levels of performance provides OASD/M&RA and the military service representatives a way to determine 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.

²³Detailed criteria have been established for performance Levels I and II.

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 a DoD STARBASE 2.0 program. 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 relations 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 performance levels are reviewed on an ongoing basis for location-wide application, appropriate-level designation, the typical period in which they can be successfully attained, and the ability for downstream sustainability. As collaborations and newly established operations are introduced, the academy performance level review process is expected to be refined and expanded.

COMPLIANCE ADHERENCE

The FY 2017 visitations focused primarily on Level I compliance. Several sites were also visited to document DoD STARBASE 2.0 program participation and execution. The Level I 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 commanding officer hosting the program 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 commanding officer. 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. In some instances, a follow-up visitation is recommended for FY 2018 by the evaluation team to document that corrective action has been taken and provide assistance in obtaining Level I performance.

Newly installed locations may receive an orientation visitation to outline DoDI requirements and document Level I compliance. Six orientation visits were conducted in FY 2017.²⁴ 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.

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. 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.

It is recommended by the evaluation team that those sites that have achieved Level I status (or near Level I status) be visited for Level II Compliance in FY 2018 to include an evaluation of their DoD STARBASE 2.0 program. Also recommended, is a three-year cycle of Level I compliance evaluations to confirm operational status regardless of performance level.

²⁴Orientation visits were conducted at: STARBASE Peterson, STARBASE New Mexico, STARBASE Puerto Rico, STARBASE MCAS Beaufort, STARBASE Kelly and Wyoming STARBASE Academy

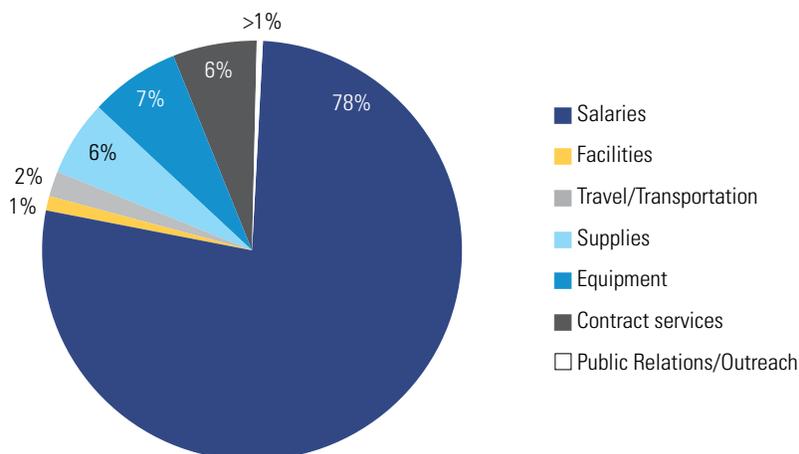
Fiscal Analysis

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 2017, the total program budget was \$30,000,000. OASD/M&RA allocated \$27,300,000 to program operations. Some of this amount was designated to opening five new DoD STARBASE locations in California, Idaho, Indiana, Minnesota, and Texas.²⁵ The remainder of the appropriation was used for assessment activities, staff development and training programs, and overall program design and development activities.

In FY 2017, the median operating cost per location was \$359,000. This is a 6.1 percent increase from FY 2016 when program allocations were 22 percent less. 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.

Operational costs differ among DoD STARBASE locations. Overall expenditures of DoD STARBASE funds allocated to each program site are shown in Figure 1. Staff costs range from 46 percent to 94 percent of the location's budget which, on average, account for 75 percent of the site budget followed by equipment (7 percent), supplies (6 percent), and contract services (6 percent).

Figure 1: FY 2017 Expenditures of DoD Funds



In addition to DoD funds, 22 of the 66 locations obtained funding from non-DoD sources. The total raised from non-DoD funding for FY 2017 was \$544,145. The average raised by locations that secured additional funding through state allocations, grants, and donations was \$5,460. The total monies received from these sources were \$166,032, \$122,186, and \$39,366, respectively. A total of \$529,990 (97 percent) of supplemental funding was expended in FY 2017. Academies use that supplemental funding for staff salaries (51 percent); supplies (23 percent); equipment (7 percent); public relations/outreach (6 percent); transportation/travel (4 percent); facilities/furnishings (3 percent); program/curriculum development (2 percent); contract services (1 percent); and other expenditures (3 percent).

²⁵ DoD STARBASE Goodfellow was fully operational by the end of FY 2017. The remaining new sites expect to open their doors to students in the spring of 2018.

Student Assessment

OVERVIEW

The Department of Defense (DoD) sponsored STARBASE program provides Science, Technology, Engineering and Math (STEM) learning and occupational awareness experiences to American youth at more than sixty military affiliated installations across the United States. The program is evaluated annually by measuring student gains in areas including basic STEM factual knowledge as well as changes in student interest in seeking STEM-related occupations. In addition, the program's impact is gauged by surveying student attitudes toward STEM activities in the contexts of school, the military, and career opportunities. The results from this annual evaluation are then useful in further enhancing the DoD STARBASE curriculum.

This evidence-based approach starts with students completing the DoD STARBASE Student Assessment Questionnaire at the start of the DoD STARBASE program. Students then complete the assessment again, once the program is completed. The key pre- to post-program assessment domains include:

- Attitudes about STEM topics
- Attitudes about STEM careers, both military and non-military
- Attitudes about the military (e.g., military personnel, military locations)
- Knowledge items that measure STEM conceptual understanding

The Student Assessment Questionnaire is updated and moderately revised each year to adapt to changes in the DoD STARBASE program as well as to reflect the evolving direction of student engagement with STEM learning opportunities and career interests. Each item is evaluated based on the current year's assessment results by subject matter experts who manage the DoD STARBASE program curriculum as well as professionals from the testing and measurement industry.

INSTRUMENT DESIGN

The 2016-2017 DoD STARBASE Student Assessment used a set of 18 knowledge items, one listing-based knowledge item, and 36 attitudinal items. Pilot items and historical items are maintained in an item data bank for possible use in future administrations and to allow for year-to-year comparisons.

Both the national standards for STEM learning objectives and the DoD STARBASE curriculum have been largely consistent during the past few years. Nonetheless, STEM exercises and activities for the students participating at local DoD STARBASE academies are often adapted and modified from one year to the next. 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 solely teaching to the assessment

As in previous years, the assessment for this year consists of two separate instruments combined into one questionnaire – a Knowledge Test and an Attitudinal survey.

- Knowledge Test – 18 multiple-choice items and one ‘choose all that apply’ nomination item were included in the assessment of STEM understanding based on the core DoD STARBASE curriculum. Twelve were core items that previously had been used, five were modified from previously used items, and two were new items (which were tested and found to be reliable).
 - o The listing item measures changes in student perceptions by presenting a list of 25 occupations and asking the students to identify all jobs that utilize or require STEM knowledge. The change is based on how many of the 25 occupations students identify as STEM related before vs. after DoD STARBASE. Results from this exercise consistently reflect favorably on the program, but it does not make a lot of sense to co-mingle the results of this STEM-job awareness item with results from more traditional knowledge items (e.g., identifying the correct chemical composition of the air we breathe). Therefore, only the 18 multiple-choice items were used for most of the evaluations of knowledge gains.
- Attitudinal Survey – 36 attitudinal items (31 core items administered both pre- and post-program; 5 program evaluation items administered post-program only) were included in the survey to measure various aspects of student attitudes and opinions about STEM and DoD STARBASE that impact areas such as academic success and future career goals.
 - o Slight modifications in item order and overall layout were made in the 2016-2017 survey to make it easier for students to follow the response option formatting. In 2016-2017, 17 core items were retained unchanged, item wording was enhanced for 14 items, and 5 new items were included (new items were analyzed and found to be reliable).

Data collected from students with the Knowledge Test and the Attitudinal Survey appear in this report as item results; results based on groups of items are identified as category results. There are also overall scores, which are presented as a mean score (i.e., group average score) and also as a percent score (i.e., percent correct for Knowledge Test; percent favorable for Attitudinal Survey). Item results, category results, and overall results are typically compared and contrasted between different groups of students or between different time periods to test for statistically significant differences that may reveal important information about the student participants, the impact of DoD STARBASE participation in a given year, or trends that can be seen across years.

STUDY LOGISTICS

The DoD STARBASE Student Assessment was administered between January and June of 2017. 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 Test.
- Administrator Instructions – Detailed instructions to the assessment coordinators including the materials needed for administration, filling out the assigned student code 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 2017 student survey resulted in a total of 3,333 (1,711 pre-program and 1,622 post-program) surveys being returned to General Dynamics IT for processing. Responses were received from 60 of the 61 operational DoD STARBASE academies participating for a 98 percent response rate, matching 2016, and comparing favorably to 96 percent in 2015, and 86 percent in 2014.²⁶

Surveys were matched pre- and post-program based on unique student ID codes. Those with matching data for both the pre- and post-program were retained for analysis, resulting in a total of 1,622 pre-test/post-test matched pairs. Of these 1,622 complete cases, 68 had more than three missing items from either the pre-questionnaire or the post-questionnaire. In 57 cases, the missing data were not due to student inattentiveness. Instead, two academies mistakenly instructed students to skip most post-test attitude questions that had been asked on the pre-test.²⁷ Those 57 cases were retained so that the sites could be represented in the report, despite the lack of complete post-test data, but could only be included in the analyses of knowledge changes. That resulted in 1,611 pre-test cases and 1,554 post-test cases, which are referenced throughout this report.

The frequency and percent of DoD STARBASE students who reported belonging to the various demographic categories are presented in Table 6 and Table 7. As in previous years, the DoD STARBASE student population is fairly evenly split between boys and girls (51.5 percent and 48.5 percent, respectively). Most of the students were in the fifth grade (93.7 percent).

Table 6: Demographic Profile of Student Sample

Item	Response	Frequency	Percent
Grade	4	58	3.4
	5	1,604	93.7
	6	26	1.5
	7	11	0.6
	8	11	0.6
	Unknown/No answer	1	0.1
Gender	Boy	881	51.5
	Girl	829	48.5
	Unknown/No answer	1	0.1

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

DoD STARBASE academies are hosted by military installations across the nation, with over 45 percent of student assessments coming from the South (24 percent) and Southeast (22 percent) combined. Another 29 percent came from the Midwest and 17 percent were from the West. A smaller percentage of the students were assessed at DoD STARBASE academies in the East (8 percent).

²⁶ STARBASE Indiana – South Bend failed to administer the student survey. The newly installed STARBASE Indiana - Gary, STARBASE Idaho, STARBASE Edwards, STARBASE Minnesota - Duluth, and STARBASE Goodfellow were not operational at the time of the student survey.

²⁷ STARBASE Nellis and STARBASE Vermont – Rutland were contacted on this error.

Five military service components sponsor DoD STARBASE programs. The National Guard is the most represented component (46 sites and 76 percent of students). The Air Force has eight sites (12 percent of students), the Air Force Reserve has four sites (8 percent of students), while the Army (2 percent) and the Marine Corps (2 percent) each have one participating site.

Table 7: Demographic Profile of Academy Sample

Item	Response	Academy Frequency	Student Frequency	Student Percent
Region	East	5	130	8.1
	Midwest	18	466	28.9
	South	14	382	23.7
	Southeast	12	355	22.0
	West	11	278	17.3
Sponsoring Component	Air Force	8	200	12.4
	Air Force Reserve	4	123	7.6
	Army	1	24	2.2
	Marine Corps	1	35	2.2
	National Guard	46	1,229	76.3

Students' previous exposure to military people and awareness of the DoD STARBASE program are presented in Table 8. Most of the students knew someone who went through DoD STARBASE (70 percent), had heard about DoD STARBASE (65 percent), and/or had met military people before coming to the DoD STARBASE program (66 percent). Still, roughly a third of participants had no previous contact with the DoD STARBASE program or military personnel before their participation, indicating that the program is successful in reaching out to the general community.

Table 8: Students' Prior Experience with Military and DoD STARBASE

Item	Response	Frequency	Percent
I have met military people before coming to DoD STARBASE	No	553	34.3
	Yes	1,058	65.7
I heard about DoD STARBASE before I knew I was coming here	No	567	35.2
	Yes	1,044	64.8
I know someone that went through DoD STARBASE before me	No	490	30.4
	Yes	1,121	69.6

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 by students using a 7-point Likert scale with a range of responses from one (Strongly Disagree) through seven (Strongly Agree). The scale is anchored by a smiling face for Strongly Agree and by a frowning face for Strongly Disagree.

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 DoD STARBASE program.

PRE/POST ATTITUDINAL SURVEY MEANS

To provide a five-year comparison, the DoD STARBASE pre- and post-program Attitudinal Survey total mean scores beginning in 2013 are shown in Table 9. Total mean scores are a composite averaged value of all the items on the survey, so it also has a possible range from one (Strongly Disagree, or least favorable) to seven (Strongly Agree, or 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 evaluation items. Utilizing mean scores in pre- to post-program comparisons controls for the difference in the total number of items given. Appendix A provides explanations of the statistical techniques used to analyze group differences and relationships throughout this report.

As in the previous years, there was a significant increase ($p < .001$) in post-program mean scores as compared to pre-program mean scores, indicating that students responded even more favorably following the program. The total mean scores for the pre- and post-program are fairly typical compared to recent years. Additional details are provided in Table 9, including the total mean attitudinal scores as well as the score shift from pre- to post-program starting from 2013. It bears repeating that, of the 36 attitude items, 17 were verbatim from prior years, 14 had slight wording modifications from prior years, and 5 were new. A larger number of changes and new items were made in 2014 and carried into 2015. As a consequence, some dissimilarity in the overall means from 2015 as compared to the 2017 overall means was expected.

Table 9: Pre/Post Attitudinal Survey Means and Standard Deviations (2013 - 2017)

Survey	2013 Mean*	2014 Mean*	2015 Mean*	2016 Mean*	2017 Mean*
Pre-Program	5.82	5.78	5.18	5.56	5.62
Post-Program	5.97	5.91	5.59	5.77	5.85
Survey	Std. Dev.				
Pre-Program	0.61	0.63	0.86	0.77	0.76
Post-Program	0.66	0.67	0.86	0.76	0.79

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

Table 5 rank-orders the items based on post-program means from most favorable to least favorable. Seventy-seven percent of the items show some degree of increase in favorability from pre- to post-program means. The 22 starred items (representing 71 percent of the 31 items assessed at both pre-test and post-test) show a statistically significant increase in favorability from pre-program to post-program attitudes. A number of items show what is called a “ceiling effect”; the responses were so positive at the pre-test that there was little room for an increase. For example, on an item such as “I like doing science experiments”, the pre-program mean value of 6.42 represents 91.7 percent of the maximum possible. Although the higher post-test score of 6.46 was not a significant increase, it was 92.3 percent of the maximum, which definitely reflects positively on the value that students are getting from the DoD STARBASE program. Similarly, other items, such as “I think I will/I have enjoyed my time at DoD STARBASE” and “I like technology” also started out at a very high level and remained so at the end.

Two items showed a significant decrease. The mean of the item “I want to learn more about technology” declined 2.01 percent, from 5.97 to 5.85, and the item “I would like to know more about science” declined 2.22 percent from 5.85 to 5.72. In both cases, the decline was small and the means remained positive. In light of the strongly positive changes on most of the other items, these small declines can be regarded as normal statistical fluctuations. In 2016, for example, the item “My teacher is excited about science” showed a small but significant drop from pre-program to post-program (5.55 vs. 5.46). The reworded item “Teachers at my school are excited about science” did not show a statistically meaningful change from pre-test to post-test (5.26 vs. 5.22) this time although it declined again slightly. The positive post-test score of 5.22 out of 7, which is 75 percent of the maximum possible score, indicates that the teachers were conveying an appropriate level of enthusiasm about science nonetheless. It appears that student perceptions of teacher zeal for science change after DoD STARBASE attendance. Perhaps teachers cannot compete with the environment provided by instructors at DoD STARBASE.



“My all-time favorite thing at DoD STARBASE was when we got to pick a STEM job. Who knew there were so many STEM careers to choose from?!”

– ANDI, STUDENT AT LONGFELLOW ELEMENTARY SCHOOL ATTENDING STARBASE GREAT FALLS

Table 10: Pre/Post Rankings and Mean Scores of Student Attitudinal Responses

Pre-Program N=1,445		Attitudinal Item	Post-Program N=1,445	
Mean	Rank		Mean	Rank
6.43	1	I like doing science experiments.	6.46	1
	post only	At DoD STARBASE, I learned a lot of things that I can use.	6.41	2
6.20	3	People who work for the military do lots of different things.	6.33***	3
6.39	2	I think I will remember enjoying my time at DoD STARBASE.	6.33	4
	post only	DoD STARBASE Instructors made learning about science, technology, engineering, and math topics fun.	6.27	5
6.07	5	I do not think DoD STARBASE will help me do better in school. (Reverse Scored)	6.26***	6
	post only	DoD STARBASE is boring. (Reverse Scored)	6.25	7
6.19	4	I like technology.	6.19	8
5.97	8	Most people use science, technology, math or engineering skills every day.	6.18***	9
6.02	6	Math is important for developing new technology.	6.17***	10
5.84	15	I am aware of some jobs that use math, science, engineering, or technology.	6.12***	11
5.52	20	Engineers help solve challenging problems.	6.12***	12
5.95	10	Scientists work on things that make life better.	6.11***	13
5.82	17	Math is really useful for solving engineering problems.	6.11***	14
5.86	11	People who work for the military use technology in their jobs.	6.10***	15
5.98	7	Learning about science, engineering, technology, and math will help me in my daily life.	6.07*	16
	post only	I will tell others about my DoD STARBASE experience.	6.06	17
	post only	I think almost any kid would have fun learning at DoD STARBASE	6.04	18
5.83	16	Military bases are exciting.	5.95**	19
5.85	12	A lot of good jobs use math to solve problems.	5.88	20
5.97	9	I want to learn more about technology.	5.85***	21
5.84	14	I like learning how technology works.	5.83	22
5.52	19	I enjoy learning about science, technology, math, and engineering topics.	5.73***	23
5.85	13	I would like to know more about science.	5.72***	24
5.77	18	I would be interested in a DoD STARBASE club at my school if it were offered.	5.71	25
5.34	22	Jobs that use math, engineering, technology and science are exciting.	5.52***	26
5.07	26	I like engineering.	5.49***	27
5.37	21	I am good at math.	5.44*	28
5.21	25	A military base is a good place to work.	5.43***	29
5.25	24	I want to learn more about engineering.	5.36**	30
5.04	27	When I finish school, I would like to get a job that has something to do with math, science, technology, or engineering.	5.36***	31
5.03	28	I am good at science.	5.33***	32
5.26	23	Teachers at my school are excited about science.	5.22	33
4.76	29	Learning about science is easy for me.	5.09***	32
4.66	30	Teachers at my school talk about why technology is important.	4.76**	33
4.32	31	I am interested in being a scientist or engineer.	4.60***	35

* $p < .05$, ** $p < .01$, *** $p < .001$. The ranks for means that appear equal were resolved at the third decimal point.

SHIFTS IN STUDENTS' ATTITUDES

Table 11 provides the top ten significant pre- to post-program attitudinal shifts for the 2017 program.

There was, to take a few examples, an 11 percent increase in appreciation for engineers solving challenging problems and an 8.2 percent greater liking for engineering. There also was a 6.9 percent increase in the students' perceptions regarding their level of ease of learning science and a 6.0 percent increase in the student believing he or she is good at science. Such results suggest that the DoD STARBASE program is having its intended impact of expanding student interest and sense of self-confidence in STEM activities.

A 6.4 percent greater positivity towards a job that involves science, math, engineering or technology after attending DoD STARBASE is another indication that the program is achieving its goals. There also was a 4.8 percent increase in reports of being aware of jobs that use math, science, engineering or technology. Finally, there was a 4.2 percent increase in students seeing a military base as a good place to work, thus indicating the value of the DoD STARBASE program as an effective community relations program of the DoD.

Table 11: The Top 10 Ranking of Attitudinal Item Shifts from Pre- to Post-Program in 2017

Attitudinal Item	Mean Percent Positive Shift Pre- to Post-Program
Engineers help solve challenging problems.	10.87%
I like engineering.	8.28%
Learning about science is easy for me.	6.93%
I am interested in being a scientist or engineer.	6.48%
When I finish school, I would like to get a job that has something to do with math, science, technology, or engineering.	6.35%
I am good at science.	5.96%
Math is really useful for solving engineering problems.	4.98%
I am aware of some jobs that use math, science, engineering, or technology.	4.79%
A military base is a good place to work.	4.22%
People who work for the military use technology in their jobs.	4.10%

MATH AND SCIENCE ATTITUDINAL RATINGS

Similar to previous years, student mean attitudes in Table 12 on science and math are more positive post- as compared to pre-program. Specifically, students show significant shifts in their self-perceptions about being good at math and science post-program. This suggests that the exposure to STEM concepts covered within the program curriculum is giving them more confidence in their math and science abilities. There was little change in student liking for doing science experiments, which was already quite high, but there was a substantial increase in the appreciation of math for addressing applied problems after attending DoD STARBASE.

Table 12: Math and Science Attitudinal Item Mean Scores (2017)

Math and Science Attitudinal Items	Pre-Program Mean	Post-Program Mean	Gap Score*
I am good at science.	5.03	5.33	+0.30*** (5.96%)
I am good at math.	5.37	5.44	+0.07* (1.30%)
I like science.	6.43	6.46	+0.03 (0.50%)
I like math.	5.82	6.11	+0.29*** (4.98%)

* $p < .05$, *** $p < .001$

Table 13 shows the historical means for the science and math items beginning in 2013. The attitudes across years remain consistently favorable. There is a modest drop in a student believing that he or she is good at science but the mean for “I like doing science experiments” is quite high. Similarly, the mean for “Math is really useful for solving engineering problems” is also high and higher than the previously used item of “I like math”. These trends imply that students are keener for the hands-on STEM activities and practical solutions that DoD STARBASE offers, although it is too soon to tell if the trends will continue.

Table 13: Post-Program Attitudinal Item Mean Scores (2013 - 2017)

	2013	2014	2015	2016	2017
Post-Program Attitudes	Mean	Mean	Mean	Mean	Mean
I am good at science.	5.60	5.51	5.45	5.44	5.33
I am good at math.	5.37	5.33	5.48	5.54	5.44
I like science/I like doing science experiments (2017)	5.82	5.88	5.57	5.74	6.46
I like math/Math is really useful for solving engineering problems (2017)	5.19	5.23	5.16	5.26	6.11

MILITARY-RELATED ATTITUDES

Comparisons Based on Prior Experience with Military Personnel

Prior experience with military locations and 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 significantly more positive attitudes, both before the program (5.69 vs. 5.48, $F(1, 1,608) = 28.73$, $p < .001$) and after completion (5.80 vs. 5.70, $F(1, 1,609) = 6.11$, $p < .01$). This difference was evident on 11 items, presented in Table 9, including greater appreciation for science, engineering, military bases and STEM.

There were nine items on which participants with prior exposure to the military had more favorable attitudes only on the pre-program assessment. These results suggest that participants with low exposure to the military caught up and had comparably favorable attitudes at the conclusion of the program.

As Table 14 shows, these items include: seeing military bases as exciting, liking for science, and an appreciation for mathematics. These outcomes testify to the salutary impact of the DoD STARBASE program on attitudes even for those without prior experience with the military.

Table 14: Significant Differences in Attitudinal Items Based on Prior Military Contact

Attitudes That Are More Positive with Prior Military Contact
I am good at science. (Pre- & Post)
Learning about science is easy for me. (Pre- & Post)
Teachers at my school are excited about science. (Pre- & Post)
I like engineering. (Pre- & Post)
Math is really useful for solving engineering problems. (Pre- & Post)
Math is important for developing new technology. (Pre- & Post)
I am aware of some jobs that use math, science, engineering, or technology. (Pre- & Post)
Most people use science, technology, math or engineering skills every day. (Pre- & Post)
I do not think DoD STARBASE will help me do better in school. (Reverse Scored, Pre- & Post)
People who work for the military use technology in their jobs. (Pre- & Post)
Learning about science, engineering, technology, and math will help me in my daily life. (Pre- & Post)
Military bases are exciting. (Pre-only)
A military base is a good place to work. (Pre-only)
I like doing science experiments. (Pre-only)
I want to learn more about engineering. (Pre-only)
I would be interested in a DoD STARBASE club at my school if it were offered. (Pre-only)
I enjoy learning about science, technology, math, and engineering topics. (Pre-only)
People who work for the military do lots of different things. (Pre-only)
Scientists work on things that make life better. (Pre-only)
A lot of good jobs use math to solve problems. (Pre-only)

Note: Group mean values are omitted for simplicity. They are available upon request.

SHIFTS IN MILITARY-RELATED ATTITUDES

Table 15 shows the four items in the Attitudinal Survey related to perceptions surrounding the military. Positive ratings were observed for the items “People who work for the military do lots of different things” (mean = 6.29) and “People who work for the military use technology in their jobs” (mean = 6.04). Although the item “A military base is a good place to work” (mean = 5.57) 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 +.22). In general, it appears that student attitudes about the military are positively influenced by their DoD STARBASE experiences. There does appear to be a slackening in positive gains for excitement and variety of military activities over the past few years. On the other hand, increased perceptions of the military as a good place to work have strengthened after attending DoD STARBASE during this time period. It is too early to tell if these trends may continue.

Table 15: Pre- to Post-Attitudinal Shifts on Military-Related Items (2013 - 2017)

Military Attitudinal Items	2013	2014	2015	2016	2017
People who work for the military do lots of different things.	+.16	+ .19	+ .08	+ .07*	+ .13* 6.20-6.33 (2.1%)
Military bases are exciting.	+ .26	+ .18	+ .18	+ .09*	+ .12* 5.83-5.95 (2.1%)
A military base is a good place to work.	+ .19	+ .17	+ .34	+ .22*	+ .22* 5.21-5.43 (4.2%)
People who work for the military use technology in their jobs.					+ .24* 5.86-6.10 (4.1%)

COMPARISON OF HIGH VS. LOW MILITARY ATTITUDE

Overall military attitudes were calculated based on a composite of the four items identified above. Consistent with prior years, students with a sum total of 27 or 28 (out of a possible 28) on those four items in the post-program assessment were categorized as having high military attitudes (n=459). Students with a sum total of 19 or less on those four items were categorized as having low military attitudes (n=213).

Table 16 provides the responses for all the attitudinal items, which have been rank-ordered from largest to smallest gap score between the high and low military attitude groups. As expected, the greatest differences occur with the first four items that make up the composite scale. Other pre- to post-program item differences between high and low military attitudes groups reflect more meaningful attitudinal differences. Those with more favorable attitudes on the four military items demonstrate:

- More interest in STEM activities, broadly described (e.g., “When I finish school, I would like to get a job that has something to do with math, science, technology, or engineering.”, “Jobs that use math, engineering, technology and science are exciting.”, “I enjoy learning about science, technology, math, and engineering topics.”);
- More interest in science (“I would like to know more about science.”, “Scientists work on things that will make life better.”);
- More interest in technology (“I like learning how technology works.”, “I want to learn more about technology.”);
- More interest in engineering (“I want to learn more about engineering.”, “I like engineering.”);
- More interest in mathematics (“Math is important for developing new technology.”, “A lot of good jobs use math to solve problems.”);
- Greater appreciation for the DoD STARBASE program (“I think almost any kid would have fun learning at DoD STARBASE.”, “I will tell others about my DoD STARBASE experience.”, “DoD STARBASE Instructors made learning about science, technology, engineering, and math topics fun.”, “I would be interested in a DoD STARBASE club at my school if it were offered.”).

In summary, the results in Table 16 show students with more receptive attitudes toward the military also appear to be more receptive and able to absorb and retain the STEM-related lessons and applications presented in the DoD STARBASE context. All of the gap differences between students with high or low military attitude scores presented in Table 11 represent item differences for the post-program testing session; all results are statistically significant ($p < .05$).

Table 16: Statistically Significant Post-Program Gap Scores Based on Low and High Military Attitudes

Attitude Item	Low Military Attitude (n = 213)	High Military Attitude (n = 459)	+ Gap
Post-Program Attitudes (mean total) Composite Score	4.76	6.35	1.59*
A military base is a good place to work.	3.57	6.79	3.23*
Military bases are exciting.	3.93	6.93	3.00*
People who work for the military use technology in their jobs.	4.51	6.92	2.41*
People who work for military do lots of different things.	4.75	6.96	2.21*
I would be interested in a DoD STARBASE club at my school if it were offered.	4.42	6.48	2.06*
I am interested in being a scientist or engineer.	3.41	5.39	1.98*
Jobs that use math, engineering, technology and science are exciting.	4.32	6.30	1.98*
I enjoy learning about science, technology, math, and engineering topics.	4.51	6.39	1.88*
I want to learn more about engineering.	4.19	6.07	1.87*
I like engineering.	4.34	6.19	1.84*
I would like to know more about science.	4.53	6.34	1.81*
When I finish school, I would like to get a job that has something to do with math, science, technology, or engineering.	4.43	6.02	1.59*
A lot of good jobs use math to solve problems.	4.94	6.49	1.55*
Teachers at my school talk about why technology is important.	3.77	5.27	1.50*
Learning about science is easy for me.	4.16	5.62	1.46*
I think almost any kid would have fun learning at DoD STARBASE.	5.13	6.57	1.45*
I like learning how technology works.	4.92	6.36	1.44*
Scientists work on things that make life better.	5.17	6.59	1.42*
I want to learn more about technology.	4.93	6.35	1.42*
I will tell others about my DoD STARBASE experience.	5.14	6.55	1.41*
DoD STARBASE Instructors made learning about science, technology, engineering, and math topics fun.	5.34	6.72	1.38*
Learning about science, engineering, technology, and math will help me in my daily life.	5.22	6.59	1.37*
Math is important for developing new technology.	5.31	6.63	1.31*
DoD STARBASE is boring. (Reverse Scored)	5.34	6.65	1.31*
I am good at science.	4.52	5.78	1.27*
I think I will remember enjoying my time at DoD STARBASE.	5.44	6.69	1.25*
Teachers at my school are excited about science.	4.53	5.71	1.18*
I do not think DoD STARBASE will help me do better in school. (Reverse Scored)	5.52	6.69	1.17*
Engineers help solve challenging problems.	5.37	6.52	1.15*
Most people use science, technology, math or engineering skills every day.	5.46	6.61	1.15*

Table 16: Statistically Significant Post-Program Gap Scores Based on Low and High Military Attitudes (cont.)

Attitude Item	Low Military Attitude (n = 213)	High Military Attitude (n = 459)	+ Gap
At DoD STARBASE, I learned a lot of things that I can use.	5.62	6.74	1.12*
Math is really useful for solving engineering problems.	5.41	6.51	1.11*
I am aware of some jobs that use math, science, engineering, or technology.	5.42	6.52	1.10*
I am good at math.	4.79	5.75	0.96*
I like doing science experiments.	5.87	6.78	0.92*
I like technology.	5.75	6.53	0.78*

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

**Items are significantly different at $p < .05$ or greater.*

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 17 shows the overall gender differences in responses for both the pre- and post-program surveys. The boy attitude scores were on average higher than girl scores at the pre-program assessment (5.70 vs. 5.53, $F(1, 1577) = 20.76$, $p < .0001$). Although a difference remained at the post-program assessment (5.91 vs. 5.80, $F(1, 1577) = 7.26$, $p < .0007$), girls had narrowed the gap by 60 percent through an improvement that was 28.57 percent stronger than boys (+.27 vs. +.21).

Table 17: Gender Differences on Pre/Post Attitude Survey Mean Total Scores

	Sample Size	Pre-Program Mean (31 items) *	Post-Program Mean (36 items)	Pre-Post Attitude Gap Score
Boys	831	5.70 (81.4%)	5.91 (84.4%)	0.21 (3.0%)*
Girls	779	5.53 (79.0%)	5.80 (82.9%)	0.27 (3.9%)*

“DoD STARBASE is like school heaven!! It is so fun, I wish I could come back every year. All of the teachers were funny, kind and smart.”

– SHANNON MIDDLETON, STUDENT AT ESMOND STATION K-8 SCHOOL
ATTENDING STARBASE ARIZONA



Table 18: 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 am interested in being a scientist or engineer.	4.86	4.32	0.54*
I want to learn more about technology.	6.10	5.57	0.53*
I like engineering.	5.71	5.26	0.45*
Military bases are exciting.	6.16	5.75	0.41*
I want to learn more about engineering.	5.55	5.16	0.39*
I like learning how technology works.	6.01	5.65	0.36*
I like technology.	6.36	6.02	0.34*
I enjoy learning about science, technology, math, and engineering topics.	5.87	5.59	0.28*
Jobs that use math, engineering, technology and science are exciting.	5.65	5.41	0.24*
I am good at math.	5.56	5.32	0.24*
Learning about science is easy for me.	5.20	4.98	0.22*
People who work for the military use technology in their jobs.	6.20	5.99	0.21*
When I finish school, I would like to get a job that has something to do with math, science, technology, or engineering.	5.46	5.26	0.20*
I am good at science.	5.40	5.25	0.15*
Girls More Favorable than Boys			
I will tell others about my DoD STARBASE experience.	5.25	6.17	-0.92*
I think I will remember enjoying my time at DoD STARBASE.	5.33	5.59	-0.26*
I think almost any kid would have fun learning at DoD STARBASE	6.10	6.23	-0.13*
I like doing science experiments.	6.40	6.52	-0.12*

* Statistically significant difference, $p < .05$

Boys and girls did not significantly differ on half of the post-program items measuring favorable attitudes about STEM and the DoD STARBASE program (18 of 36). Boys displayed more positive attitudes toward DoD STARBASE and STEM than girls on the 14 items as shown by Table 18. These include six items related to engineering (e.g., "I like engineering."), seven items related to technology (e.g., "I want to learn more about technology.") and four items related to mathematics (e.g., "I am good at math."). Boys also scored higher on two items pertaining to the military (e.g., "Military bases are exciting."). In the foregoing counts, it should be noted that several items mention more than one aspect of STEM, which is why the total number of differences across item topics exceeds fourteen. Appendix C contains gender means and gap differences for all attitude items by attitude dimension along with the composite dimension scores.

Girls expressed more positive attitudes than boys on four items, including enjoyment of the process of science ("I like doing science experiments."), appreciating their DoD STARBASE experience ("I think almost any kid would have fun learning at DoD STARBASE."), and spreading the word about the DoD STARBASE program ("I will tell others about my DoD STARBASE experience."). These outcomes suggest that both genders are deriving useful life lessons from the DoD STARBASE program, as indicated by means that are consistently above the midpoint of the scale. Boys seem to be a bit more appreciative of technology, engineering, math

and the military, per se, whereas girls seem to appreciate the active learning aspects of the DoD STARBASE program, and seem eager to be advocates for the program. In the future, assessments might be made not only of whether incoming DoD STARBASE students previously heard of the program (see below), but of the extent to which DoD STARBASE graduates actively attempted to recruit other students to the program, their success in doing so, and the performance of those recruits.

GENDER DIFFERENCES BASED ON PRIOR EXPERIENCE WITH MILITARY PERSONNEL

Gender differences in attitudes were examined in terms of differential experience with military personnel (Table 19). The positive impact of prior exposure to the military did not interact with gender on pre-program attitudes ($F(1, 1,606) = .01, p = .93$) or post-program attitudes ($F(1, 1,553) = .22, p = .64$). That is, although boys had more favorable attitudes than girls, and those with prior exposure to the military were more favorable than those who did not have prior exposure to the military, the impact of one variable, such as gender, did not influence the impact of the other variable, exposure to the military.

Table 19: Prior Experience with the Military and 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	5.56	5.76	5.77	5.88	+ .12
Girls	5.40	5.64	5.60	5.72	+ .08

COMPARISONS BASED ON PRIOR KNOWLEDGE OF DoD STARBASE

Knowledge of the program was measured by responses to the item: "I heard about DoD STARBASE before I knew I was coming here." Those familiar with DoD STARBASE responded more favorably to the pre-test Attitudinal Survey items (5.66 vs. 5.54, $F(1, 1,607) = 9.39, p = 0.002$) but that difference was reduced to a non-significant trend by the time of the post-program assessment (5.80 vs. 5.72, $F(1, 1,553) = 3.19, p = 0.08$) (Table 15). This result suggests that those who heard about the program started the program with more positive attitudes, but nearly all participants had positive attitudes at the end.

Inspection of the individual Attitudinal Survey items reveals that those who had heard about DoD STARBASE had more favorable attitudes about science both before and after the program. The "prior knowledge of DoD STARBASE" group was also more inclined, in the post-program survey, to see military bases as exciting and math as useful for solving engineering problems. Most interesting was the finding that seven attitude items were different only at the pre-program assessment, indicating that participation in the DoD STARBASE program dramatically reduced the differences between those with prior knowledge of DoD STARBASE and those lacking such knowledge. These favorable changes included attitudes dealing with military bases being a good place to work, the helpfulness of the DoD STARBASE program and its linkage to their schools and teachers, enjoyment of learning about STEM, and the work of engineers in solving challenging problems.

Table 20: Significant Differences on Attitudinal Survey Items Based on Prior Knowledge of DoD STARBASE

Pre- and Post-Program	Pre-Program Only	Post-Program Only
I am good at science.	A military base is a good place to work.	Military bases are exciting.
Learning about science is easy for me.	People who work for military do lots of different things.	Math is really useful for solving engineering problems.
I am aware of some jobs that use math, science, engineering, or technology.	I do not think DoD STARBASE will help me do better in school. (Reverse Scored)	
People who work for the military use technology in their jobs.	I would be interested in a DoD STARBASE club at my school if it were offered.	
	Teachers at my school talk about why technology is important.	
	I enjoy learning about science, technology, math, and engineering topics.	
	Engineers help solve challenging problems.	

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

IMPACT OF STUDENT GRADE

Table 21 presents the statistically significant correlations between a student's grade level with Attitudinal Survey item responses. The magnitudes of the relationships are all small, and thus explain only a slight portion of the differences among students' attitudes toward STEM and DoD STARBASE. The observed statistical significance is due mostly to the large sample size, which increases the power and sensitivity of the analysis to detect trends that may have limited practical importance. This may especially be the case considering the narrow range of observed values (e.g., 94 percent are in Grade 5).

At the pre-program assessment, there were no significant relationships on 29 of the 31 attitude items. Yet, students in higher grades were less likely to say that "I am good at math." ($r = -.08, p < .01$), less likely to report "I enjoy learning about science, technology, math, and engineering topics." ($r = -.06, p < .01$) and less likely to state that "I like learning how technology works." ($r = -.055, p < .03$). By the time of the post-test, the item "I like learning how technology works." was no longer significantly related to grade ($r = -.033, p < .20$), but the other two negative correlations remained, as reported in Table 16.

In the post-test, students from the lower grades also indicated more appreciation for the military than those in higher grades. These results suggest that younger students both commence and conclude their DoD STARBASE experience with more positive views about their mathematical ability and their enjoyment of STEM. This suggests that there could be value in attempting to involve more students at the lower grade levels, who can benefit most from their early positive experiences at DoD STARBASE.

Table 21: Relationships of Student Grade with Post-Program Attitudinal Responses

Item/Composite	Grade
Post-Program Attitude Composite	-.053*
STEM-related attitudes	
I enjoy learning about science, technology, math, and engineering topics.	-.051*
I am good at math.	-.074**
Jobs that use math, engineering, technology and science are exciting.	-.075**
Military-related attitudes	
People who work for the military do lots of different things.	-.058*
People who work for the military use technology in their jobs.	-.059*

* Correlation is significant at the $p < .05$ level (2-tailed). ** Correlation is significant at the $p < .01$ level (2-tailed).

NOTE: Negative values indicate decreasing favorability with higher grade level.

EMPIRICAL CONFIRMATION OF ATTITUDE DIMENSIONS

Beginning in 2015, the attitude items were subjected to principal components analysis (PCA), a standard data reduction method with student response data. In a PCA analysis, items are correlated with statistically derived factors or dimensions that provide the simplest description of the patterns of interrelationships observed in the data. As a result of this empirical confirmation, seven conceptual factors were derived in 2015, for which the definitions are provided below.

The results obtained in 2015 were clearly replicated in 2016. In 2017, despite some item modifications, six of the seven factors replicated. The 2015-16 factor of Math Confidence, however, is replaced by a factor called “Teacher Support” in 2017. The specific items and the results of the PCA analysis for both 2016 and 2017 are presented in Appendix D, Tables 1 and 2. The loadings of attitude items used in both years were calculated for the factors separately for the 2016 and 2017 data. Then, the paired sets of factor loadings were correlated. The correlations between the six comparable 2016 and 2017 factors averaged $r = .51$, $p < .001$, indicating solid structural consistency (Appendix D, Table 3).

Also, similar to the outcomes in 2015 and 2016, each of the seven dimensions in 2017 is sufficiently reliable for the purpose of program evaluation based on Cronbach’s α , a statistical index of measurement consistency and coherence. The scale reliability for the Military Setting Endorsement and Teacher Support for STEM composites are lower than the other composites in reliability, because those composite scores are based on a small number of heterogeneous items. Teacher Support is defined by only two items, and was part of Military Endorsement in 2016. An alpha reliability outcome of just under .60 for both of these composite scales is adequate evidence of item cohesion on which to make general outcome comparisons.

- **STEM Concept Awareness** – Recognition of the value of technology in everyday life. (3 items, $\alpha = .76$)
- **Future Planning** – Expression of interest in future careers and taking relevant classes, especially in STEM. (6 items, $\alpha = .86$)
- **Science Confidence** – Appreciation for science and a positive view of one’s capacity for learning science. (5 items, $\alpha = .71$)
- **STEM Behavior & Motivation** – Identification with the importance of STEM and the roles of engineers and scientists in solving problems and improving life. (9 items, $\alpha = .81$)

- **Military Setting Endorsement** – Positive impressions about enjoying military facilities and the diversity of work activities done by people on military bases. (3 items, $\alpha = .58$)
- **Teacher Support for STEM** – Classroom teachers emphasize the value of science and technology. (2 items, $\alpha = .59$)
- **DoD STARBASE Program Evaluation** – Positive rating of the impact of the DoD STARBASE program on learning and enthusiasm to convey that to others. (8 items, $\alpha = .87$)

Contrast analyses were performed between the 2017 Attitude scores on the six pre- and post-program dimensions (Table 17). The seventh dimension is predominantly post-program evaluation items. As with the trends observed for the individual attitude items presented in Table 5, there were increases in favorability on the dimension scores from pre-program to post-program. Four of six differences were statistically significant, including Future Planning, STEM Behavior and Motivation, Military Setting Endorsement and Science Confidence. The lack of change on STEM Concept Awareness can be attributed to a ceiling effect. The pre-program score of 6.01 on a 7-point scale is already 86.9 percent positive, and the post-program score of 5.96 (85.1 percent positive) means that the awareness continued throughout the program. The outcomes using the Attitude dimensions further substantiates the impressions suggested by other analyses of the individual items; namely, that the DoD STARBASE program continues to succeed in its intended mission to have a positive, beneficial impact on students' attitudes toward STEM learning activities, their interest in a career in STEM, and their appreciation of the activities in a military setting.

Table 22: Pre-Program and Post-Program Attitudinal Dimension Scores

Attitude Dimension	Pre-Program	Post-Program	+ Gap
STEM Concept Awareness	6.01	5.96	-0.05
Future Planning	5.08	5.34	0.26***
Science Confidence	5.49	5.61	0.12***
STEM Behavior & Motivation	5.87	6.09	0.22***
Military Setting Endorsement	5.75	5.91	0.16***
Teacher Support for STEM	4.94	4.99	0.05
DoD STARBASE Program Evaluation	-	6.17	-

*** Difference is significant at the 0.001 level (2-tailed).

Analyses assessing gender differences were also conducted on post-program Attitude Dimension scores (Table 18). At the end of the DoD STARBASE program, boys' Attitude Dimension scores exceeded girls' scores on STEM Concept Awareness, Future Planning, Science Confidence and Military Setting Endorsement. Perhaps more noteworthy is the finding that girls were not significantly different from boys on STEM Behavior and Motivation, perceptions of Teachers' Support for STEM or DoD STARBASE Program Evaluation.

Table 23: Gender Gap Score Differences in Post-Program Attitude Dimension Scores

Attitude Dimension	Girls' Mean	Boys' Mean	B-G Difference
STEM Concept Awareness	5.75	6.16	.41***
Future Planning	5.16	5.51	.35***
Science Confidence	5.55	5.66	.10*
STEM Behavior & Motivation	6.07	6.12	.06
Military Setting Endorsement	5.82	5.98	.16**
Teacher Support for STEM	5.02	4.97	-.05
DoD STARBASE Program Evaluation	6.21	6.12	-.09

* $p < .05$, ** $p < .01$, *** $p < .001$

DRIVERS OF STUDENT ATTITUDE

Multiple regression analyses were conducted to determine a set of non-overlapping statistical predictors for specific target student attitudes. The predictors, or drivers, are rank-ordered in Table 24 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 attitudes are expressed), it is very likely the target attitude also will be present and operative in student tendencies.

The Adjusted R2 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 accuracy. Each of the individual predictors also is statistically significant in its own right. Thus, they provide a condensed model toward understanding 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. Two main drivers affected four of the six target attitudes:

- I think I will remember enjoying my time at DoD STARBASE.
- I would be interested in a DoD STARBASE club at my school if it were offered.

Five other drivers each impacted three target attitudes:

- I want to learn more about engineering.
- People who work for the military use technology in their jobs.
- When I finish school, I would like to get a job that has something to do with math, science, technology, or engineering.

- DoD STARBASE is boring. (Reverse Scored)
- DoD STARBASE Instructors made learning about science, technology, engineering, and math topics fun.

Eleven additional drivers affected two target attitudes:

- Military bases are exciting.
- I am good at math.
- A military base is a good place to work.
- Teachers at my school talk about why technology is important.
- I like engineering.
- I would like to know more about science.
- Math is important for developing new technology.
- Most people use science, technology, math, or engineering skills every day.
- I enjoy learning about science, technology, math, and engineering topics.
- People who work for the military do lots of different things.
- I do not think DoD STARBASE will help me do better in school. (Reverse Scored)

These outcomes suggest that DoD STARBASE instructors should continue to stress the value of science, should continue to make learning fun, and should continue to emphasize the positive features 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 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.

“DoD STARBASE is amazing. It changed my view of math and science forever.”

– KENNETH KELLY, STUDENT AT
MOUNDRIDGE MIDDLE SCHOOL
ATTENDING STARBASE SALINA



Table 24: 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.	DoD STARBASE Instructors made learning about science, technology, engineering, and math topics fun.	0.315
	Learning about science, engineering, technology, and math will help me in my daily life.	0.381
	I will tell others about my DoD STARBASE experience.	0.408
	I do not think DoD STARBASE will help me do better in school. (Reverse Scored)	0.428
	Most people use science, technology, math or engineering skills every day.	0.434
	I think I will remember enjoying my time at DoD STARBASE.	0.441
	Scientists work on things that make life better.	0.445
	I like doing science experiments.	0.448
I will tell others about my DoD STARBASE experience.	DoD STARBASE is boring. (Reverse Scored)	0.450
	DoD STARBASE Instructors made learning about science, technology, engineering, and math topics fun.	0.255
	I think I will remember enjoying my time at DoD STARBASE.	0.305
	At DoD STARBASE, I learned a lot of things that I can use.	0.333
	I would be interested in a DoD STARBASE club at my school if it were offered.	0.351
	Teachers at my school talk about why technology is important.	0.357
	DoD STARBASE is boring. (Reverse Scored)	0.362
	Learning about science is easy for me.	0.364
I want to learn more about technology.	Engineers help solve challenging problems.	0.365
	I like learning how technology works.	0.310
	I like technology.	0.423
I am interested in being a scientist or engineer.	I want to learn more about engineering.	0.472
	I would like to know more about science.	0.491
	I am good at math.	0.497
	DoD STARBASE is boring. (Reverse Scored)	0.502
	Math is important for developing new technology.	0.505
	I like engineering.	0.507
	Military bases are exciting.	0.508
	People who work for the military do lots of different things.	0.509
	I like engineering.	0.295
When I finish school, I would like to get a job that has something to do with math, science, technology, or engineering.	0.418	

Table 24: Drivers of Key Target Attitudes (Post-Program Responses) (cont.)

Target Attitude	Drivers of Target Attitude	Adjusted R Square
I am interested in being a scientist or engineer. (cont.)	I would like to know more about science.	0.455
	I would be interested in a DoD STARBASE club at my school if it were offered.	0.465
	I want to learn more about engineering.	0.474
	I enjoy learning about science, technology, math, and engineering topics.	0.477
	I am good at math.	0.479
	I think I will remember enjoying my time at DoD STARBASE.	0.480
	I am good at science.	0.482
Military bases are exciting.	People who work for the military use technology in their jobs.	0.483
	A military base is a good place to work.	0.143
	DoD STARBASE Instructors made learning about science, technology, engineering, and math topics fun.	0.195
	I want to learn more about technology.	0.216
	I think I will remember enjoying my time at DoD STARBASE.	0.226
	People who work for the military do lots of different things.	0.233
	I want to learn more about engineering.	0.238
	I do not think DoD STARBASE will help me do better in school. (Reverse Scored)	0.241
	I would be interested in a DoD STARBASE club at my school if it were offered.	0.243
	People who work for the military use technology in their jobs.	0.245
When I finish school, I would like to get a job that has something to do with math, science, technology, or engineering.	0.247	
Military people do lots of different things.	People who work for the military use technology in their jobs.	0.137
	A military base is a good place to work.	0.196
	Most people use science, technology, math or engineering skills every day.	0.220
	Math is important for developing new technology.	0.233
	Teachers at my school talk about why technology is important.	0.239
	I am aware of some jobs that use math, science, engineering, or technology.	0.245
	A lot of good jobs use math to solve problems.	0.249
	Military bases are exciting.	0.253
	When I finish school, I would like to get a job that has something to do with math, science, technology, or engineering.	0.255
	I would be interested in a DoD STARBASE club at my school if it were offered.	0.258

Assessment of 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 25) breaks down the Knowledge Test items into the specific curriculum areas that are measured. Only the item topics are presented here.

Table 25: Knowledge Questions by Curriculum Area

Chemistry Science (E3.1.1.2)	
1	NaCl Bond
5	Composition of air pie chart
11	Example of physical change
15	States of matter
17	Hydrophobic surface
Engineering (E3.1.1.4)	
2	3D Model
3	Prototype use
10	A,B,C,D coordinates
12	CAD software first step
Mathematics Operations & Applications (E3.1.1.5)	
13	Best tool for measuring glass of milk
16	Towel experiment
Physics (E3.1.1.1)	
7	Bernoulli Principle
14	Newton's law with seat belts
Technology (E3.1.1.3)	
4	Cell phone touch screen
6	Nanometers
8	Snow melting
9	Reason to use latitude and longitude
18	Locating friend's house
STEM Job Awareness	
19*	Who uses STEM concepts in their job? (Select all that apply)

* Item 19 assesses "STEM Job Awareness" by presenting 25 different occupations to students and asking them to select all the jobs that utilize STEM concepts. Results from Item 19 are not included in the Knowledge Test Mean, which is based on the percent of correct answers to the 18 Knowledge questions. Results from Item 19 are detailed in Table 34.

INCREASES IN KNOWLEDGE SCORES BY CURRICULUM AREA

Table 26 shows the pre- and post-program assessment mean score by curriculum area. Total knowledge scores went up by nearly 28 percent, which represents an improvement of 67.5 percent. All categories, especially Physics (+47 percent), Chemistry (+37 percent), and Mathematics (+27 percent), showed significant improvement post-program as compared to responses prior to participation in DoD STARBASE. The smallest post-program increases were in Engineering (17.8 percent), STEM Job Awareness (+13.5 percent), and Technology (+13.0 percent), which were nonetheless significant improvements.

Table 26: Pre/Post Knowledge Percent Correct Scores by Curriculum Area

Curriculum Area	# of Items	Pre-Program Percent Score	Post-Program Percent Score*	Gap
Knowledge Items Total	18	40.87	68.47	27.61***
Chemistry	5	34.34	71.46	37.11***
Engineering	4	44.19	61.96	17.77***
Mathematics	4	46.08	73.47	27.39***
Physics	2	24.46	70.25	45.79***
Technology	3	51.31	64.35	13.04***
STEM Job Awareness	25	44.74	58.27	13.53***

* All subtotal post-program means are statistically significantly higher than pre-program means, $p < .001$

Table 27 presents the pre- and post-program mean scores, percent correct, and gap differences for the knowledge assessment since 2013. In 2011 and in 2015, the content of the Knowledge Test was updated based on curriculum changes throughout the DoD STARBASE program to align with STEM National Standards. The assessment began measuring new concepts that were more challenging to the students, resulting in lower scores overall. The content changes enacted in 2011 were carried through to 2017, including the replacement of simple knowledge items with problem-solving application items. For example, instead of asking students to recall specific facts regarding the learning activity, the 2012-2017 assessments presented students with situations where they must apply the facts learned in order to answer the question. As a consequence, the 2013-2017 pre-test scores shown are consistently below 50 percent correct.

When comparing year-to-year results it is important to keep in mind that the number of items on the knowledge assessment has fluctuated slightly through the years, because the assessment itself is evaluated annually to ensure all items on the assessment are showing statistical evidence of being effective, and that the content is aligned to the current needs of the program evaluation. This is important, because the number of items on the knowledge assessment directly impacts the gap score potential since the pre- to post-test differences on each item contribute to the overall gap measurement (more items = more gap potential). As such, it is not a concern that the gap score may be higher or lower in a given year; what is central to Table 27 is that there is a demonstrable and significant increase in student knowledge as a result of attending DoD STARBASE. This transfer of knowledge is indicated by the post-program average number of correct responses, which has consistently resulted in post-test mean scores that show most questions are answered correctly (i.e., 69 percent correct in 2016 and 2017 despite items that were more difficult as indicated by the pre-test scores). Appendix F extends Table 27 by presenting comparable information on an item-by-item basis.

Table 27: Pre/Post Knowledge Test Mean Total Scores and Percent Correct (2013 - 2017)

Year	2013	2014	2015	2016	2017
# of Items	25	27	17	17	18
Pre-Program Score	12.18 (48.7%)	12.42 (46.0%)	7.62 (44.8%)	7.44 (43.8%)	7.33 (40.87%)
Post-Program Score	17.37 (69.5%)	17.56 (65.0%)	12.88 (78.1%)	11.73 (69.0%)	12.33 (68.47%)
Gap	+5.19 (20.8%)	+5.14 (19%)	+4.47 (26.3%)	+4.29 (25.2%)	+5.00 (27.61%)

KNOWLEDGE TEST SCORES AS A FUNCTION OF MILITARY ATTITUDES

Performance on the Knowledge Test was examined as a function of high and low military attitudes. Table 28 shows that those with high military attitude and those with low military attitude scores did not significantly differ in their pre-program mean knowledge ($F(1,670) = 2.17, p = .14$). In the post-program assessment, by contrast, those with high military attitudes displayed a stronger performance than those with low military attitudes ($F(1,670) = 15.74, p < .0001$). Both the low and high military attitude groups had significant gains in knowledge scores pre- to post- program ($F(1,670) = 1,318.61, p < .0001$), but the high military attitude score group showed significantly greater improvement (+5.40 vs. +4.63, $F(1,670) = 7.71, p = .006$). This finding suggests that students who are more favorably disposed toward the military context of the DoD STARBASE program tend to be more highly engaged with learning about STEM principles and concepts in an applied military setting.

Table 28: Pre/Post Knowledge Test Mean Scores for High and Low Military Attitude Students

Military Attitude	Sample Size	Pre-Program Mean	Std. Deviation	Post-Program Mean	Std. Deviation
High Military Attitude	459	7.19	2.72	12.59*	3.08
Low Military Attitude	213	6.86	2.74	11.49*	3.84

* Significant increase in post-program means.

GENDER DIFFERENCES ON KNOWLEDGE TEST

Table 29 presents the pre- and post-program scores and gap differences between Knowledge Test scores based on gender. Similar to several prior years, the pre-program knowledge score was significantly higher for boys than for girls. Although boys' knowledge scores were 10 percent higher than girls at the pre-program assessment (7.71 vs. 6.98, $F(1, 1,608) = 28.33, p < .001$), the gap had been cut by 60 percent, to just 3.9 percent higher by the post-program assessment (12.55 vs. 12.08; $F(1, 1,577) = 7.88, p < .005$). The knowledge increase from pre- to post-program is significant for both boys and girls.

Table 29: Pre/Post Knowledge Test Mean Scores by Gender

	Sample Size	Pre-Program Score	Post-Program Score	Performance Gap Score
Boys	813	7.71 (42.8%)	12.55 (69.7%)	+4.84 (26.9%)*
Girls	766	6.98 (38.8%)	12.08 (67.1%)	+5.10 (38.1%)*

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

The differences in gap scores between girls and boys from 2013 to 2017 range from the smallest absolute difference of .07 in 2014 to the largest absolute difference of .33 in 2015 (see Table 30). Girls typically obtained larger gap scores than boys across the years. In 2017, the girls obtained a gap score difference of .26, which indicates that both genders improved as a function of the DoD STARBASE program.

Table 30: Gender Performance Gap Scores (2013 - 2017) on Knowledge Test (Pre-Program vs. Post-Program)

Gender	2013	2014	2015	2016	2017
# of Items	25	27	17	17	18
Boys	+5.31	+5.10	+4.31	+4.25	+4.84
Girls	+5.09	+5.17	+4.64	+4.33	+5.10
Difference (G-B)	-.22	+0.07	+0.33	+0.08	+0.26

PRIOR EXPERIENCES WITH THE MILITARY AND GENDER ON KNOWLEDGE TEST

There was a direct effect of gender on pre-program knowledge scores ($F(1, 668) = 6.41, p < .01$) but no significant direct effect of prior exposure to the military ($F(1, 668) = 1.19, p < .27$), nor an interaction between gender and exposure ($F(1, 668) = .32, p < .57$) on pre-program knowledge scores. After the program, there was a significant direct effect of both prior exposure to the military on post-program knowledge scores ($F(1, 668) = 12.96, p < .001$) and gender on post-program knowledge scores ($F(1, 668) = 3.93, p < .05$), but no interaction between gender and prior exposure ($F(1, 668) = 0.003, p = .96$). This pattern of results, shown in Table 26, suggests that individual differences in both prior exposure to the military and gender could influence knowledge scores, but the positive impact of those factors may not accumulate or build on each other. Put another way, both boys and girls with prior exposure to the military were at greater advantage in STEM knowledge at the post-test following the DoD STARBASE program.

Table 31: Prior Experience with the Military and Knowledge Differences by Gender

	No Prior Experience with Military		Prior Experience with Military		Difference Between Pre-Program Means	Difference Between Post-Program Means
	Pre-Program Mean	Post-Program Mean	Pre-Program Mean	Post-Program Mean		
Boys	7.13	11.82	7.51	12.85	+0.38	+1.03
Girls	6.68	11.28	6.80	12.28	+0.12	+1.00

RELATION OF ATTITUDE COMPONENTS TO KNOWLEDGE SCORES

Pearson correlations between the seven Attitude Dimensions and Total Knowledge scores were calculated. The seven Attitude Dimensions are moderately correlated with each other, as would be expected, yet are distinct enough to reflect clear aspects of student attitudes toward STEM, career, the military and DoD STARBASE. Correlations are presented between the Pre-Program Attitudes and both Pre-Program and Post-Program Knowledge scores, and between Post-Program Attitudes and Post-Program Knowledge scores in Table 32. Among the Pre-Program Attitudes, Science Confidence ($r = .25, p < .001$), STEM Behavior & Motivation ($r = .21, p < .001$) and Future Planning ($r = .18, p < .0001$) are the strongest predictors of Post-Program Knowledge scores.

Table 32: Relationships of Pre-Program and Post-Program Attitudinal Dimension Scores with Pre-Program and Post-Program Knowledge Scores

Attitude Dimension	Pre-Program Attitude with Pre-Program Knowledge	Pre-Program Attitude with Post-Program Knowledge	Post-Program Attitude with Post-Program Knowledge	Pre-Program Attitude with Pre-to Post-Program Knowledge Gap Scores
STEM Concept Awareness	.12**	.17**	.16**	.07*
Future Planning	.17**	.18**	.17**	.04
Science Confidence	.24**	.25**	.25**	.06*
STEM Behavior & Motivation	.22**	.21**	.28**	.03
Military Setting Endorsement	.01	.01	.08**	-.01
Teacher Support for STEM	-.01	.02	.02	.03
DoD STARBASE Program Evaluation	--	--	.08**	--

* $p < .05$; ** $p < .01$

A new analysis conducted in 2017 looked at the correlation between pre-program Attitudes and the change in the Knowledge Score from pre- to post-program (i.e., the gap score). This analysis assesses whether students who come into the program with a higher level of STEM confidence and knowledge also get a bigger boost from attending DoD STARBASE, or if those students who enter the program with less confidence and less base knowledge of STEM topics benefit more from being exposed to the STEM curriculum at DoD STARBASE. It is not surprising that a student who shows high Science Confidence attitude, for example, also attains a high Knowledge Score at both the pre-test and post-test. The question is whether a confident student not only scores consistently high, but also achieves a greater gap score from pre-test to post-test than other students with lower initial STEM attitudes.

This proved to be the case. Students with higher scores on STEM Concept Awareness ($r = .07, p < .05$) and Science Confidence ($r = .06, p < .05$) at the pre-test not only scored higher than others on both the pre-test and the post-test, but they also widened their lead by showing a greater increase in gap scores than other students. The correlation between the overall Attitude Composite and the Knowledge Gap score also was small but statistically significant ($r = .06, p < .03$). It may be that students with lower attitude scores on the pre-test could benefit from helpful coaching to prevent them from falling further behind their more confident peers. Operationally, that would require providing feedback on student attitudes immediately and to all students rather than just to selected classes at the end of the school year. It should be noted also that the sample size is large, so small correlations may be statistically significant due to chance. Nonetheless, these potential patterns seem appropriate to monitor in future years.

Additional correlations were computed to examine the relation between the pre-program Attitude Dimensions and specific post-program Knowledge Scores by curriculum area. Perhaps because of its high reliability and precision, the Total Attitude score tended to be a stronger predictor of the specific knowledge area scores than many of the individual Attitude dimensions, with the exception of Science Confidence, which was a notably strong predictor (Table 33). In fact, Pre-Program Science Confidence was a significant predictor of Post-Program scores on Engineering, Chemistry, Mathematics, and Technology ($r = .19$; $.18$; $.17$; $.14$, respectively). Pre-Program STEM Behavior & Motivation was a significant predictor of Post-Program STEM Job Awareness knowledge ($r = .18$) and Physics ($r = .14$), and exceeded Total Attitudes in Engineering, Technology and Job Awareness. All results cited above are significant at $p < .05$ or greater.

Table 33: Pre-Program Attitude Dimensions and Post-Program Knowledge Scores

	Knowledge Total	Chemistry	Engineering	Physics	Technology	Math	STEM Awareness
Attitude Total	.22**	.17**	.17**	.14**	.12**	.12**	.13**
STEM Concept Awareness	.17**	.15**	.12**	.09**	.08**	.12**	.06*
Future Planning	.18**	.13**	.15**	.13**	.07**	.10**	.07**
Science Confidence	.25**	.18**	.19**	.17**	.13**	.14**	.12**
STEM Behavior & Motivation	.21**	.15**	.18**	.14**	.13*	.10**	.18**
Military Setting Endorsement	.01	.02	-.01	-.04	.04	.01	.02
Teacher Support for STEM	.03	.05	.01	-.03	.01	.02	.04

* $p < .05$; ** $p < .01$

HIGH VERSUS LOW PERFORMERS ON KNOWLEDGE TEST

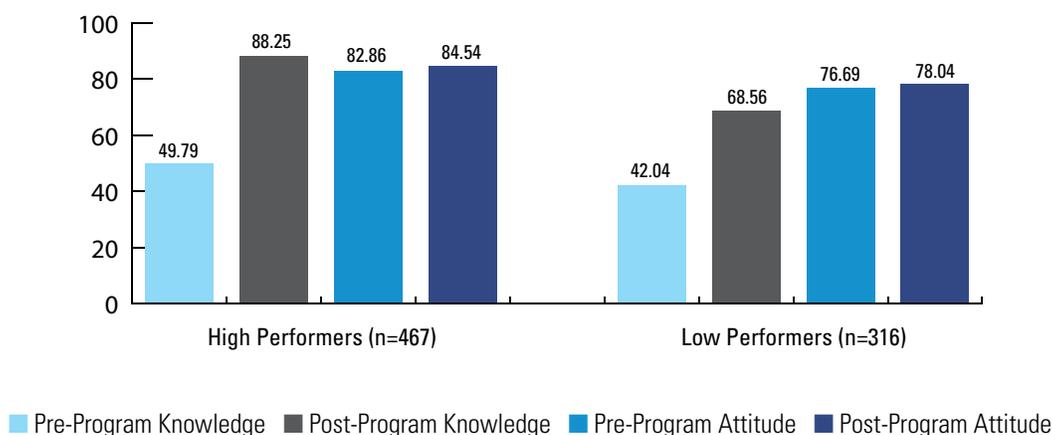
This analysis illustrates the differences between high and low performers on the pre- and post-program Knowledge Test. First, the sum of correct answers to the 18 knowledge items for each student was converted to a percentage score by dividing by 18. Then, performance was measured using the post-program total assessment score sample mean of 68.47 and standard deviation of 18.50. High performance was considered to be a total score of 86.97 percent or higher ($68.47 + 18.50$). A total of 29 percent ($n=467$) of the sample was classified as high performers. Low performance was defined to be a total score of 49.97 or lower ($68.47 - 18.50$). A total of 20 percent ($n=316$) of the sample was classified 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 an 8.88 percent increase from pre- to post-program, compared to the high performers, who improved on average by 38.46 percent. The differences between the two groups in pre- and post-program total scores are statistically significant (Pre-test, $F(1,781) = 387.54$; Post-test, $F(1,781) = 7,861.70$, and both results are significant at $p < .001$).

Pre-program and post-program attitude scores also were converted to percentages by taking the average of the 31 items and dividing by 7 (the upper end of the rating scale). The pre- and post-program averages on the attitude surveys also were lower for low knowledge assessment performers. The low performing group had a significantly lower mean attitude rating both pre- and post-program (76.69 percent and 78.04 percent respectively, increase of +1.35 percent) as compared to the high performing group (82.86 percent and 84.54 percent respectively, increase of +1.68 percent), although the difference between groups in attitude shift was not significant.

These data are shown in Figure 2. Overall, the pre-program attitudes and post-program attitudes were significant predictors of post-program Knowledge Scores for both the low-performing group ($r = .13$, $r = .17$, respectively, both $p < .05$) and the high-performing group ($r = .17$ and $r = .12$, both $p < .05$). Yet knowledge differences were greater than attitude differences between the High and Low Performer groups.

Figure 2: High versus Low Performers on Knowledge and Attitude Assessments



STEM JOB AWARENESS: PERCEPTIONS OF STEM USE IN JOBS

A new knowledge item in 2015, which also was used in 2016 and 2017, asked students “Who uses STEM concepts in their job? (Select all that apply).” Twenty-five jobs were listed (Table 29), and the average number nominated pre-program as STEM-related was 11.19 (SD = 5.55). The post-program number of jobs that were seen as STEM-related was 14.67 (SD = 6.38), which was a 31 percent increase and statistically significant ($t(1,610) = 22.74$, $p < .001$). Thus, participants gained a greater awareness of the variety of occupations in which STEM concepts may play a part as a result of their exposure to the DoD STARBASE program.



“I know that now that I can do whatever I put my mind to. When I grow up I want to be an engineer and change the world with new inventions.”

— JO RIMMIX, STUDENT AT UNIVERSITY ELEMENTARY-ACES ATTENDING STARBASE MINNESOTA

Table 34: STEM Job Awareness (Pre-Test to Post-Test)

Accountant 48.0%-65.7%***	Camera Operator 53.3%-69.3%***	Farmer 26.6%-40.8%***	Mail Carrier 15.8%-32.3%***	Police Officer 50.8%-65.2%***
Actor/Actress 10.6%-24.1%***	Car Designer 82.3%-90.6%***	Firefighter 37.5%-58.0%***	Maintenance Worker 43.5%-57.9%***	School Counselor 30.1%-43.0%***
Animal Breeder 26.3%-37.9%***	Crime Scene Investigator 54.3%-70.5%***	Hair Designer/Barber 19.9%-34.7%***	Manager 32.8%-50.7%***	Sports Athlete 18.7%-32.6%***
Architect 61.0%-71.0%***	Construction Worker 78.4%-84.5%***	Housekeeper 12.0%-22.8%***	Mechanic 77.3%-85.9%***	Teacher 67.7%-79.0%***
Nurse 49.1%-65.7%***	Cook 34.4%-49.9%***	Lawyer 43.0%-58.6%***	Military Personnel 62.9%-78.3%***	Video Game Designer 82.5%-87.9%***

*** $p < .001$ Note: Change between pre- and post-program values may differ slightly from gap described in text due to rounding.

DoD STARBASE participants were most likely to recognize that a Car Designer and Video Game Designer are most likely to use STEM concepts in their jobs and were least likely to make that connection for Housekeeper and Actor/Actress. Occupations that showed a big jump in participants' recognition of their use of STEM concepts include Firefighter (+20.5 percent), Manager (+17.8 percent), Accountant (+17.7 percent), Nurse (+16.6 percent), and Military Personnel (+15.4 percent).

The statistically significant increase in participants' recognitions of the use of science, technology, engineering and mathematics in a wide range of professions, including military service, provides further indication that the DoD STARBASE program is accomplishing its mission of heightening awareness by students of the relevance of STEM in occupations and careers.

CONCLUSION

The 2016-2017 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 2016-2017 DoD STARBASE program also yielded solid gains in students' STEM understanding 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, evidence shows, are typically less well prepared in the STEM domain than boys when they first come to DoD STARBASE. Girls seem eager to recruit others to the DoD STARBASE program. Attention might be devoted to facilitating that in the future, and monitoring its impact. Finally, the DoD STARBASE program appears to have supported the DoD sponsor's community outreach objective by creating a favorable impression of the U.S. military and the people who work for it among many of the participating students.

Participating Teacher Assessment

INTRODUCTION

The annual DoD STARBASE Teacher Survey is an important component of program evaluation. The survey supports the program's stewardship by gathering opinions from teachers who accompany the classes of children attending DoD STARBASE academies. Analyses of the survey data provide feedback that can have immediate or strategic implications, and may also reveal important trends when observed in a historical context. Feedback from the survey helps to monitor and strengthen the effectiveness of the program in promoting youth familiarity with, and interest in, STEM-based topics and careers.

The Teacher Survey assesses teachers' personal characteristics including their experience and confidence with teaching STEM-related subject matter. It reflects their opinions on a wide variety of topics related to the influence of DoD STARBASE including appropriateness of the curriculum, educational materials and other resources both within and beyond DoD STARBASE as well as perceived support from school, parents, and community. The survey also captures teacher perceptions and opinions about program impact on student outcomes such as observing an increase in cooperativeness, or raised interest in STEM activities during and after students attend DoD STARBASE. Finally, the survey assesses changes in teacher opinions about the educational and career opportunities they choose to introduce and discuss with their classes. The results suggest that the changes in teacher perceptions over the years has resulted in substantially more students who are being exposed to, and possibly becoming more interested in, learning about STEM-related topics and professions.

The Teacher Survey analytics evaluate outcomes indicative of successful DoD STARBASE programs including:

- Progress toward specific academic requirements (e.g., STEM state standards)
- Improved personal characteristics of students (e.g., STEM confidence, motivation, cooperation level)
- Future planning of students (e.g., awareness of, and desire to pursue career opportunities within STEM fields)
- Key stakeholder program support (e.g., principals and parents)

This year 2,639 teachers from 61 academies completed the survey during August 2016 through June 2017. Every academy provided ratings from at least 13 teachers, with 41 of the academies providing a sample of 30 or more completed surveys. Two academies generated over 100 teacher responses. Each academy received a summary report of its teacher 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 61 academies with teachers participating in the survey were affiliated with five Military Components across the United States. The National Guard hosted the majority of academies with 2,024 (77 percent) teachers responding to the survey from 47 academies. The Air Force sponsored eight academies and included 353 completed surveys. The academies were representative across regions with about 50 percent located in the Midwest (19 academies) or the South (14 academies). Appendix B provides the Region for each academy location. Listed below are the number of participating academies and sample sizes of teacher surveys for each military component and region.

MILITARY COMPONENT (N=2,638)

- 47 National Guard (N=2,024)
- 8 Air Force (N=353)
- 4 Air Force Reserves (N=190)
- 1 Marine (N=43)
- 1 Army (N=28)

REGION (N=2,638)

- 19 Midwest (N=883)
- 14 South (N=582)
- 12 Southeast (N=617)
- 11 West (N=402)
- 5 East (N=154)

TEACHER DEMOGRAPHICS

For the 2016-2017 academic year, 2,638 school personnel completed the online DoD STARBASE Teacher Survey. As noted previously, this represents an increase of about 15 percent in total responses from last year (2,296). As with past years, the vast majority of respondents are female, most teach the 5th grade, more than 50 percent are between the ages of 30 and 50 years, and over 50 percent have more than 10 years of teaching experience. Although there were respondents representing the full the range of teaching experience, the largest percentage (37 percent) indicated they have over 15 years of experience. While only 7 percent of respondents indicated that they are in their first year of teaching, this translates into 184 new-to-the-profession teachers exposed to DoD STARBASE this year. In total, 1,033 teachers went to a DoD STARBASE for the first time this year. Importantly, the survey results confirm that many teachers, whether in their first year or more experienced, say they gain knowledge, motivation, and insights about teaching STEM-related topics when they escort their classes to DoD STARBASE. For example, nearly 90 percent of all teachers agree that the DoD STARBASE experience has influenced them to become skilled in STEM instruction – the rate is virtually the same for both new and experienced teachers. Also, at the conclusion of the program, over 85 percent of both new and experienced teachers indicate they are more aware of the opportunities that are available to students who align themselves with STEM-related disciplines and occupations. These teachers help drive the mission of DoD STARBASE because even if they don't take part in the program during a given year, they are likely to pass on pro-STEM perspectives (formed at DoD STARBASE) to their students for the rest of their careers. Table 30 tabulates the current year data on the teacher characteristics.

“Students who come from low socio-economic and urban areas benefit from programs like DoD STARBASE because it exposes them to potential careers they would not otherwise know about. It helps them see beyond their current reality and set long-term goals about their future. DoD STARBASE is the type of program that I wish was available to me when I was younger in order to expose me to potential STEM careers.”

– KELLEY MALEC, EDUCATOR AT MARSHALL INTERMEDIATE SCHOOL, ATTENDING STARBASE INDIANA-SOUTH BEND

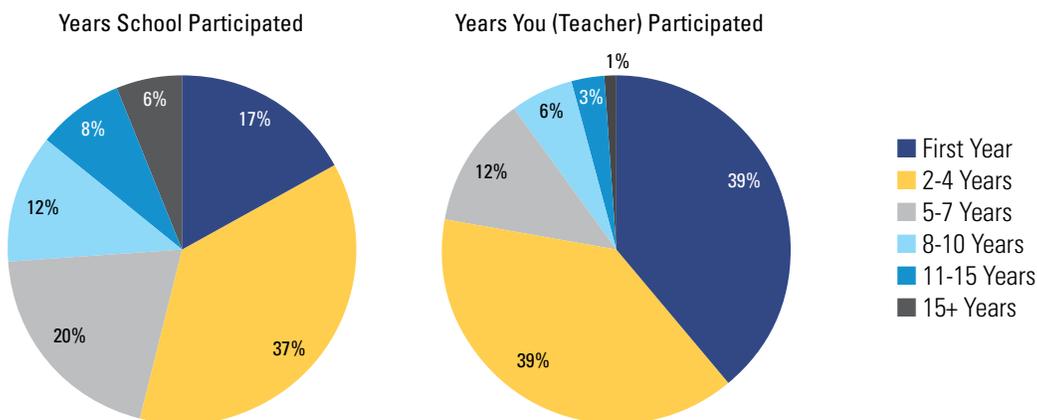


Table 35: Teacher Characteristics

Years Taught	Experience with DoD STARBASE	Grade Taught	Age Range	Gender
<ul style="list-style-type: none"> • 7% First year • 16% 2-4 Years • 13% 5-7 Years • 11% 8-10 Years • 17% 11-15 Years • 37% Over 15 Years 	<ul style="list-style-type: none"> • 39% First year • 39% 2-4 Years • 13% 5-7 Years • 6% 8-10 Years • 3% 11-15 Years • >1% Over 15 Years 	<ul style="list-style-type: none"> • 5% Grade 4 • 88% Grade 5 • 4% Grade 6 • 3% Other response (e.g., Special class, assistant, all grades, administrator) 	<ul style="list-style-type: none"> • 20% Under 30 years • 30% 31-40 years • 27% 41-50 years • 18% 51-60 years • 4% Over 60 years 	<ul style="list-style-type: none"> • 85% female • 15% male

Figure 3 shows the range of experience the teachers have with DoD STARBASE and the range of experience the schools have with the program. This year the “years of school participation” item had an option for “I don’t know” which was selected by 25 percent of the respondents. Over half of the teachers who responded “I don’t know” were among the 1,033 first-time attending teachers with most of the others indicating DoD STARBASE participation for two-to-four years. The “I don’t know,” response option was not used in calculating response option percentages in order to better represent the proportions and distribution of answers from teachers who were aware of how long their school has participated. For the same reason the percent of “I don’t know” responses to this item does not appear in the pie chart graphic in Figure 2. A little more than half of the schools (54 percent) have participated in the program for less than five years. The other portion (46 percent) of the schools has had five or more years of experience with DoD STARBASE. This includes 14 percent of teachers indicating their school has participated for more than 10 years and 6 percent indicating 15 or more years of DoD STARBASE participation. In contrast, less than 1 percent of the teachers report having participated for 15 years or more while 39 percent indicated it was their first year participating in a DoD STARBASE program. Approximately half (51 percent) of teachers reported participating in DoD STARBASE at least two years but less than eight years. The data reflects how the DoD STARBASE program continues to reach substantial numbers of first time participants each year, and that the Teacher Survey is capturing perspectives from both new and experienced teacher participants.

Figure 3: Years Participating in the DoD STARBASE Programs

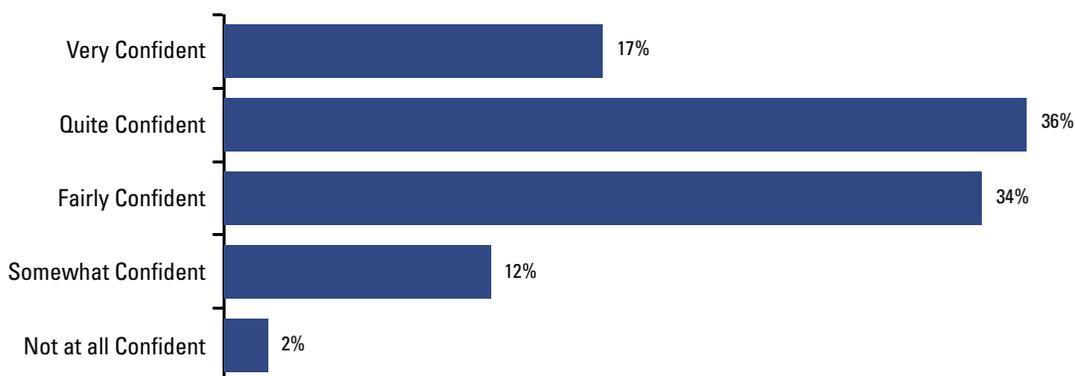


STEM-RELATED EXPERIENCE

To evaluate familiarity with STEM topics, teachers were asked whether their college major and/or minor were in a STEM-related discipline. Eighty-three percent (N=2,178) of the teachers reported that their college major and/or minor was not in a STEM-related discipline. Of the remaining responses, 9 percent show their major was in a STEM-related discipline, and 8 percent reported that they minored in a STEM-related discipline.

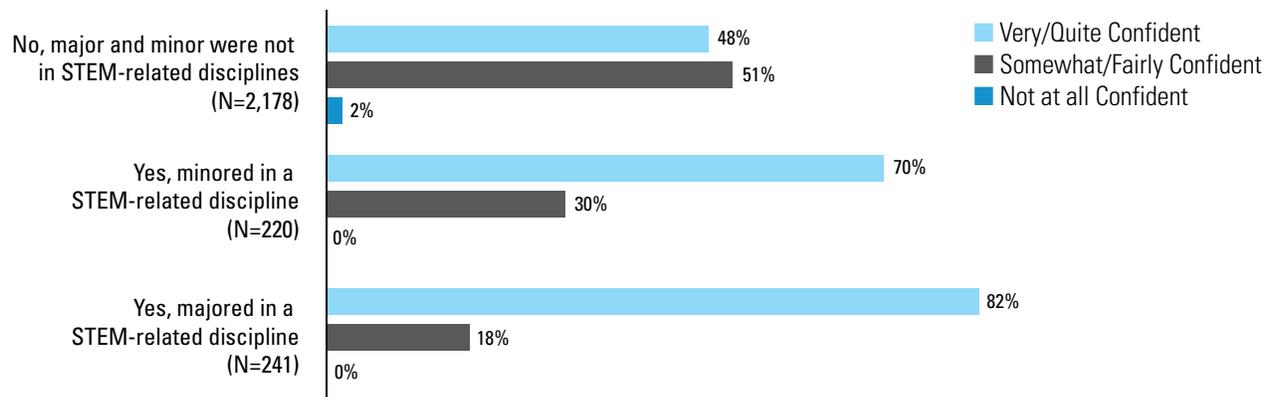
Teachers also provided their level of comfort with teaching STEM-related topics in the classroom. Overall, teachers are confident teaching STEM-related topics to their students with most reporting being Fairly (34 percent), Quite (36 percent) or Very (17 percent) Confident (Figure 4). Only 2 percent (N=42) of the respondents revealed that they are not confident teaching STEM-related topics and over half of those respondents (N=25) are in their first year of teaching.

Figure 4: Confidence with Teaching STEM-Related Topics in the Classroom



Having a degree in a STEM-related discipline is correlated with teachers having more confidence in teaching STEM-related topics to their students. Among the 9 percent (N=241) of all teachers responding who majored in a STEM-related discipline, 82 percent indicated that they are Very or Quite Confident teaching STEM-related subjects. For the 8 percent (N=220) of all respondents who minored in a STEM-related discipline the percentage indicating that they are Very or Quite Confident teaching STEM-related subjects was somewhat lower at 70 percent. Lastly, only 48 percent of the remaining 2,178 respondents who did not major or minor in a STEM-related discipline reported being Very or Quite Confident in teaching STEM-related topics (Figure 5).

It should be clear to most observers that the DoD STARBASE academies have been providing valuable STEM-related learning experiences to students for many years but these teacher survey findings remind us that teachers also benefit. With results of 90 percent of all teachers saying they plan to incorporate DoD STARBASE materials and techniques into their classroom, and 89 percent of all teachers saying that the DoD STARBASE experience has influenced them to become skilled in STEM instruction, the program's influence on teachers is obvious and vital considering that a vast majority of these teachers appear to enter the field with less than optimal training in STEM-related topics.

Figure 5: Confidence in Teaching STEM Concepts Based on College Major/Minor

TEACHER ATTITUDINAL RATINGS

Teachers rated 46 attitudinal items on a 7-point Likert scale from Disagree (1) to Agree (7) based on their experience with the DoD STARBASE program. Ten items reference changes in student behavior after DoD STARBASE, therefore these 10 items were not posed to teachers in their first year of DoD STARBASE participation. The items were aggregated into an Overall Index which covered topics including student and teacher attitudes about program concepts such as grasping and enjoying the STEM program content, displaying confidence and motivation in classroom settings, and planning for future goals and careers. Overall, favorability was high and was slightly higher than the attitude score for previous program years (Table 36). Although the content is not identical to years past, the underlying concepts and themes remain consistent from year to year.

Table 36: Mean Overall Attitudinal Index Scores for the Teacher Survey (2013 -2017)²⁸

Overall Index	2013	2014	2015	2016	2017
Summative Mean Ratings	6.13	6.11	6.15	6.21	6.15

The Teacher Survey content aligns with the stated DoD STARBASE program goals by incorporating measurement elements of program impact on both teachers and students during and after attendance. The following table (Table 37) provides the concepts and definitions for each area measured. Additional details for each of the measurement areas are included in Appendix G. "Student/Teacher Engagement" is a composite of 32 items based on teachers' self-report of their attitudes and their perceptions of student attitudes during the DoD STARBASE program. Engagement attitudes were grouped according to topic area (e.g., STEM Concepts, Program Support) to illustrate the aggregate ratings of most favorable to least favorable measurement area. As reflected in Table 37, teachers responded favorably across all measurement topics, with the most favorable responses (presented in rank, with all composite means above 6.00) coming in the areas of: STEM Concepts, Program Support, Confidence, Post-Program Impact, Overall Student Engagement, Teamwork and Behavioral/Motivational.

²⁸ The calculations included in this table are the total mean responses for all attitudinal items.

The analyses also examined the outcomes of DoD STARBASE on student STEM and academic motivation beyond the immediate effects of attendance. The Post-Program Impact scale uses responses to 10 items completed by those teachers who have more than one year of experience with the DoD STARBASE program (N = 1,606). These teachers are in a good position to observe how much their students continued to STEM relevant pursuits after their DoD STARBASE experience. Items included a broad range of post-program measures including student interest in STEM topics, their career choice options, classroom attendance, and participation in STEM-related activities. Some of these differences will be addressed in more detail in the upcoming sections of this report.

Table 37: Teacher Survey Measurement Areas

Measurement Area	Definition	Number of Items*	Cronbach's Alpha**	Mean	Std. Deviation
Student/Teacher Engagement	Engagement shown while attending DoD STARBASE	32	.957	6.18	.675
Program Support	Support and resources provided to the teachers	7	.687	6.37	.635
STEM Concepts	Student interest in and understanding of STEM concepts	6	.858	6.42	.662
Behavioral-Motivational	Effort shown by teachers in reinforcing positive behaviors	5	.750	6.04	.825
Confidence	Students' confidence with abilities and capabilities	3	.849	6.18	.819
Teamwork	Students working with and supporting each other	3	.918	6.05	.974
Future Planning	Students seeing future possibilities and opportunities	4	.914	5.91	.943
Military and Career	Teacher's personal opinion on Military personnel and career options, and their perceptions of student opinions on same	5	.757	5.78	.887
Post-program Impact	Lasting impact of DoD STARBASE after the program ends	10	.880	6.10	.751

*Thirty-three of the 36 attitudinal items responded to by the entire sample of teachers were spread across the seven rationally derived engagement sub-categories. Thirty-two of these items formed the overall Student/Teacher Engagement Composite.

**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 IMPACT ON THE SCHOOL SYSTEM

The DoD STARBASE program influences students and teachers, yet 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 38 provides the trends in favorable responses to five items dating back to 2013. The trend has shown generally more favorable responses since 2013, possibly based in part on recent strength of the program's funding.

This year the results have stabilized. There was a slight drop in the item assessing formal communications from schools to raise awareness, but the result still rests well above the results from 2013 and 2014. Similarly, the item on recommending DoD

STARBASE to other school officials returned a result very close to last year, but again with improvement over 2013 and 2014. With only 11 out of 2,639 respondents dissenting, this item exemplifies what is known as a “ceiling effect,” which occurs when an item’s aggregated mean is nearly equal to the highest possible score. An increase of about 5 percent occurred in the items that assess the use of DoD STARBASE materials/applications both in the classroom and in take home activities. An example of the generally favorable response showing strong endorsement for the program can be seen in the nearly unanimous 99.6 percent positive response rate by teachers to the item about whether they would recommend DoD STARBASE to other educational professionals and school administrators. This result replicates the item results from 2015 and 2016.

Table 38: DoD STARBASE’s Impact on the School System

Item	Positive (Yes) Responses				
Current Item	2013	2014	2015	2016	2017
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.)?	45.3%	42.8%	62.8%	66.1%	65.6%
Will you recommend DoD STARBASE to other teachers, principals, or school educators/ administrators?	91.9%	90.5%	99.4%	99.5%	99.6%
In your view, does the DoD STARBASE curriculum help you reach your state education standards?	99.6%	99.6%	94.2%	94.8%	98.0%
Do you or will you use DoD STARBASE materials/applications in your own classroom?	64.2%	58.1%	85.5%	86.1%	90.9%
Do you or will you use DoD STARBASE take home activities beyond your classroom?	43.0%	36.9%	65.8%	67.4%	71.3%

SCHOOL AND TEACHER SUPPORT AND TEACHER ATTITUDINAL RATINGS

“Program Support” includes support and advocacy of DoD STARBASE by teachers themselves as well as the resources and support provided to the teachers in the school environment. A school’s plan to continue participation in the DoD STARBASE program next year (6.87) indicates that participating schools perceive value from having students attend the program. Additionally, there is evidence of continued support from the teachers who are looking forward to future participation (6.80), as well as from parents who are delighted their children are participating (6.41), and principals who are strong advocates for the program in general (5.96) (Table 39).

As identified in previous years, an opportunity for development still exists with 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 (6.45), and they plan to incorporate some of the teaching techniques they observed into their classroom activities (6.30). There was a 91 percent agreement rate regarding intention to use materials from DoD STARBASE in the classroom, shown in Table 38 above, which also reinforces the desire for more STEM resources. Results also indicate that some teachers prefer DoD supplemental resources over other similar resources (5.84).

Table 39: Program Support Ranked from Most-to-Least Favorable

Item	Mean	Std. Deviation
My school plans to participate in the DoD STARBASE program again next year.	6.87	.693
I look forward to bringing future classes to the DoD STARBASE program.	6.80	.680
I would like more DoD STARBASE supplemental resources to take back to my classroom.	6.45	1.055
Parents are delighted that their children are participating in DoD STARBASE.	6.41	.949
I plan to incorporate DoD STARBASE teaching techniques into my daily classroom activities.	6.30	1.019
My principal is a strong advocate of DoD STARBASE.	5.96	1.422
I prefer the supplemental resources DoD STARBASE provides to teachers over other similar resources.	5.84	1.282

The “Overall Index” is an aggregate scale based on the mean or average of the attitudinal items. The Overall Index score 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 responded with more favorable attitudes toward the DoD STARBASE program as a whole compared to those teachers with little or no perceived support. Table 40 shows the percent of responses to each of the support items, and the Overall Index mean according to response category (e.g., yes, or no). Highlights of the specific outcome comparisons include:

- Teachers that use or plan to use DoD STARBASE resource material and take home activities have more favorable attitudes as measured by the Overall Index (6.21 and 6.28, respectively) compared to those that do not utilize these resources (5.46 and 5.80, respectively).
- Those teachers reporting that the DoD STARBASE curriculum directly helped them reach state education standards have more favorable overall attitudes (6.18) compared to those reporting only an indirect relationship (5.34).

- Schools with formal communication processes in place had higher teacher ratings (6.23) on the Overall Index than those with no formal communication (5.99) processes in place.
- Teachers who would recommend the DoD STARBASE program responded with higher overall ratings (6.17) as compared to those that would not recommend the program (4.03). Note, the number of teachers that would not recommend the program was quite small (N=11); none-the-less, the result shows how strong overall approval of the program motivates teachers to share information about the program with other adults in school administration.

Table 40: Overall Attitude Ratings by DoD STARBASE Impact Items

Do you or will you use DoD STARBASE materials/ applications in your own classroom?	Yes	6.21
	No	5.46
Do you or will you use DoD STARBASE take home activities beyond your classroom?	Yes	6.28
	No	5.80
Is there formal communication from your school that raises community awareness of the DoD STARBASE program (e.g., letters, meetings, etc.)?	Yes	6.23
	No	5.99
In your view, does the DoD STARBASE curriculum help you reach state education standards?	Yes	6.18
	No, Indirectly	5.34
Will you recommend DoD STARBASE to other teachers, principals, or school administrators?	Yes	6.17
	No	4.02

MILITARY EXPERIENCE AND CAREER OPPORTUNITIES

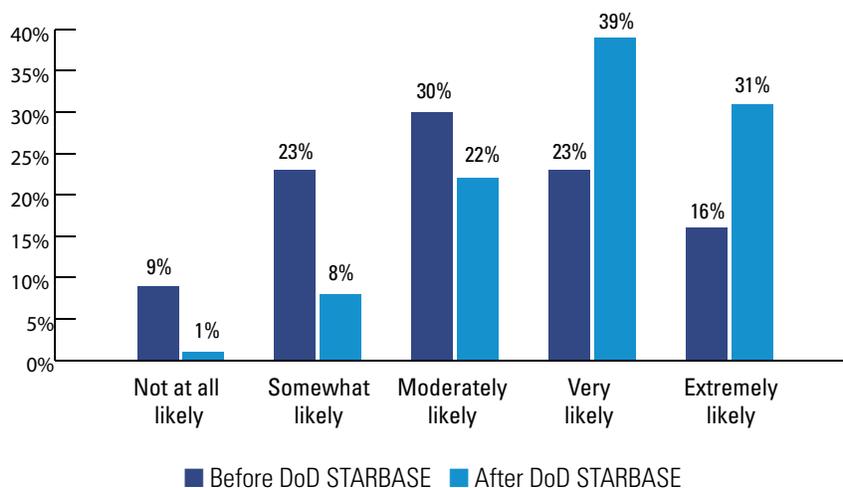
Teacher experience with military bases remained similar to the previous years despite the differences in participation rates during the same time period. The majority of teachers (75 percent) involved in the DoD STARBASE program this year have had some type of exposure to a military base either for prior DoD STARBASE programs (16 percent), non-related programs (37 percent for unrelated and 5 percent for other kinds of program activities), or a combination of the two (22 percent). Just under a quarter of the teachers (23.9 percent) reported that this is their first experience with a military base and the DoD STARBASE program (Table 41).

Table 41: Experience with a Military Base

Response	2013 (N=2,146)		2014 (N=1,076)		2015 (N=1,668)		2016 (N=2,296)		2017 (N=2,639)	
	Freq.	%								
Never visited a military base before the current DoD STARBASE Program	540	25.2%	271	25.2%	424	25.4%	589	25.7%	633	23.9%
Yes, for prior DoD STARBASE programs only	369	17.2%	163	15.1%	232	13.9%	383	14.3%	399	15.1%
Yes, for activities not related to DoD STARBASE	748	34.9%	356	33.1%	590	35.4%	827	36.0%	929	35.2%
Yes, for DoD STARBASE and non-DoD STARBASE activities	393	18.3%	231	21.5%	330	19.8%	442	19.3%	558	21.2%
Other ¹	96	4.5%	55	5.15%	92	5.5%	110	4.8%	118	4.5%

¹The majority of the "Other" responses include teachers who were in the military or who have 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.

For teachers, attending DoD STARBASE academies correlates with some exciting and meaningful changes in perspective. For instance, 88 percent (N=2,329) 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 were to recommend DoD or the military as a career option both prior to and after attending a DoD STARBASE program. The results show a 79 percent increase (from 39 percent to 70 percent) in teachers who say they are Very Likely (39 percent) or Extremely Likely (31 percent) to recommend the military or DoD civilian careers after the program as compared to a total of only 39 percent before the program (23 percent Very Likely and 16 percent Extremely Likely). Figure 6 displays the change in favorability based on percentage of responses within each of the response categories.

Figure 6: How Likely Are You to Recommend the DoD or the Military as a Career Option to Your Students?

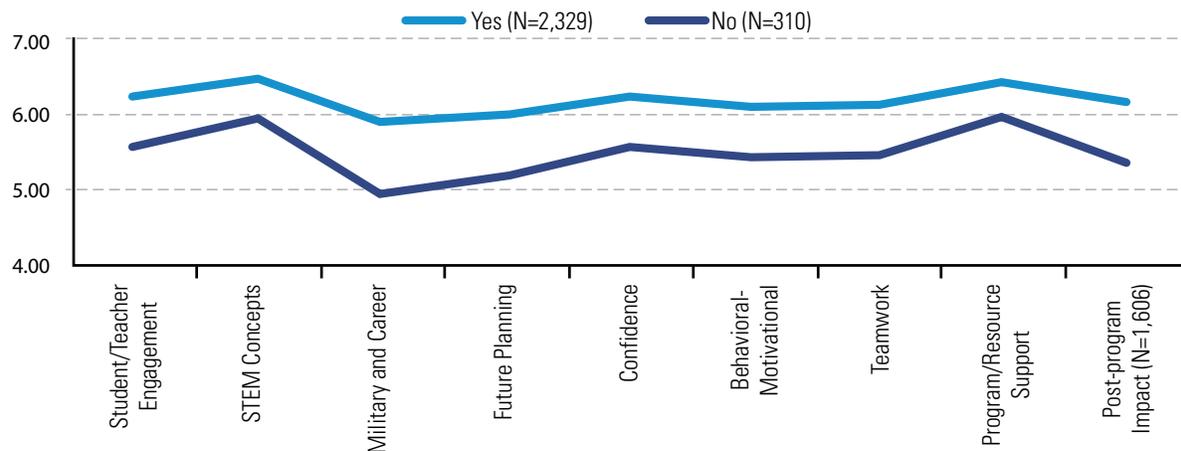
POST-PROGRAM IMPACT

The next section of this report examines results from items that were only posed to teachers who have at least one year of experience with DoD STARBASE (N = 1,606). These items asked the experienced teachers to rate the degree of beneficial post-program impacts on students after the DoD STARBASE experience. These post-impact attitudes along with all survey measurement areas were compared based on whether or not teachers reported increased awareness of DoD career opportunities. The most meaningful differences in favorable response occurred in response to the following inquiries on student behaviors. All bulleted items showed a higher average by at least .8 (on a 7-point Likert scale) when rated by non-first year teachers who say they became more aware of various career opportunities, both military and non-military, as a direct result of attending DoD STARBASE vs. experienced teachers who do not endorse that opinion. In other words, experienced teachers who confirm they gained awareness of STEM-related occupations through participating in the program tended to endorse the following items/opinions with higher ratings than those teachers who feel their awareness of STEM-related occupations was not broadened by their participation in DoD STARBASE.

- Students have better school attendance.
- Attending DoD STARBASE helps students link their experience to careers in both military and non-military positions.
- 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.).
- After DoD STARBASE, students are more interested in using computers for class-related learning activities.
- Students who have attended DoD STARBASE seem to perform better on standardized state assessments.

The average difference for the “Post-Program Impact” composite scale is presented in Figure 6. Please note that the Post-Program Impact composite group size is N=1,606, while the other composite scores presented in Figure 6 are based on the full sample of 2,639.

Figure 7: Teacher Perceptions of Student Behavior Based on Teachers Becoming More Aware of Department of Defense Career Opportunities After Attending DoD STARBASE



FACILITATING STEM AWARENESS IN STUDENTS

Teacher attitudes toward students' 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 42). Similar to previous years, concepts related to science were rated higher than math. Specifically, students were more interested in science (6.54) compared to math (5.97), according to teacher perceptions, and had improved understanding of science (6.72) compared to appreciation of how math can be applied (6.48). Even so, teacher ratings of students' interest in and appreciation of math has been quite stable in the last three years and higher than in previous years; this year nearly matched the highest averaged ratings which were seen in 2016. Student interest in learning about science has been stable after rebounding last year following a slight dip in 2015.

Two items added in 2015 included interest in learning about technology and engineering. The results this year are very close to the previous year, with tenths of a percent determining a slightly different rank-order. With only math lagging under an average of 6.00 there seems to be an abundance of positive feedback over many years. The current trend is toward more interest by students in learning about science followed by technology, engineering, and math, in that order.

"Our 5th grade students love attending DoD STARBASE! They always come back to school excited about what they learned that day. The collaborative nature of how DoD STARBASE is structured exemplifies how we want STEM to be taught back at school. The program is tailored in such a way that ALL students can be successful, and ALL students learn a lot!"

– KENT MARTZ, PRINCIPAL AT WEISSER PARK ELEMENTARY, ATTENDING STARBASE INDIANA-FORT WAYNE



Table 42: STEM Awareness Historical Comparisons

	2013	2014	2015	2016	2017
DoD STARBASE has helped to improve the students' understanding of science.	6.57	6.54	6.64	6.69	6.72
More interested in learning about science.	6.54	6.53	6.46	6.54	6.54
More interested in learning about technology.*			6.51	6.55	6.53
More interested in learning about engineering.*			6.17	6.26	6.28
DoD STARBASE has helped to improve students' appreciation of how math can be applied to a variety of situations.	6.30	6.26	6.49	6.49	6.48
More interested in learning about math.	5.84	5.79	5.93	5.97	5.97

* New in 2015

Teachers are a great resource for identifying additional development activities that are best suited to student learning styles. Teachers provided their opinion on the best way to continue developing student interest in STEM-related activities. Nearly 75 percent indicated that the best way to continue interest is to promote an existing program (31 percent) or a new program (43 percent) in the school system (Table 43). The least likely ways to increase awareness in the teachers' view included promoting a new program at the national, state, or community level (17 percent) or through an existing community-based program (10 percent). These results continue the trends seen in 2015, when these questions were first posed, as well as in 2016. In each of the past three years, teacher opinion regarding the BEST way to develop continuing student interest in STEM-related activities has more strongly endorsed promoting new and existing STEM programs in schools, with less endorsement of promoting new and existing programs supported by national, state or local entities. 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 enhance and support youthful student interest in STEM-related activities.

Table 43: 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	1,136	43%
An existing school-based program	810	31%
Promoting a new program at the national, state, or community level	436	17%
An existing community-based program	257	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 44). Approximately 25 percent of teachers report that there are “many” (10 percent) or “several” (15 percent) relevant STEM-awareness programs available to their students within their school and/or community. Another nearly 25 percent said there were no programs available. The most common response (52 percent) was from teachers indicating they know of only a couple of relevant programs. These results are very similar to 2016, but there was a slight decrease in the percentage of teachers picking the most favorable response of “many” available STEM-relevant programs, which decreased two points from 12 percent to 10 percent. When asked specifically about community extra-curricular STEM programs aimed at middle school aged students, only 38 percent could confirm the existence of such programs in the community, 48 percent said they were not sure, and 14 percent report their community offers no extra-curricular programs for middle school aged students.

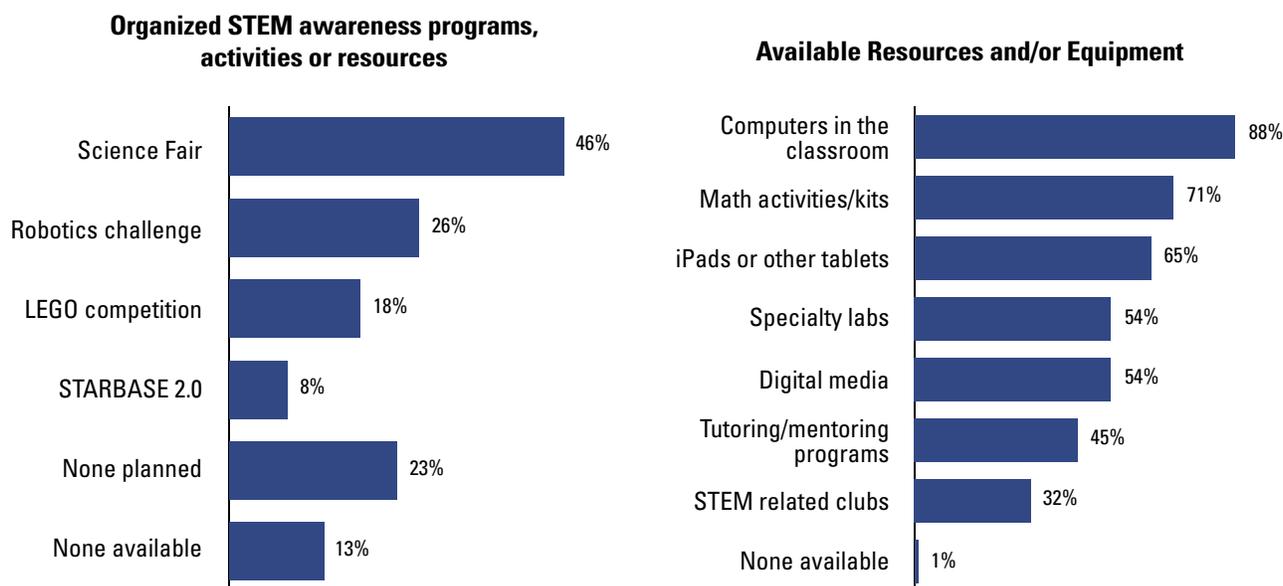
Table 44: STEM-Related School or Community Resources and Extra-Curricular Programs/Activities

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?
<ul style="list-style-type: none"> • 10% many relevant STEM awareness programs • 15% several relevant programs • 52% only a couple of relevant programs • 24% no other relevant programs 	<ul style="list-style-type: none"> • 38% Yes • 14% No • 48% Not sure

Teachers also identified specific STEM awareness programs, activities, resources and equipment available to students within the school system and the community at large. Thirty-six percent of the teachers indicate that either there are no available (13 percent) or no planned (23 percent) organized STEM awareness programs, activities or resources for their students after attending the DoD STARBASE program (Figure 8). In a write-in section, 313 teachers identified other STEM programs or activities, and 129 teachers cited other resources or equipment. Sixty percent of the teachers (N=1,588) were able to identify at least one organized activity, program or other resource for their students after DoD STARBASE has ended (e.g., Science Fair, Robotics challenge).

- In a repeat of last year’s results, 99 percent of teachers report there are resources and/or equipment available in school for students to use (e.g., Math activities, Specialty labs). For the first time in 2016-2017, teachers were asked about the availability of computers in the classroom dedicated to student use and 88 percent of teachers report computers are available for students in the classroom.

These findings are similar to those obtained in 2016 with the exception that the reported availability of iPads and other tablets has fallen just under the reported availability of math kits. However, both remain near the top of the list of available resources in the classroom. As cited above, teachers were asked about the availability of personal computers in the classroom this year, and fully 88 percent of teachers say they have a personal computer in the classroom for student activities, making it the most common answer. This is important new information that could influence the development of new curriculum and/or take away resources from DoD STARBASE.

Figure 8: 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-seven percent of the teachers plan to always (46 percent), often (36 percent), or sometimes (15 percent) refer students to additional STEM-related programs or resources after the DoD STARBASE program has ended (Table 45). The high percentage of teachers who plan to refer students to additional STEM-related programs suggests that, whether or not they formed their opinion as a direct result of DoD STARBASE, nearly all the teachers who have attended a DoD STARBASE academy understand the importance of fostering continued STEM-related interest in their students, even beyond the classroom.

Table 45: 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	Cumulative Percent
Always	1,179	46%	46%
Often	905	36%	82%
Sometimes	378	15%	97%
Once or twice	70	3%	99%
Not at all	20	1%	100%

Drivers of Selected Target Ratings

Stepwise multiple regression analyses were performed to determine the important drivers of key teacher attitudes and ratings about DoD STARBASE.²⁹ The key teacher ratings selected this year focus on broad program impact and on student STEM and career 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 have the most influence on program effectiveness. The drivers listed for the “Post-Program Impact” aggregate scale explain approximately 70 percent of the variance, or variability, across teachers in their perceptions of DoD STARBASE impact (as indicated by an R2 value of .694). That is, these items predict individual teacher opinion about program impact on students with a high degree of efficiency. Thus, they provide a condensed model from which to tell how teachers feel about the program. 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’s impact.

The results are consistent with the driver model of Post-Program Impact derived in 2016, with 62 percent overlap of the contributing teacher attitude items. This time, the factors include teacher perceptions of student focus on their future goals and potential cooperation, student appreciation of applied math, and teacher motivation to become more skilled in STEM instruction. Teacher interest in having more DoD STARBASE supplemental resources and enthusiasm for returning to DoD STARBASE next year are also important factors in determining positive opinions of DoD STARBASE impact.

DRIVERS OF POST-PROGRAM IMPACT³⁰ (R2 = .694; P<.05)

- While attending DoD STARBASE, the students appear more ready to set future and career goals.
- DoD STARBASE has helped to improve student 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.
- While attending DoD STARBASE, the students appear more comfortable making decisions.
- During DoD STARBASE, students have better school attendance.
- The DoD STARBASE experience has influenced me to become skilled in STEM instruction.
- While attending DoD STARBASE, the students appear more interested in learning about engineering.
- I plan to incorporate DoD STARBASE teaching techniques into my daily classroom activities.
- While attending DoD STARBASE, the students appear more interested in learning about military careers.
- While attending DoD STARBASE, the students appear more interested in learning about science.

²⁹ Appendix A provides a definition of multiple regression and other statistical techniques used in this report.

³⁰ The items making up this scale were not included in the regression analysis to maintain independence between predictor and outcome measures.

- I look forward to bringing future classes to the DoD STARBASE program.
- While attending DoD STARBASE, the students appear more goal oriented.
- While attending DoD STARBASE, the students appear to focus more on their future potential.

Table 41 provides a summary of the regression analyses for key target ratings based on all attitudinal items within the Teacher Survey. The predictive models selected for analysis this year once again focus on student attitudes about future career opportunities and their understanding of how STEM-related skills and abilities link to various career paths.

The top few drivers listed in the summary of each target rating predictor model below tend largely to be the same ones as in previous years. This helps to solidify a core set of teacher perceptions of student behaviors and their own attitudes that directly implicate the influence DoD STARBASE exerts on forming student aspirations for their future STEM-related educational pursuits and possible career directions.

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:

- Helping students better understand how STEM skills/abilities fit job requirements for certain career fields.
- Helping students better understand that developing their current skills/abilities is necessary to have good future career choices.
- Have more questions about DoD and other non-military career opportunities.
- More interested in learning about military careers.
- More ready to set future educational and career goals.
- Focus more on their future potential.
- More goal oriented.
- More interested in learning about engineering.
- More interested in learning about science.
- DoD STARBASE has helped to improve student appreciation of how math can be applied to a variety of situations.

Table 46: Drivers of Key Target Ratings**DRIVERS OF “ATTENDING DoD STARBASE HELPS STUDENTS LINK THEIR EXPERIENCE TO CAREERS IN BOTH MILITARY AND NON-MILITARY POSITIONS” ($R^2 = .640^*$)**

- Attending DoD STARBASE helps students better understand how STEM skills/abilities fit job requirements for certain career fields.
- More interested in learning about military careers.
- DoD STARBASE helps to improve cooperative learning in the classroom even after the program ended.
- DoD STARBASE has helped to improve student appreciation of how math can be applied to a variety of situations.
- Attending DoD STARBASE helps students understand better that developing their current skills/abilities is necessary to have good future career choices.
- More excited about learning.

DRIVERS OF “ATTENDING DoD STARBASE HELPS STUDENTS UNDERSTAND BETTER HOW STEM SKILLS/ ABILITIES FIT JOB REQUIREMENTS FOR CERTAIN CAREER FIELDS” ($R^2 = .730^*$)

- Attending DoD STARBASE helps students better understand 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 student appreciation of how math can be applied to a variety of situations.
- More interested in learning about science.
- Parents are delighted that their children are participating in DoD STARBASE.
- My school plans to participate in the DoD STARBASE program again next year.
- After the DoD STARBASE program, the students ask more questions about technology.
- More confident about what they can accomplish.
- Focus more on their future potential.
- More interested in learning about military careers.
- I prefer the supplemental resources DoD STARBASE provides to teachers over other similar resources.
- The students enjoyed being on a military base.

DRIVERS OF “ATTENDING DoD STARBASE HELPS STUDENTS UNDERSTAND BETTER THAT DEVELOPING THEIR CURRENT SKILLS/ABILITIES IS NECESSARY TO HAVE GOOD FUTURE CAREER CHOICES” ($R^2 = .700^*$)

- Attending DoD STARBASE helps students better understand how STEM skills/abilities fit job requirements for certain career fields.
- The students talk about DoD STARBASE long after the program has ended.
- DoD STARBASE helps to improve cooperative learning in the classroom even after the program ended.
- More ready to set future educational and career goals.
- I plan to incorporate DoD STARBASE teaching techniques into my daily classroom activities.
- Better at working in groups.
- More confident about what they can accomplish.
- Attending DoD STARBASE helps students link their experience to careers in both military and non-military positions.
- I prefer the supplemental resources DoD STARBASE provides to teachers over other similar resources.
- Better at following directions.

DRIVERS OF “STUDENTS ARE MORE INTERESTED IN LEARNING ABOUT MILITARY CAREERS” ($R^2 = .746^*$)

- Have more questions about DoD and other non-military career opportunities.
- More comfortable with military personnel.
- Attending DoD STARBASE helps students link their experience to careers in both military and non-military positions.

* Statistically significant Multiple Correlations ($p < .05$)

Table 46: Drivers of Key Target Ratings (cont.)

- Attending DoD STARBASE helps students understand better how STEM skills/abilities fit job requirements for certain career fields.
- DoD STARBASE has helped to improve the student understanding of science.
- The students talk about DoD STARBASE long after the program has ended.
- After DoD STARBASE, students are more interested in using computers for class-related learning activities.
- More excited about their futures.
- The students enjoyed being on a military base.

DRIVERS OF “STUDENTS ARE MORE READY TO SET FUTURE EDUCATIONAL AND CAREER GOALS” ($R^2 = .629^*$)

- Focus more on their future potential.
- More interested in learning about engineering.
- More goal oriented.
- More excited about their futures.
- The DoD STARBASE experience has influenced me to become skilled in STEM instruction.
- Attending DoD STARBASE helps students better understand that developing their current skills/abilities is necessary to have good future career choices.
- After DoD STARBASE, students have better school attendance.
- My school plans to participate in the DoD STARBASE program again next year.

DRIVERS OF “STUDENTS SEEM TO HAVE MORE QUESTIONS ABOUT DoD AND OTHER NON-MILITARY CAREER OPPORTUNITIES AFTER DoD STARBASE” ($R^2 = .729^*$)

- More interested in learning about military careers.
- Focus more on their future potential.
- More interested in learning about engineering.
- More comfortable with military personnel.
- I plan to incorporate DoD STARBASE teaching techniques into my daily classroom activities.

DRIVERS OF “STUDENTS SEEM TO FOCUS MORE ON THEIR FUTURE POTENTIAL AFTER DoD STARBASE” ($R^2 = .826^*$)

- More ready to set future educational and career goals.
- Have more questions about DoD and other non-military career opportunities.
- More excited about their futures.
- More willing to cooperate with each other.
- More excited about learning.
- DoD STARBASE helps to improve cooperative learning in the classroom even after the program ended.
- My school plans to participate in the DoD STARBASE program again next year.
- I would like more DoD STARBASE supplemental resources to take back to my classroom.
- More goal oriented.
- More interested in learning about engineering.
- More interested in learning about science.
- Attending DoD STARBASE helps students better understand how STEM skills/abilities fit job requirements for certain career fields.

* Statistically significant Multiple Correlations ($p < .05$)

CONCLUSIONS

The DoD STARBASE program continues to influence and instill a growing population of elementary and middle school teachers with the mission of providing students with STEM awareness activities that support student achievement overall, but especially in STEM related concepts and topics, which can open both educational and professional opportunities. For some participating schools, DoD STARBASE is the primary STEM program that is available to students. The teachers report that participation in this 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 attending the DoD STARBASE program report that the students³¹:

- Talk about DoD STARBASE long after the program ended (6.58)
- Understand better how STEM skills/abilities fit job requirements for certain career fields (6.42)
- Understand better that developing their current skills/abilities is necessary to have good future career choices (6.39)
- After DoD STARBASE students are more interested in using computers for class-related learning activities (6.28)

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’s ability 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 17 percent of the teachers indicated having a major or minor college degree in a STEM-related field).

Although DoD STARBASE, is technically a youth program, the teachers who attend with their students also benefit from exposure to the topics and the teaching methods. The survey data reveals that nearly 90 percent of participating teachers are influenced to become skilled in STEM instruction, about 94 percent of respondents say they plan to incorporate DoD STARBASE techniques in their classrooms, and 90 percent are at least “moderately likely” to suggest military or civilian career opportunities to their students. Results like these strongly suggest that most teachers will continue to support the mission of DoD STARBASE by introducing their students to STEM-related activities and career paths, even if those students or teachers can’t participate in the DoD STARBASE program every year.

³¹ Likert scale based on response options from 1 (Disagree) to 7 (Agree).

“DoD STARBASE is by far one of the most important academic programs that is offered to 5th Grade. To be able to inspire 10 year olds, cutting across demographics and making science relevant to everyone is something that isn’t done in public schools. Teaching science, math and technology is so relevant and so often neglected. The question isn’t whether we keep DoD STARBASE for 5th Grade, but how to expand it to every grade?”

– HEIDI JENKINS, EDUCATOR AT VALLEY VIEW ELEMENTARY SCHOOL, ATTENDING STARBASE RADID CITY

CONSIDERATIONS FOR THE **2018 Program Year**

The assessment process captures valuable information from each of key participant groups such as classroom teachers, school administrators, military base personnel, base commanders, DoD STARBASE staff, students, volunteers, and interested observers of the program. This information is documented through surveys, reports on operational activities, after-action investigations, compliance activities, academy visitations reports, reviews of academy documents, observations of program activity, and special ad-hoc studies on newly established initiatives. The following proposed list of “considerations” has been developed based on that input. The objective of this section is to guide planned and purposeful improvement in every dimension of the DoD STARBASE program. The key “considerations” for the 2018 program year include:

KEY PARTICIPANT GROUP INVOLVEMENT

- Elevate classroom teachers as a special panel group analytical construct in research analysis and operational target groups. This would include their roles as outreach agents in installing and expanding the delivery of DoD STARBASE materials, curriculum applications and techniques/practices throughout the school system, affiliated educational systems and the community of STEM programs.
- Design and develop DoD STARBASE materials that are complementary to existing school system curriculum and that demonstrate the efficacy of the hands on-minds on STARBASE methodology that can also be utilized by the school system classroom.
- Design and develop a generic teacher training program on extended DoD STARBASE applications, materials and episodic STEM problem-solving presentations. These applications should be affordable and attentive to time constraints and set-up requirements. Some of the applications should also be constructed with limited teacher training presentation (stand-alone).
- Create a program-wide comprehensive inventory of outreach activities, including those that are effectively successful in installation, contacts (status), and downstream linkages. The objective is to organize and review the outreach efforts by all participant groups. Identify local, regional, and national linkages and the length of commitment. This should include those that are obtained by third-parties as well as those self-initiated. Piggy-back third-level linkages and their integration into partnerships, sponsorship and co-sponsorship as part of the inventory. Categorize source of linkages such as DoD staff, academy personnel, school teachers, and educational representatives, DoD contract representatives, military personnel, STEM programs at local, regional and national levels. Active, non-active and referrals should be recorded as part of downstream assessment. Also identify the key participants in outreach by their roles and operating units in the DoD STARBASE. Grant identification, sponsor requirements and other constructs should be also included in the assessment.
- Assess key STEM target groups in partnership/sponsorship relationships based on ease of installation and on-going commitments compatible to DoD STARBASE objectives. Also consider those partnerships that result in upgrade applications.
- Expand analytical constructs around the key DoD STARBASE contributors (i.e. military, volunteers, school system participants, sponsors, etc.) and their outreach linkages and involvement, including secondary and tertiary relationships. Identify which units capture outreach objectives and the breadth of contacts as well as those that result in some form of implementation.

- Consider a protocol format for each type of outreach relationship that protects the interests of DoD STARBASE program objectives and integrity.
- Develop a profile of each curriculum area so each academy can identify areas that will need remedial action.
- Increase OASD/M&RA communications with DoD STARBASE sites and directors regarding program operations and finances.

PROGRAM OVERSIGHT

- Provide guidance memo/policy letter as a supplement to the current DoDI. This includes:
 - o Clarification on the number of required DoD STARBASE classes per dedicated STARBASE classroom. (i.e. 28 classes per dedicated classroom)
 - o Clarification on the number of required DoD STARBASE instructors per dedicated classroom when conducting DoD STARBASE classes. (i.e. two DoD STARBASE instructors or an instructor and an aide)
 - o Documentation of the DoD STARBASE standard objectives and activities permitted.
- Modify Level II evaluation criteria to include:
 - o Site having an established, sustainable DoD STARBASE 2.0 program
 - o DoD STARBASE 2.0 evaluation as part of the Level II Evaluation Visitation process
 - o DoD STARBASE 2.0 pilot program visits as part of a Level II Orientation Visit.
- Implement automatic follow-up visit process for the next year when compliance issues are identified to insure corrective action has been taken and to close outstanding issues.
- Include curriculum outreach program involvement along with key program performance indicators for academy performance requirements.
- Develop specific supplemental evaluation processes for those DoD STARBASE locations operating under a for-profit contracting situation.

“I’ve experienced DoD STARBASE on a professional level for years and this year my son attended and came home and said that he was proud I was a teacher to excite other kids like DoD STARBASE does. He now wants to be a science teacher and teach Eggbert.”

– KRISTAL MCCONIHAY, EDUCATOR AT RUFFNER ELEMENTARY SCHOOL, ATTENDING WEST VIRGINIA STARBASE ACADEMY

PROGRAM GUIDANCE

- Facilitate a strategic meeting between select DoD STARBASE directors (old and new) to create a new director orientation guide.
- Facilitate a strategic meeting between select DoD STARBASE 2.0 program directors (old and new) to create a new 2.0 implementation guide.
- Develop a process to identify students with low pre-program STEM confidence attitudes and ways that the DoD STARBASE instructors may provide additional coaching during the program to increase post-program scores.
- Continue pursuit of a national professional development workshop for all DoD STARBASE directors. This workshop should include:
 - o Program Oversight topics as listed above
 - o Guidance on the range of involvement of directors in outreach, partnerships, regional and national STEM activities, and the impact on key program performance levels
 - o A session on the importance of building industry and community partners
 - o A session on marketing and public relations as it relates to operating a DoD STARBASE program
 - o A session on the keys to successful implementation and operation of a DoD STARBASE 2.0 program
 - o Information on program and student cyber safety to include Facebook and other social media and website security



Appendices

2017

Appendix A: 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

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

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. F-test – Tests the differences between multiple group means

$$F = MS_b / MS_w$$

$$MS_b = \sum n_k (\bar{x}_k - \bar{x})^2 / (K - 1)$$

$$MS_w = \sum [\sum (x_{ik} - \bar{x}_k)^2] / (N - K)$$

x_{ik} = the value of the variable obtained by the *i*th person in the *k*th group

\bar{x}_k = the mean of the *k*th group

\bar{x} = the grand mean overall of all groups

n_k = the size of the *k*th group

N = the total sample size of all groups

K = the total number of groups

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

$$r^2 = \frac{[\sum Y_1 * Y_2 - \sum Y_1 * \sum Y_2 / N] / (N-1)}{s_{y_1} s_{y_2}}$$

r = the statistical relationship of two variables

Y = the values of the variables

s = the standard deviation of the variables

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

7. 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

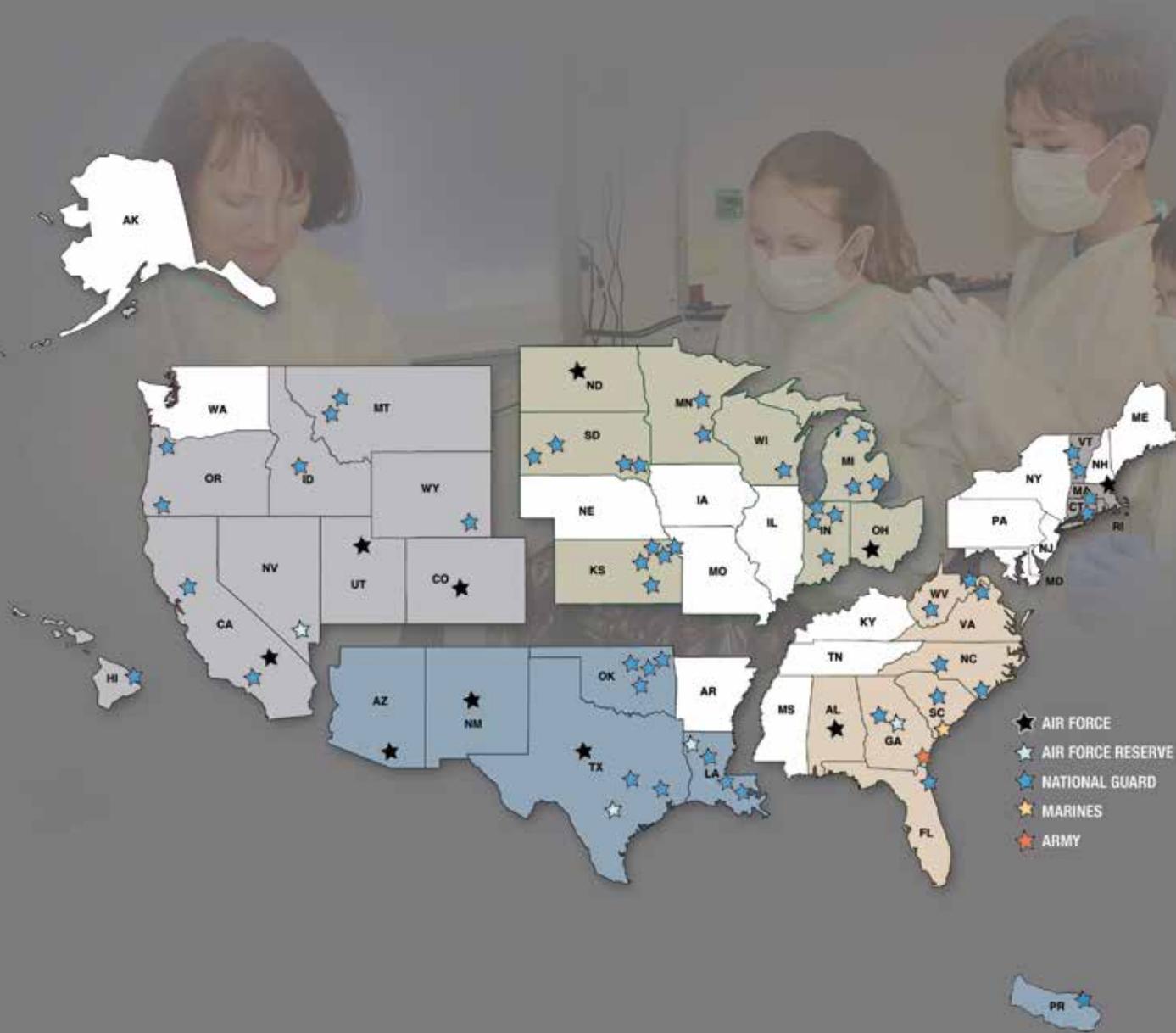
"My daughter was so excited about DoD STARBASE that she counted down to attending like it was Christmas! This really solidified her interests and goals in the STEM areas. Thank you for providing this opportunity to all of our children."

– PARENT OF A STUDENT AT SYCAMORE ELEMENTARY SCHOOL, ATTENDING STARBASE ARIZONA



Appendix B: STARBASE Locations by Military Component and Region

LOCATIONS BASED ON MILITARY COMPONENT (2017)



Appendix B: STARBASE Locations by Military Component and Region, (cont.)

DOD STARBASE LOCATIONS ACROSS GEOGRAPHIC REGIONS (2017)

EAST

Connecticut	STARBASE Windsor Locks
Connecticut	STARBASE Waterbury
Massachusetts	STARBASE Hanscom
Vermont	STARBASE Vermont - Rutland
Vermont	STARBASE Vermont - South Burlington

SOUTHEAST

Alabama	STARBASE Maxwell
Florida	STARBASE Florida
Georgia	Peach State STARBASE
Georgia	STARBASE Robins
Georgia	STARBASE Savannah
North Carolina	STARBASE Charlotte
North Carolina	STARBASE Ft. Fisher
South Carolina	STARBASE MCAS Beaufort
South Carolina	STARBASE Swamp Fox
Virginia	Winchester STARBASE Academy
West Virginia	STARBASE Martinsburg
West Virginia	STARBASE Academy

MIDWEST

Indiana	STARBASE Indiana - Fort Wayne
Indiana	STARBASE Indiana - Gary
Indiana	STARBASE Indiana - Indianapolis
Indiana	STARBASE Indiana - South Bend
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
Minnesota	STARBASE Minnesota - Duluth
North Dakota	STARBASE North Dakota
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
Louisiana	Bayou State STARBASE
New Mexico	New Mexico STARBASE
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 Goodfellow AFB
Texas	STARBASE Kelly
Texas	Texas STARBASE - Austin
Texas	Texas STARBASE - Houston

WEST

California	STARBASE Edwards
California	STARBASE Los Alamitos
California	STARBASE Sacramento
Colorado	STARBASE Peterson AFB
Hawaii	STARBASE - Hawaii
Idaho	STARBASE Idaho
Montana	STARBASE Fort Harrison
Montana	STARBASE Great Falls
Nevada	STARBASE Nellis
Oregon	STARBASE Kingsley
Oregon	STARBASE Portland
Utah	STARBASE Hill Screaming Eagles
Wyoming	Wyoming STARBASE Academy

Appendix C: Expressed Attitudinal Differences by Gender

Gender	Pre-test Mean	Attitude	Gender	Post-test Mean	Post-Pre Gap
Boys	5.70	Total Attitudes	Boys	5.84	0.14
Girls	5.53		Girls	5.69	0.16
Boys	6.22	STEM Awareness	Boys	6.16	-0.07
Girls	5.79		Girls	5.75	-0.04
Boys	6.39	I like technology.	Boys	6.36	-0.03
Girls	5.99		Girls	6.02	0.03
Boys	6.17	I want to learn more about technology.	Boys	6.10	-0.07
Girls	5.78		Girls	5.57	-0.21
Boys	6.11	I like learning how technology works.	Boys	6.01	-0.09
Girls	5.57		Girls	5.65	0.07
Boys	5.30	Future Planning	Boys	5.51	0.22
Girls	4.86		Girls	5.16	0.30
Boys	4.65	I am interested in being a scientist or engineer.	Boys	4.86	0.21
Girls	3.98		Girls	4.32	0.34
Boys	5.17	When I finish school, I would like to get a job that has something to do with math, science, technology, or engineering.	Boys	5.46	0.29
Girls	4.89		Girls	5.26	0.37
Boys	5.47	I want to learn more about engineering.	Boys	5.55	0.08
Girls	4.98		Girls	5.16	0.18
Boys	5.38	I like engineering.	Boys	5.71	0.34
Girls	4.71		Girls	5.26	0.54
Boys	5.66	I enjoy learning about science, technology, math, and engineering topics.	Boys	5.87	0.21
Girls	5.40		Girls	5.59	0.19
Boys	5.47	Jobs that use math, engineering, technology and science are exciting.	Boys	5.65	0.18
Girls	5.22		Girls	5.41	0.18
Boys	5.52	Science Confidence	Boys	5.66	0.14
Girls	5.46		Girls	5.55	0.10
Boys	5.10	I am good at science.	Boys	5.40	0.30
Girls	4.96		Girls	5.25	0.29
Boys	4.86	Learning about science is easy for me.	Boys	5.20	0.34
Girls	4.71		Girls	4.98	0.27
Boys	5.81	I would like to know more about science.	Boys	5.74	-0.07
Girls	5.88		Girls	5.69	-0.19
Boys	5.51	I am good at math.	Boys	5.56	0.04
Girls	5.21		Girls	5.32	0.10
Boys	6.33	I like doing science experiments.	Boys	6.40	0.07
Girls	6.53		Girls	6.52	0.00

Appendix C: Expressed Attitudinal Differences by Gender, (cont.)

Gender	Pre-test Mean	Attitude	Gender	Post-test Mean	Post-Pre Gap
Boys	5.88	STEM Motivation & Behavior	Boys	6.12	0.24
Girls	5.86		Girls	6.07	0.20
Boys	5.87	A lot of good jobs use math to solve problems.	Boys	5.90	0.03
Girls	5.84		Girls	5.87	0.03
Boys	6.01	Math is important for developing new technology.	Boys	6.23	0.22
Girls	6.04		Girls	6.11	0.07
Boys	5.84	Math is really useful for solving engineering problems.	Boys	6.16	0.32
Girls	5.79		Girls	6.06	0.27
Boys	5.90	Most people use science, technology, math or engineering skills every day.	Boys	6.18	0.28
Girls	6.05		Girls	6.19	0.13
Boys	5.98	Scientists work on things that make life better.	Boys	6.09	0.11
Girls	5.95		Girls	6.12	0.18
Boys	6.01	People who work for the military use technology in their jobs.	Boys	6.20	0.19
Girls	5.72		Girls	5.99	0.27
Boys	5.97	Learning about science, engineering, technology, and math will help me in my daily life.	Boys	6.09	0.12
Girls	6.02		Girls	6.06	0.04
Boys	5.80	I am aware of some jobs that use math, science, engineering, or technology.	Boys	6.10	0.30
Girls	5.90		Girls	6.13	0.24
Boys	5.58	Engineers help solve challenging problems.	Boys	6.17	0.59
Girls	5.47		Girls	6.06	0.59
Boys	5.85	Military Setting Endorsement	Boys	5.98	0.13
Girls	5.64		Girls	5.82	0.18
Boys	5.23	A military base is a good place to work.	Boys	5.43	0.20
Girls	5.21		Girls	5.44	0.23
Boys	6.08	Military bases are exciting.	Boys	6.16	0.08
Girls	5.58		Girls	5.75	0.18
Boys	6.28	People who work for the military do lots of different things.	Boys	6.38	0.11
Girls	6.15		Girls	6.29	0.14
Boys	4.93	Teacher Support for STEM	Boys	4.97	0.04
Girls	4.96		Girls	5.02	0.06
Boys	5.20	Teachers at my school are excited about science.	Boys	5.19	-0.01
Girls	5.29		Girls	5.26	-0.03
Boys	4.65	Teachers at my school talk about why technology is important.	Boys	4.75	0.10
Girls	4.64		Girls	4.77	0.14

Appendix C: Expressed Attitudinal Differences by Gender, (cont.)

Gender	Pre-test Mean	Attitude	Gender	Post-test Mean	Post-Pre Gap
Boys	5.92	General Program Evaluation	Boys	6.12	0.20
Girls	5.93		Girls	6.21	0.29
Boys	5.78	I would be interested in a STARBASE club at my school if it were offered.	Boys	5.72	-0.06
Girls	5.79		Girls	5.72	-0.07
Boys	6.09	I do not think DoD STARBASE will help me do better in school. (Reverse Scored)	Boys	6.26	0.18
Girls	6.11		Girls	6.28	0.18
		I think I will remember enjoying my time at DoD STARBASE.	Boys	6.26	-
			Girls	6.41	-
		DoD STARBASE is boring. (Reverse Scored)	Boys	6.20	-
			Girls	6.30	-
		At DoD STARBASE, I learned a lot of things that I can use.	Boys	6.38	-
			Girls	6.44	-
		I will tell others about my DoD STARBASE experience.	Boys	5.95	-
			Girls	6.17	-
		DoD STARBASE Instructors made learning about science, technology, engineering, and math topics fun.	Boys	6.25	-
			Girls	6.29	-
		I think almost any kid would have fun learning at DoD STARBASE	Boys	5.97	-
			Girls	6.12	-

Appendix D: PCA Analysis of Attitude Dimensions

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.

1. Loadings of Attitude Items on Seven Factors, 2015

Attitude Items	2015						
	Future Planning	Science Confidence	Program Evaluation	STEM Behavior/Motivation	Military Setting Endorse	STEM Concept Awareness	Math Confidence
I would take engineering classes if offered.	0.736						
I am interested in being a scientist or engineer.	0.723						
I like engineering.	0.692						
I want to learn more about engineering.	0.675						
When I finish school, I would like to get a job where I could use STEM.	0.628			0.421			
I would like a job in a science-related area.	0.586	0.5					
I enjoy learning about STEM topics.	0.57						
STEM jobs are exciting.	0.565			0.408			
I like science.		0.781					
I am good at science.		0.768					
Learning about science is easy for me.		0.754					
I would like to take more science classes.	0.413	0.67					
I would like to join a science club at my school.	0.397	0.629					
DoD STARBASE is boring. (Reversed Scored)			0.761				
DoD STARBASE Instructors made learning about STEM topics fun.			0.738				
I would tell my friends to come to DoD STARBASE.			0.724				
At DoD STARBASE, I learned a lot of things that I can use.			0.61				
I do not think DoD STARBASE will help me do better in school. (Reversed Scored)			0.516				

Appendix D: PCA Analysis of Attitude Dimensions, (cont.)

2015							
Attitude Items	Future Planning	Science Confidence	Program Evaluation	STEM Behavior/Motivation	Military Setting Endorse	STEM Concept Awareness	Math Confidence
Most people use STEM skills every day.				0.609			
I think learning about STEM topics will help me in my daily life.	0.38			0.605			
I am aware of some STEM careers.	0.342			0.602			
Scientists work on things that will make life better.				0.554			
Engineers help solve challenging problems.				0.527			
Military bases are exciting.					0.731		
A military base is a good place to work.					0.708		
People who work on a military base do lots of different things.				0.365	0.648		
People who work for the military use technology in their jobs.				0.383	0.586		
I have enjoyed coming to a military base.			0.514		0.538		
I like technology.						0.784	
I want to learn more about technology.	0.358					0.697	
I like figuring out how to use technology gear (tablets, smart phones, etc.).						0.665	
I would take classes on technology if available.	0.535					0.602	
I like math.							0.901
I would like to take more math classes.							0.806
I am good at math.							0.775
I need to do well in math to get the kind of job I want.							0.391

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

Appendix D: PCA Analysis of Attitude Dimensions, (cont.)

2. Loadings of Attitude Items on Seven Factors, 2016

2016							
Attitude Items	Future Planning	Science Confidence	Program Evaluation	STEM Behavior/Motivation	Military Setting Endorse	STEM Concept Awareness	Math Confidence
I am interested in being a scientist or engineer.	0.736						
I like engineering.	0.723						
I want to learn more about engineering.	0.742						
When I finish school, I would like to get a job where I could use STEM (Science, Technology, Engineering, and Math).	0.587			0.374			
I enjoy learning about STEM (Science, Technology, Engineering, and Math) topics.	0.496		0.41				
STEM (Science, Technology, Engineering, and Math) jobs are exciting.	0.561						
I like science.		0.777					
I am good at science.		0.795					
Learning about science is easy for me.		0.758					
I would like to learn more about science.		0.704					
I would join a science club at my school if it was offered.	0.401	0.594					
DoD STARBASE is boring. (Reversed Scored)			0.791				
DoD STARBASE Instructors made learning about STEM (Science, Technology, Engineering, and Math) topics fun.			0.743				
I will tell others about my DoD STARBASE experience.			0.638				
At DoD STARBASE, I learned a lot of things that I can use.			0.663				
I do not think DoD STARBASE will help me do better in school. (Reversed Scored)			0.642				

Appendix D: PCA Analysis of Attitude Dimensions, (cont.)

2016							
Attitude Items	Future Planning	Science Confidence	Program Evaluation	STEM Behavior/Motivation	Military Setting Endorse	STEM Concept Awareness	Math Confidence
Most people use STEM (Science, Technology, Engineering, and Math) skills every day.				0.726			
I think learning about STEM (Science, Technology, Engineering, and Math) topics will help me in my daily life.				0.559			
I am aware of some STEM, (Science, Technology, Engineering, and Math) jobs.				0.551			
Scientists work on things that will make life better.				0.465			
Engineers help solve challenging problems.					0.495		
Military bases are exciting.			0.426		0.564		
A military base is a good place to work.					0.613		
People who work for the military do lots of different things.				0.355	0.58		
People who work for the military use technology in their jobs.				0.446	0.562		
I have enjoyed coming to a military location.			0.615				
My teacher is excited about science.*					0.553		
My teacher thinks technology is important.*					0.538		
I like technology.						0.801	
I want to learn more about technology.						0.735	
I like figuring out how to use technology (computers, tablets, smart phones, etc.).						0.702	
I like math.							0.904
I would like to learn more about math.							0.860
I am good at math.							0.809
I must do well in math to get the kind of job I want.							0.466

*New items were not used on the factor to maximize similarity to 2015 results

Appendix D: PCA Analysis of Attitude Dimensions, (cont.)

3. Loadings of Attitude Items on Seven Factors, 2017

2017							
Attitude Items	Future Planning	Science Confidence	Program Evaluation	STEM Behavior/Motivation	Military Setting Endorse	STEM Concept Awareness	Math Confidence
PS19 I am interested in being a scientist or engineer.	0.737						
PS29 When I finish school, I would like to get a job that has something to do with math, science, technology, or engineering.	0.694						
PS13 I want to learn more about engineering.	0.657						
PS12 I like engineering.	0.627						
PS22 I enjoy learning about science, technology, math, and engineering topics.	0.562						
PS17 Jobs that use math, engineering, technology and science are exciting.	0.551						
PS1 I am good at science.		0.824					
PS2 Learning about science is easy for me.		0.775					
PS15 I would like to know more about science.	0.374	0.457					
PS4 I am good at math.		0.395					
PS10 I like doing science experiments.		0.390					
PS36 I think almost any kid would have fun learning at DoD STARBASE			0.763				
PS35 DoD STARBASE Instructors made learning about science, technology, engineering, and math topics fun.			0.752				
PS32r DoD STARBASE is boring. (Reverse Scored)			0.744				
PS31 I think I will remember enjoying my time at DoD STARBASE.			0.717				
PS34 I will tell others about my DoD STARBASE experience.			0.665				
PS33 At DoD STARBASE, I learned a lot of things that I can use.			0.661				
PS18 I would be interested in a STARBASE club at my school if it were offered.			0.636				

Appendix E: Intercorrelations Among Student Characteristics and Attitude Dimensions

	Gender	Grade	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	Military Attitudes
Gender	1	.004	-.020	.016	-.033	-.089**
Grade	.004	1-.029	-.028	-.061*	-.063*	
I heard about DoD STARBASE before I knew I was coming here.	-.020	-.029	1	.448**	-.024	.066**
I know someone that went through DoD STARBASE before me.	.016	-.028	.448**	1	.133**	.073**
I have met military people before coming to DoD STARBASE.	-.033	-.061*	-.024	.133**	1	.091**
Military Attitudes	-.089**	-.063*	.066**	.073**	.091**	1
Attitudes Total (post)	-.068**	-.051*	.026	.033	.056*	.655**
STEM Concepts (post)	-.167**	-.017	-.012	-.029	-.012	.338**
Future Planning (post)	-.133**	-.054*	.021	-.001	.023	.461**
Science Confid. (post)	-.050*	-.056*	.059*	.040	.065*	.419**
Behavior-Motive (post)	-.034	-.047	.046	.056*	.101**	.591**
Military Base Endor. (post)	-.079**	-.053*	.053*	.065*	.069**	.941**
Teacher Support for STEM	.019	.027	.046	.061*	.036	.316**
Overall Evaluation (post)	.043	-.031	.015	.031	.007	.441**
Knowledge Total (post)	-.071**	.030	.031	.085**	.135**	.112**
Chemistry (post)	-.043	.077**	.031	.056*	.091**	.110**
Engineering (post)	-.032	.010	.019	.076**	.078**	.049
Physics (post)	-.033	.042	.024	.056*	.116**	.088**
Technology (post)	-.078**	-.007	.024	.072**	.065**	.056*
Math (post)	-.051*	-.030	.005	.027	.107**	.065*
STEM Job Awareness (post)	.044	-.007	.009	.079**	.143**	.087**

** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed).

Appendix E: Intercorrelations Among Student Characteristics and Attitude Dimensions, (cont.)

	Attitudes Total	STEM Concepts	Future Planning	Science Confidence	Teacher Support for STEM	Behavior-Motive
Gender	-.068**	-.167**	-.133**	-.050*	-.034	-.079**
Grade	-.051*	-.017	-.054*	-.056*	-.047	-.053*
I heard about DoD STARBASE before I knew I was coming here.	.026	-.012	.021	.059*	.046	.053*
I know someone that went through DoD STARBASE before me.	.033	-.029	-.001	.040	.056*	.065*
I have met military people before coming to DoD STARBASE.	.056*	-.012	.023	.065*	.101**	.069**
Military Attitudes	.655**	.338**	.461**	.419**	.591**	.941**
Attitudes Total (post)	1.676**	.846**	.745**	.794**	.614**	
STEM Concepts (post)	.676**	1.606**	.473**	.470**	.309**	
Future Planning (post)	.846**	.606**	1.574**	.605**	.424**	
Science Confid. (post)	.745**	.473**	.574**	1.551**	.389**	
Behavior-Motive (post)	.794**	.470**	.605**	.551**	1.472**	
Military Base Endor. (post)	.614**	.309**	.424**	.389**	.472**	1
Teacher Support for STEM	.479**	.234**	.348**	.319**	.350**	.296**
Overall Evaluation (post)	.770**	.405**	.527**	.451**	.429**	.441**
Knowledge Total (post)	.208**	.156**	.168**	.252**	.282**	.081**
Chemistry (post)	.193**	.155**	.150**	.220**	.220**	.086**
Engineering (post)	.126**	.072**	.106**	.150**	.199**	.020
Physics (post)	.074**	.033	.028	.130**	.139**	.081**
Technology (post)	.128**	.146**	.127**	.148**	.157**	.037
Math (post)	.138**	.086**	.114**	.164**	.197**	.049
STEM Job Awareness (post)	.101**	.023	.074**	.096**	.227**	.035

** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed).

Appendix E: Intercorrelations Among Student Characteristics and Attitude Dimensions, (cont.)

	Military Base	Overall Evaluation	Knowledge Total	Chemistry	Engineering	Physics
Gender	.019	.043	-.071**	-.043	-.032	-.033
Grade	.027	-.031	.030	.077**	.010	.042
I heard about DoD STARBASE before I knew I was coming here.	.046	.015	.031	.031	.019	.024
I know someone that went through DoD STARBASE before me.	.061*	.031	.085**	.056*	.076**	.056*
I have met military people before coming to DoD STARBASE.	.036	.007	.135**	.091**	.078**	.116**
Military Attitudes	.316**	.441**	.112**	.110**	.049	.088**
Attitudes Total (post)	.479**	.770**	.208**	.193**	.126**	.074**
STEM Concepts (post)	.234**	.405**	.156**	.155**	.072**	.033
Future Planning (post)	.348**	.527**	.168**	.150**	.106**	.028
Science Confid. (post)	.319**	.451**	.252**	.220**	.150**	.130**
Behavior-Motive (post)	.350**	.429**	.282**	.220**	.199**	.139**
Military Base Endor. (post)	.296**	.441**	.081**	.086**	.020	.081**
Teacher Support for STEM	1.270**	.017	.050*	-.018	-.021	
Overall Evaluation (post)	.270**	1.076**	.086**	.061*	.001	
Knowledge Total (post)	.017	.076**	1.768**	.687**	.489**	
Chemistry (post)	.050*	.086**	.768**	1.368**	.270**	
Engineering (post)	-.018	.061*	.687**	.368**	1.206**	
Physics (post)	-.021	.001	.489**	.270**	.206**	1
Technology (post)	.049	.036	.574**	.287**	.243**	.112**
Math (post)	-.017	.039	.717**	.413**	.342**	.274**
STEM Job Awareness (post)	.077**	-.003	.214**	.149**	.154**	.127**

** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed).

Appendix E: Intercorrelations Among Student Characteristics and Attitude Dimensions, (cont.)

	Physics	Technology	Math	STEM Job Awareness
Gender	-.033	-.078**	-.051*	.044
Grade	.042	-.007	-.030	-.007
I heard about DoD STARBASE before I knew I was coming here.	.024	.024	.005	.009
I know someone that went through DoD STARBASE before me.	.056*	.072**	.027	.079**
I have met military people before coming to DoD STARBASE.	.116**	.065**	.107**	.143**
Military Attitudes	.088**	.056*	.065*	.087**
Attitudes Total (post)	.074**	.128**	.138**	.101**
STEM Concepts (post)	.033	.146**	.086**	.023
Future Planning (post)	.028	.127**	.114**	.074**
Science Confid. (post)	.130**	.148**	.164**	.096**
Behavior-Motive (post)	.139**	.157**	.197**	.227**
Military Base Endor. (post)	.081**	.037	.049	.035
Teacher Support for STEM	-.021	.049	-.017	.077**
Overall Evaluation (post)	.001	.036	.039	-.003
Knowledge Total (post)	.489**	.574**	.717**	.214**
Chemistry (post)	.270**	.287**	.413**	.149**
Engineering (post)	.206**	.243**	.342**	.154**
Physics (post)	1.112**	.274**	.127**	
Technology (post)	.112**	1.287**	.123**	
Math (post)	.274**	.287**	1.151**	
STEM Job Awareness (post)	.127**	.123**	.151**	1

** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed).

“Greatest strength - the ability to make difficult content available for these kids in a way they can understand, enjoy and remember. We truly hope this program continues for many years to come. My previous students from 5 or more years ago still comment on their love for DoD STARBASE.”

– NOE ENGLISH, EDUCATOR AT KE KULA O NAWAHIOKALANIOPUU PUBLIC CHARTER SCHOOL, ATTENDING STARBASE HAWAII



Appendix F: Pre/Post Knowledge Item Mean Scores and Percent Correct

The following table 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, less than half (44%) of the incoming students responded correctly to three questions about the elements of the engineering design process. The DoD STARBASE curriculum helped to boost that to nearly two-thirds (62%), a relative increase of 18%. 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 7% to 70%, resulting in a 63% absolute increase in those responding correctly pre- to post-program. Across individual items, the average increase in correct responding from pre- to post-program in 2017 was almost 28%, which compares favorably to the 25% gain in 2016, the 26% gain in 2015 and the 19% recorded in 2014.

Knowledge Item	2013 Pre- Program	2013 Post- Program	2014 Pre- Program	2014 Post- Program	2015 Pre- Program	2015 Post- Program	2016 Pre- Program	2016 Post- Program	2017 Pre- Program	2017 Post- Program	2017 Change
Chemistry Science (E3.1.1.2)											
1. Sodium and chloride bond to form salt (NaCl). What does this bonded substance represent?*	--	--	--	--	55%	80%	60%	81%	57.23%	80.13%	22.53%
5. Which pie chart represents the correct composition of air?*	--	--	40%	53%	11%	79%	10%	80%	11.48%	80.76%	69.05%
11. Which of the following is an example of physical change?	33%	61%	35%	55%	33%	67%	35%	67%	36.13%	65.76%	29.62%
15. Which of the following states of matter have the least amount of kinetic energy?	51%	73%	36%	62%	37%	65%	40%	65%	37.49%	67.09%	29.62%
17. While testing how well a surface repels water you observe that a water droplet forms a contact angle greater than 90 degrees on the surface, the best conclusion drawn from this observation is that the surface is: (New item in 2017)									28.74%	63.54%	34.75%
Engineering (E3.1.1.4)											
2. Which of the following can NOT be learned from constructing a 3D scale model of a car?*	--	--	--	--	37%	54%	38%	51%	30.91%	53.73%	22.72%
3. A team of engineers is designing a new car seat for babies that can transform into a stroller and a backpack carrier. According to the Engineering Design Process, why will they make a prototype of their idea?	56%	69%	64%	77%	67%	80%	70%	79%	62.32%	70.19%	8.04%
10. In the graph above, find the letter that is at the coordinates (3,-2). Is it A, B, C, or D?	48%	67%	49%	66%	45%	65%	52%	67%	46.77%	66.55%	19.75%
12. When using computer design software to build a model, the first step is to:**					41%	62%	38%	63%	36.56%	57.41%	20.57%

* Item content modified from last administration ** New item in 2015 *** New item in 2017

Appendix F: Pre/Post Knowledge Item Mean Scores and Percent Correct, (cont.)

Knowledge Item	2013 Pre- Program	2013 Post- Program	2014 Pre- Program	2014 Post- Program	2015 Pre- Program	2015 Post- Program	2016 Pre- Program	2016 Post- Program	2017 Pre- Program	2017 Post- Program	2017 Change
Mathematics Operations & Applications (E3.1.1.5)											
13. Of the following, which tool would be appropriate to measure the volume of a glass of milk?	39%	60%	53%	75%	54%	80%	56%	81%	51.52%	80.06%	27.91%
16. 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*.	54%	69%	55%	67%	57%	70%	51%	63%	53.07%	67.15%	13.80%
Physics (E3.1.1.1)											
7. 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%	6%	68%	8%	68%	6%	67%	7.26%	69.87%	62.59%
14. What scientific law makes it important to wear a seat belt?	39%	75%	38%	72%	37%	70%	38%	71%	41.46%	70.63%	28.99%
Technology (E3.1.1.3)											
4. What feature will open when you touch the screen on this cell phone at coordinates -1, +1?***									35.51%	45.11%	18.61%
6. Which of the following is typically measured in nanometers?	38%	71%	41%	69%	38%	71%	39%	73%	37.31%	75.06%	37.66%
8. You are working on a new invention to help repel ice and snow buildup on walkways. You have four different products you need to evaluate but have a limited budget and timeframe. Based on the limited information in the table below, which product would you choose for further review?*	60%	71%	59%	71%	60%	71%	26%	34%	52.20%	61.65%	18.61%
9. Which of the following would be a good reason to use latitude and longitude coordinates?	43%	70%	41%	69%	45%	73%	45%	74%	41.22%	71.58%	30.19%
18. 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%	62%	59%	70%	62%	75%	65%	75%	65.98%	77.28%	9.24%
STEM Awareness											
19. Who uses science, technology, math, and engineering concepts in their job?***					73%	80%	74%	82%	44.80%	59.49%	14.69%

* Item content modified from last administration ** New item in 2015 *** New item in 2017

Appendix G: Mean Ratings by Measurement Area

			2017 Mean	Std. Deviation	N
STEM Concepts	Cronbach's Alpha Reliability .858	6 Items	6.42	.662	2,639
While attending DoD STARBASE, the students appear...					
... more interested in learning about technology.			6.53	0.814	2,639
... more interested in learning about science.			6.54	0.777	2,639
... more interested in learning about engineering.			6.28	0.900	2,639
... more interested in learning about math.			5.97	1.155	2,639
DoD STARBASE has helped to improve the students' understanding of science.			6.72	0.637	2,639
DoD STARBASE has helped to improve students' appreciation of how math can be applied to a variety of situations.			6.48	0.821	2,639
Confidence	Cronbach's Alpha Reliability .849	3 Items	6.18	.819	2,639
While attending DoD STARBASE, the students appear...					
... more willing to try new things.			6.45	0.839	2,639
... more confident about what they can accomplish.			6.26	0.925	2,639
... more comfortable making decisions.			5.85	1.031	2,639
Behavioral/Motivational	Cronbach's Alpha Reliability .752	5 items	6.09	.861	2,639
While attending DoD STARBASE, the students appear...					
... more excited about learning.			6.30	0.914	2,639
... better at following directions.			5.70	1.243	2,639
DoD STARBASE reinforces many positive behaviors I try to teach my students.			6.68	0.786	2,639
During DoD STARBASE, students have better school attendance.			5.88	1.336	2,639
The DoD STARBASE experience has influenced me to become skilled in STEM instruction.			5.95	1.142	2,639
Teamwork	Cronbach's Alpha Reliability .918	3 items	6.05	.974	2,639
While attending DoD STARBASE, the students appear...					
... more willing to cooperate with each other.			6.08	1.019	2,639
... better at working in groups.			6.04	1.096	2,639
... more likely to encourage each other.			6.03	1.036	2,639
Future Planning	Cronbach's Alpha Reliability .914	4 items	5.91	.943	2,639
While attending DoD STARBASE, the students appear...					
... more excited about their futures.			5.95	1.042	2,639
... more ready to set future educational and career goals.			5.93	1.048	2,639
... more goal oriented.			5.87	1.090	2,639
... to focus more on their future potential.			5.88	1.052	2,639

Appendix G: Mean Ratings by Measurement Area, (cont.)

			2017 Mean	Std. Deviation	N
Military and Career	Cronbach's Alpha Reliability .757	5 items	5.778	.887	2,639
While attending DoD STARBASE, the students appear.....					
... more comfortable with military personnel.			5.78	1.211	2,639
... to have more questions about DoD and other non-military career opportunities.			5.71	1.085	2,639
... more interested in learning about military careers.			5.69	1.171	2,639
The students enjoyed being on a military base.			6.68	.792	2,639
Because of my participation in DoD STARBASE, I am more comfortable with military personnel.			5.15	1.523	2,639
Program Support	Cronbach's Alpha Reliability .687	7 items	6.37	.635	2,639
My school plans to participate in the DoD STARBASE program again next year.			6.87	.693	2,639
I look forward to bringing future classes to the DoD STARBASE program.			6.80	.680	2,639
Parents are delighted that their children are participating in DoD STARBASE.			6.41	.949	2,639
I would like more DoD STARBASE supplemental resources to take back to my classroom.			6.45	1.055	2,639
My principal is a strong advocate of DoD STARBASE.			5.96	1.422	2,639
I plan to incorporate DoD STARBASE teaching techniques into my daily classroom activities.			6.30	1.019	2,639
I prefer the supplemental resources DoD STARBASE provides to teachers over other similar resources.			5.84	1.282	2,639
Post-program Impact	Cronbach's Alpha Reliability .892	10 items	6.10	.751	1606
The students talk about DoD STARBASE long after the program has ended.			6.58	0.781	1606
Attending DoD STARBASE helps students better understand how STEM skills/abilities fit job requirements for certain career fields.			6.42	0.818	1606
Attending DoD STARBASE helps students better understand that developing their current skills/abilities is necessary to have good future career choices.			6.39	0.817	1606
Attending DoD STARBASE helps students link their experience to careers in both military and non-military positions.			6.14	1.041	1606
After DoD STARBASE, students are more interested in using computers for class-related learning activities.			6.28	1.054	1547
DoD STARBASE helped to improve cooperative learning in the classroom even after the program ended.			6.20	0.971	1606
After the DoD STARBASE program, the students ask more questions about technology.			6.04	1.025	1606
Students who have attended DoD STARBASE seem to perform better on standardized state assessments.			5.82	1.268	1224
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.).			5.79	1.233	1235
After DoD STARBASE, students have better school attendance.			5.24	1.469	1394



“DoD STARBASE is a wonderful program for our students to participate in. Chiloquin students do not get very many opportunities/exposure to programs that further their knowledge and experiences in math and science. I love seeing our students being hands on and excited about their learning. This is a great program and experience for them to see and learn about career opportunities beyond what they are used to seeing. My students are so excited to come to DoD STARBASE each day and love sharing about their experience.”

– CHARLI SHOCKLEY, EDUCATOR AT CHILOQUIN ELEMENTARY SCHOOL, ATTENDING STARBASE KINGSLEY

Glossary

Academy: See DoD STARBASE Academy.

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

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

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

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

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

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

Class: Within the context of a DoD STARBASE Academy, a class is a grouping of students. This group may not necessarily have been a homogenous entity prior to DoD STARBASE instruction; it may be a temporary grouping only for the purposes of assembling for the 25-hour minimum period of DoD STARBASE instruction.

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

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

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

Conferences: DoD STARBASE holds two conferences a year to provide professional development to the DoD STARBASE directors and instructors.

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

Current Expenditures: Expenditures for operating DoD STARBASE Academies, excluding capital outlay. These expenditures include such items as salaries for personnel, facilities, travel, supplies, equipment, contract service and outreach.

Current Expenditures per Pupil: Current expenditures for the DoD STARBASE academies divided by the total number of participating students.

Glossary, (cont.)

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

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

DoD: Department of Defense.

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

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

DoD STARBASE Academy: A DoD educational program designed to improve the knowledge and skills of students in kindergarten through twelfth grade in mathematics, science, and technology. It follows the academy model description in DoDI 1025.7.

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 hrs as mandated by OASD/RA)

Mathematics Operations & Applications

Glossary, (cont.)

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 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.

DoE: Department of Education.

Driver: Drivers identify a set of related attitudinal clusters for the student population (i.e. when the driver is present, the set of attitudes will most likely be present, or in reverse, when the condition in the list of attitudes are present the target “driver” attitude will also be present).

Elementary School: A school with one or more of grades K–6 that does not have any grade higher than grade 8. For example, schools with grades K–6, 1–3, or 6–8 are classified as elementary.

Elementary/Secondary School: Elementary/secondary schools include regular schools (i.e., schools that are part of state and local school systems and private elementary/ secondary schools, both religiously affiliated and nonsectarian), alternative schools, vocational education schools, and special education schools.

Enrollment: The total number of students registered at a DoD STARBASE Academy at a given time.

Ethnicity/Race: Categories developed in 1997 by the Office of Management and Budget (OMB) that are used to describe groups to which individuals belong, identify with, or belong in the eyes of the community. The categories do not denote scientific definitions of anthropological origins. The designations are used to categorize U.S. citizens, resident aliens, and other eligible non-citizens. Individuals are asked to first designate ethnicity as: Hispanic or Latino or Not Hispanic or Latino. Second, individuals are asked to indicate one or more races that apply among the following: American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian or Other Pacific Islander, White.

Expenditures: Charges incurred, whether paid or unpaid.

Expenditures Per Pupil: Charges incurred for a particular period of time divided by a student unit of measure, such as enrollment, average daily attendance, or average daily membership.

Glossary, (cont.)

Fiscal Year: 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 2014 begins on October 1, 2013 and ends on September 30, 2014.

Free or reduced-price lunch: See National School Lunch Program.

Gap Score: Difference between pre-program and post-program test scores.

Graduate: An individual who has received formal recognition for the successful completion of a prescribed program of studies.

High School: A secondary school offering the final years of high school study necessary for graduation, in which the lowest grade is not lower than grade 9 and usually includes grades 10, 11, and 12 or grades 9, 10, 11, and 12. Alternatively, according to the 2007–08 Schools and Staffing Survey, defined as a school with no grade lower than 7 and at least one grade higher than 8.

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

Inner City Location: Usually older, poorer, and more densely populated central section of a city.

Inquiry-Based Learning: A student-centered educational approach which focuses on using and learning content as a means to develop information-processing and problem-solving skills. In this approach the teacher acts as a facilitator. Students are involved in the building of knowledge through active involvement.

Instructor: DoD STARBASE educator.

Kindergarten: Includes transitional kindergarten, kindergarten, and pre-1st grade students.

Location: See DoD STARBASE Site/Location.

Mapping: The process of using maps to chart a course.

Mathematics: The study of the measurement, properties, and relationships of quantities and sets, using numbers and symbols. A body of related courses concerned with knowledge of measurement, properties, and relations quantities, which can include theoretical or applied studies of arithmetic, algebra, geometry, trigonometry, statistics, and calculus.

Median: A number that half of the data is larger than it and half is smaller. If the itemized data are listed in order of size, the median is the middle number in the list.

Middle school: A school with no grade lower than 5 and no grade higher than 8.

Minority: Racial and ethnic minority populations are defined as: Asian American, Black or African American, Hispanic or Latino, Native Hawaiian and Other Pacific Islander, American Indian and Alaska Native.

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

Glossary, (cont.)

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 educational organization.

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

Percentile (Score): A value on a scale of 0 to 100 that indicates the percent of a distribution that is equal to or below it.

Pre/Post Application: Prior to the start of the program and at the completion of the program.

Program Year: The DoD STARBASE program year is the same as the government fiscal year, October 1 – September 30.

Public School: A school that provides educational services for at least one of grades K–12 (or comparable ungraded levels), has one or more teachers to give instruction, has an assigned administrator, receives public funds as primary support, and is operated by an education or chartering agency. Public schools include regular, special education, vocational/technical, alternative, and charter schools. They also include schools in juvenile detention centers, schools located on military bases and operated by the Department of Defense, and Bureau of Indian Education-funded schools operated by local public school districts. See also Special education school, Vocational school, Alternative school, Charter school, and Traditional public school.

Race/Ethnicity: Categories developed in 1997 by the Office of Management and Budget (OMB) that are used to describe groups to which individuals belong, identify with, or belong in the eyes of the community. The categories do not denote scientific definitions of anthropological origins. The designations are used to categorize U.S. citizens, resident aliens, and other eligible non-citizens. Individuals are asked to first designate ethnicity as: Hispanic or Latino or Not Hispanic or Latino. Second, individuals are asked to indicate one or more races that apply among the following: American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian or Other Pacific Islander, White.

Race/ethnicity unknown: The category used to report students or employees whose race and ethnicity are not known.

Rural Location: All population, housing and territory not included within an urbanized area. Whatever is not urban is considered rural.

Salary: The total amount regularly paid or stipulated to be paid to an individual, before deductions, for personal services rendered while on the payroll of a business or organization.

Sample Population: A statistically significant representation of the total number of students tested each year.

Glossary, (cont.)

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.

Socio-Economic Disadvantage(d): A term used to describe economically deprived, poor, poverty stricken, or disadvantaged individuals or groups. (See also Socio-economic status.)

Socio-Economic Status: A measure of an individual or family's relative economic and social ranking based on such factors as father's education level, mother's education level, father's occupation, mother's occupation and family income.

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 that do not fall under the targeted "participant" schools or are in response to requests by members of the community to serve other groups of children. 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; Getting state or national certification to teach by completing all requirements.

Title I grant program: The federal government provides grants to local education agencies to supplement state and local education funding based primarily on the number of children from low-income families in each local education agency. The program provides extra academic support and learning opportunities to help disadvantaged students catch up with their classmates or make significant academic progress.

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.

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: 334-953-4072
 Director: Princess J. Cuthrell
 Email: princess@montgomeryed.org
 Website: None

AUTAUGA COUNTY

AUTAUGAVILLE
 BILLINGSLEY
 DANIEL PRATT ELEMENTARY
 PINE LEVEL ELEMENTARY
 PRATTVILLE INTERMEDIATE

ELMORE COUNTY

HOLTVILLE MIDDLE
 REDLAND ELEMENTARY
 WETUMPKA MIDDLE

MAXWELL AIR FORCE BASE

MAXWELL ELEMENTARY MIDDLE

MONTGOMERY PUBLIC SCHOOLS

BLOUNT ELEMENTARY
 BRAIN FOREST SUMMER
 DALRAIDA ELEMENTARY
 E.D. NIXON ELEMENTARY
 FLOYD ELEMENTARY
 GARRETT ELEMENTARY
 MARTIN LUTHER KING ELEMENTARY
 MORNINGVIEW ELEMENTARY
 PINTLALA

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
 Director: Mikelle Cronk
 Email: cronkm@vail.k12.az.us
 Website: www.facebook.com/starbasearizona

AMPHITHEATER UNIFIED SCHOOL DISTRICT

HOLAWAY ELEMENTARY
 KEELING ELEMENTARY
 WALKER ELEMENTARY

SUNNYSIDE UNIFIED SCHOOL DISTRICT

MISSION MANOR ELEMENTARY

VAIL UNIFIED SCHOOL DISTRICT

ACACIA ELEMENTARY
 DESERT WILLOW ELEMENTARY
 COPPER RIDGE ELEMENTARY
 ESMOND STATION K-8 SCHOOL
 SYCAMORE ELEMENTARY

CALIFORNIA

EDWARDS

STARBASE EDWARDS

Service Component: Air Force
 Military Location: Edwards Air Force Base
 Address: TBD
 Tel: 661-277-4240
 Director: Janice L. Hollen
 Email: Janice.Hollen@us.af.mil
 Website: TBD

LOS ALAMITOS

STARBASE Los Alamitos*

Service Component: National Guard
 Military Location: Joint Forces Training Base Los Alamitos
 Address: 11525 Freedom Way

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

Building 262
Los Alamitos, California 90720
Tel: 562-795-1473
Director: Stacey Hendrickson
Email: stacey.hendrickson.nfg@mail.mil
Website: www.starbaselosalamitos.com

CYPRESS UNIFIED

AE ARNOLD
LANDELL ELEMENTARY

FULLERTON SCHOOL DISTRICT

COMMONWEALTH ELEMENTARY
PACIFIC DRIVE ELEMENTARY
RICHMAN ELEMENTARY
WOODCREST ELEMENTARY

LONG BEACH UNIFIED

HOLMES ELEMENTARY

LOS ANGELES UNIFIED

93RD STREET ELEMENTARY
96TH STREET ELEMENTARY
122ND STREET ELEMENTARY
GRAHAM ELEMENTARY
LOWELL ELEMENTARY
LOVELIA FLOURNOY ELEMENTARY
SUNRISE ELEMENTARY

OCEAN VIEW UNIFIED

COLLEGE VIEW ELEMENTARY

PRIVATE SCHOOL

DOLORES MISSION
ST. MICHAELS

SANTA ANA UNIFIED

ABRAHAM LINCOLN ELEMENTARY
ANDREW JACKSON ELEMENTARY
CHARLES BARRETT ELEMENTARY
DIAMOND ELEMENTARY
EL SOL
JIM THORPE ELEMENTARY
JOHN F. KENNEDY ELEMENTARY
LOWELL ELEMENTARY

MADISON ELEMENTARY
MARTIN HENINGER ELEMENTARY
MONROE ELEMENTARY
MONTE VISTA ELEMENTARY
WALLACE DAVIS 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
Director: CW2 Jon R. Herrera
Email: jon.r.herrera.mil@mail.mil
Website: pending

ELK GROVE UNIFIED

ANNA KIRCHGATER ELEMENTARY
BARBARA COMSTOCK ELEMENTARY
ELLIOTT RANCH ELEMENTARY
FLORENCE MARKOFER ELEMENTARY
FOULKS RANCH ELEMENTARY
JOSEPH SIMS ELEMENTARY
MARY TSUKAMOTO ELEMENTARY
ROY HERBURGER ELEMENTARY
PRAIRIE ELEMENTARY
SAMUEL KENNEDY ELEMENTARY
SIERRA ENTERPRISE ELEMENTARY
UNION HOUSE ELEMENTARY

FOLSOM CORDOVA UNIFIED

CORDOVA GARDENS ELEMENTARY
CORDOVA VILLA ELEMENTARY
JOHN REITH ELEMENTARY
MATHER HEIGHTS ELEMENTARY
PETER J. SHIELDS ELEMENTARY
WHITE ROCK ELEMENTARY
WILLIAMSON ELEMENTARY

ROBIA SCHOOL DISTRICT

BELL AVENUE ELEMENTARY
GLENWOOD ELEMENTARY
MAIN AVENUE ELEMENTARY

COLORADO

COLORADO SPRINGS

STARBASE Peterson*

Service Component: Air Force
 Military Location: Peterson Air Force Base
 Address: 710 Loring Street
 Building 850
 Colorado Springs, Colorado 80914
 Tel: 719-556-9500
 Director: Patty Smathers
 Email: psstarbasepeterson@gmail.com
 Website: None

COLORADO SPRINGS SCHOOL DISTRICT ELEVEN

CHIPETA ELEMENTARY
 CHRISTA MCAULIFFE ELEMENTARY
 EDISON ELEMENTARY
 FREMONT ELEMENTARY
 GLOBE CHARTER
 HUNT ELEMENTARY
 JAMES MONROE ELEMENTARY
 JOHN ADAMS ELEMENTARY
 MADISON ELEMENTARY
 MIDLAND INTERNATIONAL ELEMENTARY
 MCAULIFFE ELEMENTARY
 QUEEN PALMER ELEMENTARY
 ROOSEVELT CHARTER
 SCOTT ELEMENTARY
 WEST ELEMENTARY
 WILL ROGERS ELEMENTARY
 WILSON ELEMENTARY

ELLICOT SCHOOL DISTRICT 22

ELLCOTT ELEMENTARY

FALCON SCHOOL DISTRICT 49

HORIZON MIDDLE SCHOOL
 IMAGINE CLASSICAL ACADEMY INDIGO RANCH
 ODYSSEY ELEMENTARY

HARRISON SCHOOL DISTRICT TWO

MONTEREY ELEMENTARY
 OTRERO ELEMENTARY
 WILDFLOWER ELEMENTARY

PRIVATE

DIVINE REDEEMER
 PIKES PEAK CHRISTIAN
 SPRINGS ADVENTIST ACADEMY

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, Unit 300
 Windsor Locks, Connecticut 06096
 Tel: 860-292-4678
 Director: Melissa Vanek
 Email: mvanek@starbase-ct.com
 Website: www.starbase-ct.com

HARFORD PUBLIC SCHOOL

BREAKTHROUGH II MAGNET
 DR. FRANK T. SIMPSON WAVERLY ELEMENTARY
 DR. JAMES H. NAYLOR/CCSU LEADERSHIP ACADEMY
 DR. MICHAEL D. FOX SCHOOL
 JUMOKE ACADEMY HONORS SMART
 MARIA COLON SANCHEZ ELEMENTARY
 MUSEUM ACADAEMY AT WISH
 RAMON E. BETANCES STEM MAGNET
 SARAH J. RAWSON ELEMENTARY
 WEBSTER MICROSOIETY MAGNET
 WEST MIDDLE SCHOOL

WINDSOR PAROCHIAL SCHOOLS

ST. GABRIEL SCHOOL

WATERBURY

STARBASE Connecticut - Waterbury

Service Component: National Guard
 Military Location: Off-base
 Address: 750 Chase Parkway
 Waterbury, Connecticut 06708
 Tel: 203-575-8271
 Director: Melissa Vanek
 Email: mvanek@starbase-ct.com
 Website: www.starbase-ct.com

*Indicates location also coordinates a DoD STARBASE 2.0 Program.

WATERBURY PAROCHIAL SCHOOLS
OUR LADY OF MOUNT CARMEL ELEMENTARY

WATERBURY PRIVATE SCHOOL
CHILDREN'S COMMUNITY SCHOOL

WATERBURY PUBLIC SCHOOLS
BUCKS HILL ELEMENTARY
BUNKER HILL ELEMENTARY
B.W. TINKER ELEMENTARY
CARRINGTON ELEMENTARY
CHASE ELEMENTARY
DRIGGS ELEMENTARY
DUGGAN ELEMENTARY
F.J. KINGSBURY ELEMENTARY
GENERALI ELEMENTARY
HOPEVILLE ELEMENTARY
JOHN G. GILMARTIN ELEMENTARY
JONATHAN REED ELEMENTARY
MALONEY MAGNET ELEMENTARY
REGAN ELEMENTARY
ROTELLA ELEMENTARY
SPRAGUE ELEMENTARY
WALSH ELEMENTARY
WASHINGTON ELEMENTARY
WENDELL CROSS ELEMENTARY
WOODROW WILSON ELEMENTARY

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
Director: Greg Stritch
Email: gregory.s.stritch@ang.af.mil
Website: None

DUVAL COUNTY PUBLIC SCHOOLS
BEAUCLERC
BRENTWOOD ELEMENTARY
DINSMORE ELEMENTARY CENTER ACADEMY

GARDEN CITY
HENDRICKS AVENUE ELEMENTARY
HENRY KITE
LONG BRANCH
MAMIE AGNES JONES ELEMENTARY
ORTEGA
PICKET
PINE ESTATES
TIMUCUAN
WEST RIVERSIDE
WINDRY HILL

ST. AUGUSTINE DIOCESE
HOLY FAMILY
HOLY ROSARY
SAN JOSE CATHOLIC
ST. PIUS V CATHOLIC

GEORGIA

MARIETTA

Peach State STARBASE
Service Component: National Guard
Military Location: Clay National Guard Center/Dobbins Air Reserve Base
Address: 1000 Halsey Avenue, Building 53
Dobbins ARB, Georgia 30060
Tel: 678-569-3568
Director: John McKay
Email: john.e.mckay8.nfg@mail.mil
Website: www.facebook.com/peachstatestarbase

COBB COUNTY SCHOOL DISTRICT
BRYANT ELEMENTARY
HARMONY LELAND ELEMENTARY
LABELLE ELEMENTARY
MABLETON ELEMENTARY
RUSSELL ELEMENTARY

HOMESCHOOL GROUP
FORSYTH COUNTY CHRISTIAN HOMESCHOOL GROUP
CC SMYRNA HSG
KID CULTIVATORS HSG

MARIETTA CITY SCHOOLS

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

LOCKHEED ELEMENTARY
SAWYER ROAD ELEMENTARY

SAVANNAH

STARBASE Savannah*

Service Component: Army
Military Location: Hunter Army Air Field
Address: 134 MacArthur Circle
Building 617
Savannah, Georgia 31409
Tel: 912-315-3749
Director: Betty L. G. Morgan
Email: bmormicmou@aol.com
Website: savannahstarbase.weebly.com/index.html

CHATHAM COUNTY

CALVARY DAY SCHOOL
CHARLES ELLIS
EAST BROAD STREET SCHOOL
HUBERT MIDDLE SCHOOL
JACOB G. SMITH SCHOOL
MAY HOWARD ELEMENTARY
METTER INTERMEDIATE
PULASKI ELEMENTARY
SAVANNAH CHRISTIAN PREPARATORY
VIRGINIA HEARD SCHOOL
WEST CHATHAM 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
Director: Wesley Fondal, Jr.
Email: wesley@starbaserobins.org
Website: www.starbaserobins.org

BIBB SCHOOL DISTRICT

ALEXANDER II ELEMENTARY
BROOKDALE ELEMENTARY
BRUCE ELEMENTARY
BURDELL HUNT ELEMENTARY
HARTLEY ELEMENTARY

HEARD ELEMENTARY
LANE ELEMENTARY
SPRINGDALE ELEMENTARY
WILLIAMS ELEMENTARY

HOUSTON SCHOOL DISTRICT

CENTERVILLE ELEMENTARY
EAGLE SPRINGS ELEMENTARY
HILLTOP ELEMENTARY
LANGSTON ROAD ELEMENTARY
LINDSEY ELEMENTARY
MORNINGSIDE ELEMENTARY
NORTHSIDE ELEMENTARY
PARKWOOD ELEMENTARY
PEARL STEPHENS ELEMENTARY
QUAIL RUN ELEMENTARY
SHIRLEY HILLS ELEMENTARY
WESTSIDE ELEMENTARY

PRIVATE

SACRED HEART
WESTFIELD SCHOOL

TWIGGS SCHOOL DISTRICT

JEFFERSONVILLE ELEMENTARY

HAWAII

KEAAU

STARBASE Hawaii

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

HILO COMPLEX

WAIAKEA ELEMENTARY

HILO PRIVATE SCHOOL

HAILI CHRISTIAN SCHOOL
ST. JOSEPH SCHOOL

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

KAU-KEAAU-PAHOA COMPLEX

KEAAU ELEMENTARY
KEONEPOKO ELEMENTARY
MT. VIEW ELEMENTARY
PAHOA ELEMENTARY

PUNA CHARTER SCHOOL

HAWAII ACADEMY OF ARTS AND SCIENCE
KE KULA O NAWAHIOKALANIOPUU
NA WAI OLA PUBLIC CHARTER

IDAHO

BOISE

STARBASE Idaho

Service Component: Air National Guard

Military Location:

Address: 4474 De Haviland Street, Building 668

Boise, Idaho 83705

Tel: 208-947-7867

Director: Jim Heuring

Email: jheuring@imd.idaho.gov

Website: TBD

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: 260-478-3712

Director: Scott Liebhauser

Email: scott@starbasein.org

Website: www.starbasein.org

FORT WAYNE-SOUTH BEND CATHOLIC DIOCESE

MOST PRECIOUS BLOOD

ST. ALOYSIUS

ST. JOHN THE BAPTIST

ST. JOSEPH HESSEN CASSEL

ST. ELIZABETH ANN SETON

EAST ALLEN COUNTY SCHOOLS

HERITAGE ELEMENTARY
PRINCE CHAPMAN ACADEMY

FORT WAYNE COMMUNITY SCHOOLS

ABBETT ELEMENTARY
BLOOMINGDALE ELEMENTARY
FRANKE PARK ELEMENTARY
GLENWOOD PARK ELEMENTARY
HARRISON HILL ELEMENTARY
INDIAN VILLAGE ELEMENTARY
LEVAN SCOTT ACADEMY
MAPLEWOOD ELEMENTARY
SOUTH WAYNE ELEMENTARY
STUDY ELEMENTARY
WASHINGTON ELEMENTARY
WEISSER PARK ELEMENTARY

FORT WAYNE LUTHERAN SCHOOLS

ST. PAUL'S LUTHERAN
SUBURBAN BETHLEHEM LUTHERAN

HUNTINGTON COUNTY SCHOOLS

FLINT SPRINGS

PRIVATE

CORNERSTONE CHRISTIAN

GARY

STARBASE Indiana-Gary

Service Component: Indiana Army National Guard

Military Location: Gary Armory

Address: 2501 E. 15th Ave

Gary, Indiana 46402

Tel: 260.213.3342

Director: Scott Liebhauser

Email: Scott@Starbasein.org

Website: www.Starbasein.org

INDIANAPOLIS

STARBASE Indiana-Indianapolis

Service Component: National Guard

Military Location: Joint Forces Headquarters, Indiana National Guard

Address: 2002 S. Holt Road, Building 12

Indianapolis, Indiana 46241

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

Tel: 317-247-3502
 Director: Brande Morgan
 Email: brande@starbasein.org
 Website: www.starbasein.org

FRANKLIN TOWNSHIP COMMUNITY SCHOOL CORPORATION

ARLINGTON ELEMENTARY SCHOOL
 THOMPSON CROSSING ELEMENTARY SCHOOL
 MARY ADAMS ELEMENTARY

GREENWOOD COMMUNITY SCHOOL CORPORATION

NORTHEAST ELEMENTARY
 SOUTHWEST ELEMENTARY
 V. O. ISOME CENTRAL ELEMENTARY
 WESTWOOD ELEMENTARY

INDIANAPOLIS PUBLIC SCHOOLS

COLD SPRING ELEMENTARY
 FREDRICK DOUGLAS SCHOOL
 GEORGE WASHINGTON CARVER MONTESSORI
 MERLE SIDENER GIFTED ACADEMY
 ROBERT LEE FROST ELEMENTARY
 THOMAS GREGG SCHOOL
 WASHINGTON IRVING ELEMENTARY

PRIVATE

HASTEN HEBREW ACADEMY

HOMESCHOOL

HOMESCHOOL CLASS

SOUTH BEND

STARBASE Indiana-South Bend

Service Component: National Guard
 Military Location: South Bend Armory
 Address: 1901 Kemble Avenue
 South Bend, Indiana 46613
 Tel: 317-247-3000, Extension 88827
 Director: Thomas Foltz
 Email: tom@starbasein.org
 Website: www.starbasein.org

DIOCESE OF FORT WAYNE – SOUTH BEND

ST. ANTHONY DE PAUDA CATHOLIC
 ST. ADALBERT CATHOLIC
 ST. JOHN THE BAPTIST CATHOLIC

ST. MICHAEL CATHOLIC

PRIVATE

COVENANT CHRISTIAN SCHOOL
 RESURRECTION LUTHERAN ACADEMY

SCHOOL CITY OF MISHAWAKA

LASALLE ELEMENTARY
 TWIN BRANCH ELEMENTARY

SOUTH BEND COMMUNITY SCHOOL CORPORATION

BROWN INTERMEDIATE CENTER
 CLAY INTERMEDIATE CENTER
 EDISON INTERMEDIATE CENTER
 GREENE INTERMEDIATE CENTER
 JACKSON INTERMEDIATE CENTER
 MARSHAL INTERMEDIATE CENTER

KANSAS

KANSAS CITY

STARBASE Kansas City

Service Component: National Guard
 Military Location: 2nd 137th Infantry Regiment Combined Arms
 Battalion
 Address: 100 S. 20th Street
 Kansas City, Kansas 66102-5604
 Tel: 785-646-7864
 Director: Karen Whitacre
 Email: karen@kansasstarbase.org
 Website: www.kansasstarbase.org

BASEHOR LINWOOD SCHOOL DISTRICT

BASEHOR INTERMEDIATE
 GLENWOOD RIDGE ELEMENTARY
 LINWOOD ELEMENTARY

EASTON UNIFIED SCHOOL DISTRICT

PLEASANT RIDGE ELEMENTARY

KANSAS CITY KANSAS PUBLIC SCHOOLS

M.E. PEARSON ELEMENTARY
 NEW CHELSEA ELEMENTARY
 PARKER ELEMENTARY
 T.A. EDISON ELEMENTARY

WHITE CHURCH ELEMENTARY

LAWRENCE PUBLIC SCHOOLS

PINCKNEY ELEMENTARY

LANSING UNIFIED SCHOOL DISTRICT

LANSING ELEMENTARY

LEAVENWORTH UNIFIED SCHOOL DISTRICT

ANTHONY ELEMENTARY

DAVID BREWER ELEMENTARY

EARL LAWSON ELEMENTARY

HENRY LEAVENWORTH ELEMENTARY

PRIVATE

KANSAS CITY CHRISTIAN

MARANTHA ACADEMY

MIGHTY OAKS ENRICHMENT CENTER

ST.AGNES CATHOLIC

XAVIER CATHOLIC

SHAWNEE MISSION SCHOOL DISTRICT

BLUE JACKET FLINT ELEMENTARY

BROOKRIDGE ELEMENTARY

NIEMAN ELEMENTARY

OAK PARK CARPENTER ELEMENTARY

PAWNEE ELEMENTARY

PRAIRIE ELEMENTARY

RHEIN BENNINGHOVEN ELEMENTARY

SANTE FE TRAIL ELEMENTARY

TOMAHAWK ELEMENTARY

MANHATTAN

STARBASE Manhattan

Service Component: National Guard

Military Location: 130th Field Artillery Brigade

Address: 721 Levee Drive

Manhattan, Kansas 66502-5085

Tel: 785-646-4690

Director: Rebecca Catlin

Email: becky@kansasstarbase.org

Website: www.kansasstarbase.org

ARCHDIOCESE OF KANSAS CITY, KANSAS

STS. PETER AND PAUL CATHOLIC

BLUE VALLEY USD 378

RANDOLPH MIDDLE SCHOOL

CHAPMAN UNIFIED SCHOOL DISTRICT 473

CHAPMAN ELEMENTARY

FLINT HILLS CHRISTIAN SCHOOL

FLINT HILLS CHRISTIAN

GEARY COUNTY SCHOOLS UNIFIED SCHOOL DISTRICT 475

FT. RILEY ELEMENTARY

JEFFERSON ELEMENTARY

MILFORD ELEMENTARY

MORRIS HILL ELEMENTARY

SEITZ ELEMENTARY

SPRING VALLEY ELEMENTARY

WESTWOOD ELEMENTARY

MANHATTAN-OGDEN UNIFIED SCHOOL DISTRICT 383

AMANDA ARNOLD ELEMENTARY

FRANK BERMAN ELEMENTARY

BLUEMONT ELEMENTARY

NORTHVIEW ELEMENTARY

OGDEN ELEMENTARY

THEODORE ROOSEVELT ELEMENTARY

WOODROW WILSON ELEMENTARY

PRIVATE

ST. XAVIER CATHOLIC SCHOOL

MANHATTEN CATHOLIC SCHOOL

CHIEF HOME SCHOOL GROUP

MORRIS COUNTY USD 417

COUNCIL GROVE ELEMENTARY

PRAIRIE HEIGHTS ELEMENTARY

RILEY COUNTY UNIFIED SCHOOL DISTRICT 378

RILEY COUNTY ELEMENTARY

ROCK CREEK UNIFIED SCHOOL DISTRICT 383

WESTMORELAND ELEMENTARY

UNIFIED SCHOOL DISTRICT 380 VERMILLION

FRANKFORT ELEMENTARY

CENTRALIA ELEMENTARY

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

WAMEGO USD 320
WEST ELEMENTARY

SALINA

STARBASE Salina

Service Component: National Guard
Military Location: Great Plains Joint Training Center
Address: 2929 Scanlan Avenue, Building 365
Salina, Kansas 67401
Tel: 785-822-6602
Director: Dixie Tipling
Email: dixie@kansasstarbase.org
Website: www.kansasstarbase.org

CANTON GALVA USD 419
CANTON - GALVA ELEMENTARY

CENTRAL PLAINS UNIFIED SCHOOL DISTRICT 112
WILSON SCHOOL

CHAPMAN UNIFIED SCHOOL DISTRICT 473
BLUE RIDGE ELEMENTARY
ENTERPRISE ELEMENTARY

CLIFTON - CLYDE UNIFIED SCHOOL DISTRICT 224
CLIFTON - CLYDE ELEMENTARY

LINCOLN UNIFIED SCHOOL DISTRICT 298
LINCOLN ELEMENTARY

MCPHERSON UNIFIED SCHOOL DISTRICT 418
EISENHOWER ELEMENTARY
LINCOLN ELEMENTARY
ROOSEVELT ELEMENTARY
WASHINGTON ELEMENTARY

MOUNDRIDGE USD 423
MOUNDRIDGE MIDDLE

NORTH OTTAWA UNIFIED SCHOOL DISTRICT 239
MINNEAPOLIS ELEMENTARY

PRIVATE
ELYRIA CHRISTIAN
LINDSBORG HOME EDUCATORS
SALINA CHRISTIAN ACADEMY

ST. ANDREW CATHOLIC SCHOOL
ST. MARY CATHOLIC
ST. JOSEPH CATHOLIC

SALINA UNIFIED SCHOOL DISTRICT 305

CORONADO ELEMENTARY
COTTONWOOD ELEMENTARY
GRACE E. STEWART ELEMENTARY
SCHILLING ELEMENTARY
SUNSET ELEMENTARY
HEUSNER ELEMENTARY
OAKDALE ELEMENTARY

SMOKY VALLEY USD 400
SMOKY VALLEY MIDDLE

SOLOMON UNIFIED SCHOOL DISTRICT 393
SOLOMON ELEMENTARY

SOUTHERN CLOUD UNIFIED SCHOOL DISTRICT 334
MILTONVALE ELEMENTARY
GLASCO GRADE SCHOOL

SYLVAN UNIFIED SCHOOL DISTRICT 299
LUCAS - SYLVAN ELEMENTARY

TWIN VALLEY UNIFIED SCHOOL DISTRICT 240
BENNINGTON GRADE SCHOOL
TESCOTT ELEMENTARY

TOPEKA

STARBASE Topeka

Service Component: National Guard
Military Location: 190th Air Refueling Wing
Address: 5920 SE Coyote Drive
Forbes Field ANG
Topeka, Kansas 66619
Tel: 785-861-4196
Director: Brent Mumford
Email: brent@kansasstarbase.org
Website: www.kansasstarbase.org

ARCHDIOCESE OF KANSAS CITY KS
HOLY FAMILY CATHOLIC
ST. MATTHEW CATHOLIC

ATCHISON COUNTY COMMUNITY SCHOOLS UNIFIED SCHOOL DISTRICT 377

ATCHISON COUNTY COMMUNITY ELEMENTARY

AUBURN WASHBURN UNIFIED SCHOOL DISTRICT 437

FARLEY ELEMENTARY
INDIAN HILLS ELEMENTARY
PAULINE SOUTH INTERMEDIATE

BALDWIN CITY UNIFIED SCHOOL DISTRICT 348

BALDWIN ELEMENTARY INTERMEDIATE CENTER

JEFFERSON WEST UNIFIED SCHOOL DISTRICT 340

JEFFERSON WEST MIDDLE

LAWRENCE PUBLIC SCHOOLS

PRAIRIE PARK ELEMENTARY

LYNDON UNIFIED SCHOOL DISTRICT 421

LYNDON ELEMENTARY

MILL CREEK VALLEY USD 329

ALMA GRADE SCHOOL
MAPLE HILL GRADE SCHOOL

MISSION VALLEY UNIFIED SCHOOL DISTRICT 330

MISSION VALLEY ELEMENTARY

PRIVATE

INTERNATIONAL ACADEMY
ST. JOHNS LUTHERAN SCHOOL

SANTA FE TRAIL UNIFIED SCHOOL DISTRICT 434

CARBONDALE ATTENDANCE CENTER

SEAMAN UNIFIED SCHOOL DISTRICT 345

LOGAN ELEMENTARY
NORTH FAIRVIEW ELEMENTARY

SHAWNEE HEIGHTS USD 450

BERRYTON ELEMENTARY
SHAWNEE HEIGHTS ELEMENTARY
TECUMSEH NORTH ELEMENTARY
TECUMSEH SOUTH ELEMENTARY

TOPEKA PUBLIC SCHOOLS UNIFIED SCHOOL DISTRICT 501

MAUDE BISHOP ELEMENTARY
MCEACHRON ELEMENTARY
QUINCY ELEMENTARY
STOUT ELEMENTARY
WHITSON ELEMENTARY

WEST FRANKLIN USD 287

APPANOOSE ELEMENTARY

WICHITA

STARBASE Wichita*

Service Component: National Guard
Military Location: McConnell Air Force Base
Address: 52870 Jayhawk Drive
Wichita, Kansas 67221-9020
Tel: 316-759-8911
Director: Aaron Santry
Email: aaron@kansasstarbase.org
Website: www.kansasstarbase.org

ANDOVER PUBLIC SCHOOLS

COTTONWOOD ELEMENTARY
SUNFLOWER ELEMENTARY
WHEATLAND ELEMENTARY

AUGUSTA PUBLIC SCHOOLS

GARFIELD ELEMENTARY
LINCOLN ELEMENTARY
ROBINSON ELEMENTARY

ARCHDIOCESE OF WICHTIA

BLESSED SACRAMENT CATHOLIC
HOLY CROSS CATHOLIC SCHOOL

BELLE PLAINE PUBLIC SCHOOLS

BELLE PLAINE ELEMENTARY

BLUESTEM USD 205

BLUESTEM ELEMENTARY

CENTRAL OF BURDEN PUBLIC SCHOOLS

CENTRAL BURDEN ELEMENTARY

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

CHENEY USD 268
CHENEY ELEMENTARY

CIRCLE PUBLIC SCHOOLS
TOWANDA ELEMENTARY

DERBY PUBLIC SCHOOLS
DERBY HILLS ELEMENTARY
PLEASANTVIEW ELEMENTARY

HALSTEAD-BENTLEY USD 440
HALSTEAD

HAYSVILLE PUBLIC SCHOOLS
FREEMAN ELEMENTARY
OATVILLE ELEMENTARY
PRAIRIE ELEMENTARY
RUTH CLARK ELEMENTARY

HOME SCHOOL
KANG HOME SCHOOL

PRIVATE
CENTRAL CHRISTIAN ACADEMY
CHRIST THE SAVIOR ACADEMY
HOLY CROSS LUTHERAN
TRINITY ACADEMY

ROSE HILL PUBLIC SCHOOLS
ROSE HILL INTERMEDIATE

WICHITA PUBLIC SCHOOLS
ADAMS ELEMENTARY
ALLEN ELEMENTARY
BEECH ELEMENTARY
BENTON ELEMENTARY
BOSTIC TRADITIONAL MAGNET
BUCKNER PERFORMING ARTS AND SCIENCE
CLEVELAND TRADITIONAL MAGNET
CLOUD ELEMENTARY
LINWOOD ELEMENTARY
GRIFFITH ELEMENTARY
MAGNET ELEMENTARY
PAYNE ELEMENTARY
SPAGHT MULTIMEDIA MAGNET
WOODMAN ELEMENTARY

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
Director: Regina Corcoran
Email: reginadevilliercorcoran@ipsb.education
Website: None

EAST BATON ROUGE PARISH SCHOOL DISTRICT

CAPITAL ELEMENTARY
CHILDREN'S CHARTER ELEMENTARY
EDEN PARK ELEMENTARY
GREENBRIAR ELEMENTARY
PARK ELEMENTARY
UNIVERSITY TERRACE ELEMENTARY
WHITE HILLE ELEMENTARY

IBERVILLE PARISH SCHOOL DISTRICT

CRESCENT ELEMENTARY
DORSEYVILLE ELEMENTARY
EAST IBERVILLE ELEMENTARY
IBERVILLE ELEMENTARY
IBERVILLE CHARTER
MSA EAST
NORTH IBERVILLE ELEMENTARY

POINTE COUPEE SCHOOL DISTRICT

FALSE RIVER ACADEMY
ROSENWALD ELEMENTARY
UPPER POINTE COUPEE ELEMENTARY
VALVERDA ELEMENTARY

WEST BATON ROUGE PARISH SCHOOL DISTRICT

COHN ELEMENTARY
DEVAL MIDDLE
LUKEVILLE ELEMENTARY

BOSSIER CITY

STARBASE Louisiana*
Service Component: Air Force Reserve

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

Military Location: Barksdale Air Force Base
 Address: 827 Twining Drive
 Building 4238
 Barksdale AFB, Louisiana 71110
 Tel: 318-529-3521
 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
 KINGSTON ELEMENTARY
 LEGACY ELEMENTARY
 MEADOWVIEW ELEMENTARY
 PLANTATION PARK ELEMENTARY
 PRINCETON ELEMENTARY
 STOCKWELL PLACE ELEMENTARY
 W. T. LEWIS ELEMENTARY
 WALLER ELEMENTARY

CADDO PARISH SCHOOLS

CHEROKEE PARK ELEMENTARY
 CRESWELL ELEMENTARY
 E.B. WILLIAMS STONER HILL ELEMENTARY
 FOREST HILL ELEMENTARY
 MOORINGSPOUR ELEMENTARY
 NORTH HIGHLANDS ELEMENTARY
 SHREVE ISLAND ELEMENTARY
 SUMMERFIELD ELEMENTARY
 WERNER PARK ELEMENTARY

PRIVATE

FIRST BAPTIST CHURCH SCHOOL
 PROVIDENCE CLASSICAL ACADEMY
 ST. JOHN BERCHMANS CATHEDRAL SCHOOL
 WORD OF GOD ACADEMY

NEW ORLEANS

STARBASE Jackson Barracks*

Service Component: National Guard
 Military Location: Army National Guard, Jackson Barracks
 Address: 2033 Sherman Drive
 New Orleans, Louisiana 70117
 Tel: 504-278-8440
 Director: Lisa Calabresi
 Email: lisa.m.calabresi.nfg@mail.mil
 Website: None

ORLEANS PARISH SCHOOL DISTRICT

BEN FRANKLIN ELEMENTARY MATHEMATICS AND SCIENCE SCHOOL
 EDWARD HYNES CHARTER
 ESPERANZA CHARTER
 LAFAYETTE ACADEMY CHARTER
 MARTIN BEHRMAN CHARTER SCHOOL ACADEMY OF CREATIVE
 ARTS AND SCIENCE
 MARTIN LUTHER KING CHARTER
 ST. RITA CATHOLIC

PLAQUEMINES PARISH SCHOOL DISTRICT

BELLE CHASSE ACADEMY

ST. BERNARD PARISH SCHOOL DISTRICT

ARABI ELEMENTARY
 CHALMETTE ELEMENTARY
 LYNN OAKS
 OUR LADY OF PROMPT SUCCOR

PINEVILLE

Pelican State STARBASE*

Service Component: National Guard
 Military Location: Camp Beauregard
 Address: 609 F. Street
 Camp Beauregard
 Pineville, Louisiana 71360
 Tel: 318-290-5252
 Director: Nancy Brinkerhoff-Force
 Email: nancy.l.brinkerhoffforce.nfg@mail.mil
 Website: None

ASSOCIATION OF CHRISTIAN SCHOOLS INTERNATIONAL (ACSI)

GRACE CHRISTIAN

DIOCESE OF ALEXANDRIA

*Indicates location also coordinates a DoD STARBASE 2.0 Program.

OUR LADY OF PROMPT SUCCOR
SACRED HEART

GRANT PARISH

COLFAX ELEMENTARY
POLLOCK ELEMENTARY
SOUTH GRANT ELEMENTARY

INDEPENDENT SCHOOLS ASSOCIATION OF THE SOUTHWEST

MONTESSORI EDUCATIONAL CENTER

RAPIDES PARISH

ACADIAN ELEMENTARY
ALMA REDWINE ELEMENTARY
BALL ELEMENTARY
CARTER C. RAYMOND ELEMENTARY
D.F. HUDDLE ELEMENTARY
FOREST HILL ELEMENTARY
GLENMORA HIGH SCHOOL
HADNOT-HAYES ELEMENTARY
JULIUS PATRICK ELEMENTARY
MABEL BRASHER ELEMENTARY
MARTIN PARK ELEMENTARY
MARY GOFF ELEMENTARY
NORTHWOOD HIGH SCHOOL
PINEVILLE ELEMENTARY
PLAINVIEW HIGH SCHOOL
TIOGA ELEMENTARY
W. O. HALL MAGNET ELEMENTARY

SEVENTH DAY ADVENTIST

ALFRED BOOKER JUNIOR ACADEMY

SOUTHERN BAPTIST ASSOCIATION

HOME BAPTIST SCHOOL

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
Director: Peter Holden PhD
Email: pholden@mass-starbase.org
Website: www.mass-starbase.org

AYER-SHIRLEY REGIONAL SCHOOL DISTRICT

LURA A. WHILE
PAGE-HILLTOP ELEMENTARY

BILLERICA PUBLIC SCHOOLS

THOMAS DITSON ELEMENTARY

DRACUT PUBLIC SCHOOLS

GEORGE H. ENGLSBY ELEMENTARY

HAVERHILL PUBLIC SCHOOLS

DR. PAUL NETTLE

LEOMINSTER PUBLIC SCHOOLS

FRANCIS DRAKE ELEMENTARY
JOHNNY APPLESEED ELEMENTARY
THE NORTHWEST SCHOOL

LINCOLN PUBLIC SCHOOLS

HANSCOM MIDDLE

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
Director: Steven Tezak
Email: stezak@starbasealpena.org
Website: www.starbasealpena.org

ALCONA COMMUNITY SCHOOLS

ALCONA ELEMENTARY

*Indicates location also coordinates a DoD STARBASE 2.0 Program.

ALPENA PUBLIC SCHOOLS

BESSER ELEMENTARY
ELLA M. WHITE SCHOOL
HINKS SCHOOL
LINCOLN COMMUNITY SCHOOL
SANBORN SCHOOL
WILSON COMMUNITY SCHOOL

FAIRVIEW AREA SCHOOLS

FAIRVIEW SCHOOL

HILLMAN COMMUNITY SCHOOLS

HILLMAN ELEMENTARY

MIO-AUSABLE SCHOOLS

MIO-AUSABLE ELEMENTARY

POSEN CONSOLIDATED SCHOOL DISTRICT NO. 9

POSEN ELEMENTARY

PRIVATE

ALL SAINTS CATHOLIC
COOPERTIVE OF ALPENA – AREA CHRISTIAN SCHOOLS
IMMANUEL LUTHERAN
ST. JOHN LUTHERAN

ROGERS CITY AREA SCHOOLS

ROGERS CITY ELEMENTARY

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
Director: Bruce Medaugh
Email: bmedaugh@starbasebattlecreek.org
Website: None

BATTLE CREEK AREA CATHOLIC SCHOOLS

ST. JOSEPH ELEMENTARY

BATTLE CREEK PUBLIC SCHOOLS

ANN J. KELLOGG
VALLEY VIEW ELEMENTARY

VERONA ELEMENTARY

BELLEVUE PUBLIC SCHOOLS

BELLEVUE ELEMENTARY

COLON PUBLIC SCHOOLS

COLON ELEMENTARY

DELTON KELLOGG PUBLIC SCHOOLS

DELTON KELLOGG MIDDLE

GALESBURG-AUGUSTA COMMUNITY SCHOOLS

GALESBURG-AUGUSTA MIDDLE

HASTINGS COMMUNITY SCHOOLS

CENTRAL ELEMENTARY
NORTHEASTERN ELEMENTARY
SOUTHEASTERN ELEMENTARY
STAR ELEMENTARY

LAKEWOOD PUBLIC SCHOOLS

LAKEWOOD MIDDLE

LAWTON COMMUNITY SCHOOLS

LAWTON ELEMENTARY

MAR LEE SCHOOL

MAR LEE SCHOOL

PARCHMENT PUBLIC SCHOOLS

NORTHWOOD ELEMENTARY

PENNFIELD SCHOOLS

DUNLAP ELEMENTARY

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

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

Address: 27310 D Street
 Selfridge ANGB, Michigan 48045
 Tel: 586-239-4884
 Director: Rick Simms
 Email: rsimms@starbaseone.org
 Website: www.starbaseone.org

ANCHOR BAY PUBLIC SCHOOLS

ASHLEY ELEMENTARY
 GREAT OAKS ELEMENTARY
 LOTTIE SCHMIDT ELEMENTARY
 MACONCE ELEMENTARY
 NALDRETT ELEMENTARY
 SUGARBUSH ELEMENTARY

ARMADA PUBLIC SCHOOLS

KRAUSE ELEMENTARY

CHARTER - CENTERLINE

MICHIGAN MATH AND SCIENCE ACADEMY

CHARTER - NEW HAVEN

MERRITT ACADEMY

CORSE PUBLIC SCHOOLS

GRANDPORT ACADEMY

DETROIT PUBLIC SCHOOLS

BENNETT ELEMENTARY
 CARVER ELEMENTARY
 CHRYSLER ELEMENTARY
 CLIPPERT ACADEMY
 DAVISON ELEMENTARY
 THIRKELL ELEMENTARY

LAMPHERE PUBLIC SCHOOLS

HILLER ELEMENTARY

L'ANSE CREUSE PUBLIC SCHOOLS

CARKENORD ELEMENTARY
 GREEN ELEMENTARY
 HIGGINS ELEMENTARY
 LOBBESTAEEL ELEMENTARY
 SOUTH RIVER ELEMENTARY
 YACKS ELEMENTARY

NEW HAVEN COMMUNITY SCHOOLS

ENDEAVOUR ELEMENTARY
 NEW HAVEN ELEMENTARY

PRIVATE SCHOOL - CLINTON TWP

TRINITY LUTHERAN

PRIVATE SCHOOL - ST. CLAIR SHORES

ST. GERMAINE CATHOLIC

RICHMOND COMMUNITY SCHOOLS

RICHMOND MIDDLE

RIVER ROUGE SCHOOLS

RIVER ROUGE STEM ACADEMY AT DUNN

SOUTH LAKE PUBLIC SCHOOLS

ELMWOOD ELEMENTARY

MINNESOTA

DULUTH

STARBASE MINNESOTA DULUTH

Service Component: Air National Guard
 Military Location: Base Civil Engineering Building
 Address: 4630 Mustang Drive, Building 252
 55811 Duluth , MN
 Tel: 218-788-7288
 Director: Charity Rupp
 Email: crupp@starbasemn.org
 Website: www.starbasemn.org

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
 Director: Kim Van Wie
 Email: kvanwie@starbasemn.org
 Website: www.starbasemn.org

ANOKA-HENNEPIN PUBLIC SCHOOLS

UNIVERSITY AVENUE SCHOOL ACES

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

DULUTH PUBLIC SCHOOLS
LOWELL ELEMENTARY

HOPKINS PUBLIC SCHOOLS
ALICE SMITH ELEMENTARY
EISENHOWER ELEMENTARY
GATEWOOD ELEMENTARY
GLEN LAKE ELEMENTARY
L.H. TANGLEN ELEMENTARY
MEADOWBROOK ELEMENTARY
XINXING ACADEMY

MINNEAPOLIS PUBLIC SCHOOLS
BANCROFT ELEMENTARY
BETHUNE ELEMENTARY
BRYN MAWR COMMUNITY SCHOOL
EMERSON SILC (SPANISH IMMERSION LEARNING CENTER)
JEFFERSON COMMUNITY SCHOOL
LAKE NOKOMIS - KEEWAYDIN
LORING
PILLSBURY ELEMENTARY

NORTH ST. PAUL, OAKDALE, MAPLEWOOD PUBLIC SCHOOL
CARVER ELEMENTARY
CASTLE ELEMENTARY
EAGLE POINT ELEMENTARY
OAKDALE ELEMENTARY
RICHARDSON ELEMENTARY
WEBSTER ELEMENTARY

PRIVATE
FRASSATI CATHOLIC ACADEMY
MATERNITY OF MARY - ST. ANDREW
RISEN CHRIST CATHOLIC
SACRED HEAR CATHOLIC
ST. AGNES SCHOOL
ST. JEROME SCHOOL
ST. ROSE OF LIMA CATHOLIC

ROSEMOUNT-APPLE VALLEY-EAGAN PUBLIC SCHOOLS
ECHO PARK ELEMENTARY
OAK RIDGE ELEMENTARY
WESTVIEW ELEMENTARY

ST. PAUL CHARTER SCHOOL
ACHIEVE LANGUAGE ACADEMY

COMMUNITY OF PEACE ACADEMY
FRIENDSHIP ACADEMY OF FINE ARTS
WEST SIDE SUMMIT

ST. PAUL PUBLIC SCHOOLS
BATTLE CREEK ELEMENTARY
EASTERN HEIGHTS ELEMENTARY
FARNSWORTH AEROSPACE ELEMENTARY
MAGNET SCHOOL 5-8
FROST LAKE ELEMENTARY
GALTIER
HIGHWOOD HILLS ELEMENTARY
OBAMA SERVICE LEARNING ELEMENTARY
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
Director: Wendy Fechter
Email: wendyfechter@mt.gov
Website: None

AUGUSTA PUBLIC SCHOOL DISTRICT
AUGUSTA ELEMENTARY

BROWNING PUBLIC SCHOOL DISTRICT
NAPI SCHOOL

GREAT FALLS PUBLIC SCHOOL DISTRICT
CHIEF JOSEPH ELEMENTARY
LEWIS AND CLARK ELEMENTARY
LINCOLN ELEMENTARY
LONGFELLOW ELEMENTARY
LOY ELEMENTARY
MEADOWLARK ELEMENTARY
MORNINGSIDE ELEMENTARY
MOUNTAIN VIEW ELEMENTARY
RIVERVIEW ELEMENTARY
ROOSEVELT ELEMENTARY

SACAJAWEA ELEMENTARY
 SUNNYSIDE ELEMENTARY
 VALLEY VIEW ELEMENTARY
 WEST ELEMENTARY
 WHITTIER ELEMENTARY SCHOOL

HIGHWOOD PUBLIC SCHOOL DISTRICT
 HIGHWOOD ELEMENTARY

PRIVATE

FOOTHILLS CHRISTIAN
 FIVE FALLS CHRISTIAN

RONAN PUBLIC SCHOOL
 SCHOOL OF PABLO ELEMENTARY

SUN RIVER PUBLIC
 SUNRIVER MIDDLE

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
 Director: Dr. Michael Vannatta
 Email: mvannatta@mt.gov
 Website: None

CLANCY SCHOOL DISTRICT
 CLANCY ELEMENTARY

EAST HELENA PUBLIC SCHOOLS
 ROBERT H. RADLEY ELEMENTARY

ELLISTON SCHOOL DISTRICT 27
 ELLISTON ELEMENTARY

HELENA PUBLIC SCHOOLS
 BROADWATER ELEMENTARY
 BRYANT ELEMENTARY
 CENTRAL ELEMENTARY
 C.R. ANDERSON MIDDLE
 FOUR GEORGIANS ELEMENTARY

HAWTHORNE ELEMENTARY
 HELENA MIDDLE
 JEFFERSON ELEMENTARY
 JIM DARCY ELEMENTARY
 KESSLER ELEMENTARY
 SMITH ELEMENTARY
 WARREN ELEMENTARY

LINCOLN PUBLIC SCHOOLS
 LINCOLN ELEMENTARY

MONTANA CITY SCHOOL DISTRICT 27
 MONTANA CITY SCHOOL

PRIVATE
 ST. ANDREW SCHOOL

TOWNSEND SCHOOL DISTRICT #1
 TOWNSEND ELEMENTARY

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
 Director: Myles Judd
 Email: mjudd@starbasenellis.com
 Website: none

CLARK COUNTY

BETSY RHODES ELEMENTARY
 HOLLINGSWORTH ELEMENTARY
 MAR ZEL LOWMAN ELEMENTARY
 MOAPA INDIAN RESERVATION
 NEAL ELEMENTARY
 RICHARD BRYAN ELEMENTARY
 UTE V. PERKINS ELEMENTARY
 WALTER BRACKEN ELEMENTARY
 WALTER LONG ELEMENTARY
 WILHELM ELEMENTARY

*Indicates location also coordinates a DoD STARBASE 2.0 Program.

NEW MEXICO

ALBUQUERQUE

New Mexico STARBASE*

Service Component: Air Force

Military Location: Kirtland Air Force Base

Address: 1401 Maxwell Street SE,

Albuquerque, New Mexico 87117

Tel: 505-846-8042

Director: Esti Gutierrez

Email: estike.gutierrez.ctr@us.af.mil

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

ALBUQUERQUE PUBLIC SCHOOLS

21ST CENTURY PUBLIC ACADEMY CHARTER

CARLOS REY ELEMENTARY

DOLORES GONZALES ELEMENTARY

EAST SAN JOSE ELEMENTARY

MARIE HUGHES ELEMENTARY

MONTEZUMA ELEMENTARY

SANDIA BASE ELEMENTARY

SEVEN BAR ELEMENTARY

ZIA ELEMENTARY

EASTERN NAVAJO EDUCATION LINE OFFICE SCHOOL DISTRICT

BACA/DLO AZHI COMMUNITY SCHOOL

GRANTS-CIBOLA COUNTY SCHOOLS

MESA VIEW ELEMENTARY

LOS LUNAS PUBLIC SCHOOLS

PERALTA ELEMENTARY

SUNDANCE ELEMENTARY

MAGDELENA MUNICIPAL SCHOOLS

MAGDELENA ELEMENTARY

MORIARTY-EDGEWOOD SCHOOLS

ROUTE 66 ELEMENTARY

SOUTH MOUNTAIN ELEMENTARY

PRIVATE

CHRIST LUTHERAN CHURCH AND SCHOOL

HOPE CHRISTIAN SCHOOL

HOMESCHOOL

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

Director: Barbara Miller

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

Website: None

BURKE COUNTY SCHOOL SYSTEM

CHESTERFIELD ELEMENTARY

FOREST HILL ELEMENTARY

CHARLOTTE-MECKLENBURG SCHOOL SYSTEM

BARRINGER ELEMENTARY

DEVONSHIRE ELEMENTARY

HIGHLAND RENAISSANCE ACADEMY

IDLEWILD ELEMENTARY

JOHN MOTLEY MOREHEAD STEM ACADEMY

LONG CREEK ELEMENTARY

STARMOUNT ACADEMY OF EXCELLENCE

WESTERLY HILLS ACADEMY

LINCOLN COUNTY SCHOOL SYSTEM

LINCOLN CHARTER

ST. JAMES ELEMENTARY

MADISON COUNTY SCHOOL SYSTEM

MARS ELEMENTARY

PERQUIMANS COUNTY SCHOOL SYSTEM

HERTFORD GRAMMAR SCHOOL

THOMASVILLE CITY SCHOOLS

LIBERTY DRIVE ELEMENTARY

WATAUGA COUNTY SCHOOL SYSTEM

BLOWING ROCK ELEMENTARY

KURE BEACH

*Indicates location also coordinates a DoD STARBASE 2.0 Program.

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
 Director: Barbara Miller
 Email: barbara.h.miller6.ctr@mail.mil
 Website: None

BRUNSWICK COUNTY SCHOOL SYSTEM

VIRGINIA WILLIAMSON ELEMENTARY

DAVIDSON COUNTY SCHOOLS

LIBERTY DRIVE ELEMENTARY
 PALISADES PARK ELEMENTARY

NEW HANOVER COUNTY SCHOOLS

ALDERMAN ELEMENTARY
 ANDERSON ELEMENTARY
 BRADLEY CREEK ELEMENTARY
 CAROLINA BEACH ELEMENTARY
 CASTLE HAYNE ELEMENTARY
 CODINGTON ELEMENTARY
 COLLEGE PARK ELEMENTARY
 EATON ELEMENTARY
 EDWIN A. ANDERSON ELEMENTARY
 FOREST HILLS ELEMENTARY
 JOHN H. BLAIR ELEMENTARY
 MARY C. WILLIAMS ELEMENTARY
 MURRAYVILLE ELEMENTARY
 PINE VALLEY ELEMENTARY
 WRIGHTSBORO ELEMENTARY
 WRIGHTSVILLE ELEMENTARY
 SUNSET PARK ELEMENTARY

PERQUIMANS SCHOOL DISTRICT

HERTFORD GRAMMAR SCHOOL

PENDER COUNTY SCHOOLS

NORTH TUPSAIL ELEMENTARY

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
 Director: Jenica R. Swenson
 Email: jenica.swenson@minot.k12.nd.us
 Website: www.minot.k12.nd.us/group/02f6f3d8-95ce-42dd-aae7-ad9038d43a1d

GLENBURN PUBLIC SCHOOLS

GLENBURN PUBLIC

MINOT PUBLIC SCHOOLS

BEL AIR ELEMENTARY
 BELL ELEMENTARY
 DAKOTA ELEMENTARY
 EDISON ELEMENTARY
 JOHN HOEVEN ELEMENTARY
 LEWIS AND CLARK ELEMENTARY
 LONGFELLOW ELEMENTARY
 MCKINLEY ELEMENTARY
 NORTH PLAINS ELEMENTARY
 PERKETT ELEMENTARY
 ROOSEVELT ELEMENTARY
 SUNNYSIDE ELEMENTARY
 WASHINGTON ELEMENTARY

PRIVATE

BISHOP RYAN CATHOLIC
 OUR REDEEMER CHRISTIAN

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

Service Component: Air Force
 Military Location: Wright-Patterson Air Force Base
 Address: 2261 Monahan Way, Bldg 196
 Dayton, Ohio 45433
 Tel: 937-938-4859
 Director: Daniel Andrews
 Email: daniel.andrews.1@us.af.mil
 Website: edoutreach.wpafb.af.mil/starbase/index.html

*Indicates location also coordinates a DoD STARBASE 2.0 Program.

BEAVERCREEK CITY SCHOOLS

COY MIDDLE
FAIRBROOK ELEMENTARY
MAIN ELEMENTARY
PARKWOOD ELEMENTARY
SHAW ELEMENTARY
TREBEIN ELEMENTARY
VALLEY ELEMENTARY

CENTERVILLE CITY SCHOOLS

MAGSIG MIDDLE

DAYTON PUBLIC SCHOOLS

CHARITY ADAMS EARLY ACADEMY FOR GIRLS
DAYTON REGIONAL STEM
EASTMONT PRE K-6
KISER PRE K-6
RIVERS EDGE MONTESSORI
WESTWOOD PRE K-6
WORLD OF WONDER PRE K-6

DUBLIN CITY SCHOOLS

WYANDOT ELEMENTARY

FAIRBORN CITY SCHOOLS

FAIRBORN INTERMEDIATE SCHOOL

HUBER HEIGHTS CITY SCHOOLS

CHARLES HUBER ELEMENTARY
MONTICELLO ELEMENTARY
RUSHMORE ELEMENTARY
VALLEY FORGE ELEMENTARY
WRIGHT BROTHERS ELEMENTARY

JEFFERSON TOWNSHIP LOCAL SCHOOLS

BLAIRWOOD ELEMENTARY

KETTERING CITY SCHOOLS

BEAVERTOWN ELEMENTARY
GREENMONT ELEMENTARY
INDIAN RIFFLE ELEMENTARY
JOHN F. KENNEDY ELEMENTARY
KETTERING MIDDLE
OAKTOWN ELEMENTARY

MAD RIVER LOCAL SCHOOLS

SPINNING HILLS MIDDLE SCHOOL

MIAMISBURG CITY SCHOOLS

BAUER
MARK TWAIN
MIAMISBURG MIDDLE

NEW LEBANON LOCAL SCHOOLS

DIXIE MIDDLE SCHOOL

LAKOTA LOCAL SCHOOLS

HOPEWELL JUNIOR

NORTHWESTERN LOCAL SCHOOLS

NORTHWESTERN JUNIOR/SENIOR

PRIVATE

EARLY COLLEGE ACADEMY
EMERSON ACADEMY
ST. HELENS INCARNATION SCHOOL
MIDDLETOWN CHRISTIAN
TEMPLE CHRISTIAN

TROTWOOD-MADISON CITY SCHOOLS

WESTBROOKE VILLAGE ELEMENTARY

WEST CARROLLTON CITY SCHOOLS

FRANK NICHOLAS ELEMENTARY

XENIA COMMUNITY SCHOOLS

ARROWOOD ELEMENTARY
COX ELEMENTARY
MCKINLEY ELEMENTARY
SHAWNEE ELEMENTARY
TECUMSEH ELEMENTARY

YELLOW SPRINGS VILLAGE SCHOOLS

MILLS LAWN ELEMENTARY

OKLAHOMA

OKLAHOMA CITY

STARBASE Oklahoma - Oklahoma City*

Service Component: National Guard

Military Location: Tinker Air Force Base

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

Address: 9131 E. Viper Street
 Oklahoma City, Oklahoma 74115
 Tel: 918-833-7757
 Director: Pamela Kirk
 Email: pamelastarbaseok.org
 Website: www.dodstarbase.org

ARAPAHO/ BUTLER PUBLIC SCHOOLS
 ARAPAHO/BUTLER ELEMENTARY

BURNS FLAT-DILL CITY PUBLIC SCHOOLS
 WILL ROGERS ELEMENTARY

CANUTE PUBLIC SCHOOLS
 CANUTE ELEMENTARY

CHOCTAW-NICOMA PARK SCHOOLS
 CHOCTAW ELEMENTARY
 JAMES GRIFFITH INTERMEDIATE
 NICOMA PARK INTERMEDIATE
 WESTFALL ELEMENTARY

CRUTCHO PUBLIC SCHOOLS
 CRUTCHO ELEMENTARY

CYRIL PUBLIC SCHOOLS
 CYRIL ELEMENTARY

DIBBLE PUBLIC SCHOOLS
 DIBBLE ELEMENTARY

DUNCAN PUBLIC SCHOOLS
 MARK TWAIN ELEMENTARY
 PLATO ELEMENTARY

ERICK PUBLIC SCHOOLS
 ERICK ELEMENTARY

FLETCHER PUBLIC SCHOOLS
 FLETCHER ELEMENTARY

HAMMON PUBLIC SCHOOLS
 HAMMON ELEMENTARY

INDIAHOMA PUBLIC SCHOOLS
 INDIAHOMA ELEMENTARY

LAWTON PUBLIC SCHOOLS
 ALMOR WEST ELEMENTARY
 CROSBY PARK ELEMENTARY
 FREEDOM ELEMENTARY
 LINCOLN ELEMENTARY
 PAT HENRY ELEMENTARY
 RIDGECREST ELEMENTARY
 SULLIVAN VILLAGE ELEMENTARY
 WHITTIER ELEMENTARY

LEEDEY PUBLIC SCHOOLS
 LEEDEY ELEMENTARY

MERRITT PUBLIC SCHOOLS
 MERRITT ELEMENTARY

MILWOOD PUBLIC SCHOOLS
 MILWOOD ELEMENTARY LEARNING ACADEMY

MOUNTAIN VIEW-GOTEBO PUBLIC SCHOOLS
 MOUNTAIN VIEW-GOTEBO ELEMENTARY

OKLAHOMA CITY PUBLIC SCHOOLS
 CLEVELAND ELEMENTARY
 GREEN PASTURES ELEMENTARY
 SEQUOYAH ELEMENTARY
 SPENCER ELEMENTARY
 TELSTAR ELEMENTARY
 WILLOW BROOK ELEMENTARY

PRIVATE
 BISHOP JOHN CARROLL CATHOLIC
 LAWTON ACADEMY OF ARTS AND SCIENCES
 LAWTON CHRISTIAN
 MERCY SCHOOL INSTITUTE
 RIVERSIDE INDIAN SCHOOL
 ST. CHARLES BORROMEO CATHOLIC
 ST. JAMES
 ST. JOHN NEPOMUK CATHOLIC
 ST. MARY'S CATHOLIC
 ST. PHILIP NERI CATHOLIC

STERLING PUBLIC SCHOOLS
 STERLING ELEMENTARY

SWEETWATER PUBLIC SCHOOLS

SWEETWATER ELEMENTARY

THOMAS CUSTER PUBLIC SCHOOLS

THOMAS FAY CUSTER ELEMENTARY

TINKER AIR FORCE BASE

OKLAHOMA VIRTUAL 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

Director: Pamela Kirk

Email: pamela@starbaseok.org

Website: www.dodstarbase.org

ANDERSON PUBLIC SCHOOLS

ANDERSON ELEMENTARY

AVANT PUBLIC SCHOOLS

AVANT ELEMENTARY

CANEY VALLEY PUBLIC SCHOOLS

CANEY VALLEY ELEMENTARY

GUYMON PUBLIC SCHOOLS

CENTRAL JUNIOR HIGH

MUSKOGEE PUBLIC SCHOOLS

IRRING ELEMENTARY

OSAGE PUBLIC SCHOOLS

OSAGE ELEMENTARY

OWASSO PUBLIC SCHOOLS

BARNES ELEMENTARY

MILLS ELEMENTARY

STONE CANYON ELEMENTARY

PRIVATE

ALL SAINTS CATHOLIC

MISS HELEN SCHOOL

REJOICE CHRISTIAN

SANKOFA CHARTER

ST. CATHERINE CATHOLIC

STS. PETER AND PAUL CATHOLIC

ST. JOSEPH CATHOLIC

TANG TECH KIDS

PRYOR PUBLIC SCHOOLS

JEFFERSON ELEMENTARY

LINCOLN ELEMENTARY

SEQUOYAH SCHOOLS

SEQUOYAH HIGH

TULSA PUBLIC SCHOOLS

MARSHALL ELEMENTARY

MCCLURE ELEMENTARY

WALT WHITMAN ELEMENTARY

UNION PUBLIC SCHOOLS

JOHNSON O'MALLEY PROGRAM

VERDIGRIS PUBLIC SCHOOLS

VERDIGRIS UPPER ELEMENTARY

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

Director: Denise Kortez

Email: denisekortez@yahoo.com

Website: None

HOME SCHOOL

CLASSICAL CONVERSATIONS

MORGAN HOMESCHOOL GROUP

KLAMATH COUNTY SCHOOL DISTRICT

BONANZA ELEMENTARY

CHILOQUIN ELEMENTARY

FERGUSON ELEMENTARY

*Indicates location also coordinates a DoD STARBASE 2.0 Program.

GREAT BASIN HOMESCHOOL CENTER
 HENLEY ELEMENTARY
 KENO ELEMENTARY
 MALIN ELEMENTARY
 MERRILL ELEMENTARY
 PELICAN ELEMENTARY
 PETERSON ELEMENTARY
 SHASTA ELEMENTARY
 STEARNS ELEMENTARY

KLAMATH FALLS CITY SCHOOLS

CONGER ELEMENTARY
 MILLS ELEMENTARY
 ROOSEVELT ELEMENTARY

PRIVATE

HOSANNA CHRISTIAN ACADEMY
 NEW HORIZON CHRISTIAN
 TRIAD 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
 Director: Denise Kortes
 Email: starbaseportland@gmail.com
 Website: None

BEAVERTON

CHEHALEM ELEMENTARY
 MCKAY ELEMENTARY
 VOSE ELEMENTARY

CANBY

KNIGHT ELEMENTARY
 LEE ELEMENTARY

PORTLAND PUBLIC SCHOOLS

ASTOR ELEMENTARY
 CESAR CHAVEZ
 CRESTON ELEMENTARY
 FAUBION ELEMENTARY
 GROUT ELEMENTARY

HARRISON PARK
 JASON LEE ELEMENTARY
 ROSA PARKS
 SCOTT ELEMENTARY
 SITTON ELEMENTARY
 VERNON ELEMENTARY
 VESTAL ELEMENTARY
 WOODLAWN ELEMENTARY
 WOODSTOCK ELEMENTARY

REYNOLDS

ALDER ELEMENTARY
 MARGARET SCOTT
 WILKES ELEMENTARY

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
 Director: Urbano Ayala
 Email: urbano.starbasepr@gmail.com
 Website: None

AGUADILLA

LICEO AGUADILLANO

AGUAS BUENAS

CASA/CAP

BAYAMÓN

CRISTOBAL COLON

BAYAMON III

TALLER ARTIC
 MARIA VAZQUEZ UMPIERRE

CAROLINA

CRUZ SALGUERO TORRES
 DEPENDIENTES PRNG

CAMUY

*Indicates location also coordinates a DoD STARBASE 2.0 Program.

COL MI PEQUENO REBANO

CANÓVANAS

ACADEMIA BAUTISTA SOTERO
FÉLIX SÁNCHEZ CRUZ
PEDRO GUTIERREZ

COROZAL

JOSE FERNANDEZ RUBIAL

GUAYNABO

EL CONQUISTADOR

GURABO

LUIS MUÑOZ GRILLO

SAN JUAN

ABRAHAM LINCOLN
DR. RAFAEL LOPEZ SICARDO
LIGA ATLÉTICA POLICIACA
LUIS MUNOZ RIVERA
VILLA GRANADA

SAN LORENZO

QUEBRADA HONDA

SAN SEBASTIAN

NARCISCO RABELL

YABUCOA

PADRO JORGE ROSARIO DEL VALLE
QUEMADOS
SU ANDRES SANDIN MARTINEZ

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
Director: Savannah French

Email: sfrench.starbase@gmail.com

Website: None

BEAUFORT COUNTY SCHOOL DISTRICT

BEAUFORT ELEMENTARY
BROAD RIVER ELEMENTARY
COOSA ELEMENTARY
JOSEPH S. SHANKLIN ELEMENTARY
LADY'S ISLAND ELEMENTARY
MOSSY OAKS ELEMENTARY
PITCHARDVILLE ELEMENTARY
PORT ROYAL ELEMENTARY
RIVERVIEW CHARTER
SAINT HELENA ELEMENTARY
WHALE BRANCH MIDDLE

PRIVATE

BEAUFORT ACADEMY
HOLY TRINITY CLASSICAL CHRISTIAN
ST. GREGORY THE GREAT CATHOLIC
ST. PETERS CATHOLIC
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
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
ST. JOSEPH CATHOLIC
ST. PETER'S CATHOLIC

LEXINGTON SCHOOL DISTRICT ONE
DEERFIELD ELEMENTARY

LEXINGTON SCHOOL DISTRICT TWO
B. C. GRAMMAR SCHOOL

LEXINGTON-RICHLAND SCHOOL DISTRICT FIVE
H. E. CORLEY ELEMENTARY
IRMO ELEMENTARY

RICHLAND SCHOOL DISTRICT ONE
CARVER-LYON ELEMENTARY
FOREST HEIGHTS ELEMENTARY
GADSDEN ELEMENTARY
HOPKINS ELEMENTARY
HORRELL HILL ELEMENTARY
MILLCREEK ELEMENTARY
WEBBER ELEMENTARY

RICHLAND SCHOOL DISTRICT TWO
FOREST LAKE ELEMENTARY

SOUTH CAROLINA INDEPENDENT SCHOOL ASSOCIATION
WILSON HALL

SUMTER SCHOOL DISTRICT
F. J. DELAINE ELEMENTARY
R.E. DAVIS ELEMENTARY
WILDER ELEMENTARY
WILLOW DRIVE ELEMENTARY

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

Director: Polly Unterbrunner

Email: polly@sdstarbase.org

Website: sdstarbase.org

CUSTER SCHOOL DISTRICT 16-1
CUSTER ELEMENTARY
HERMOSA ELEMENTARY

EAGLE BUTTE SCHOOL DISTRICT 20-1
CHEYENNE EAGLE BUTTE ELEMENTARY

HOT SPRINGS SCHOOL DISTRICT 23-2
HOT SPRINGS ELEMENTARY

KADOKA AREA SCHOOL DISTRICT
KADOKA ELEMENTARY

LYMAN SCHOOL DISTRICT
PRESHO ELEMENTARY
KENNEBEC ELEMENTARY

MEADE SCHOOL DISTRICT 46-1
PIEDMONT VALLEY ELEMENTARY
STURGIS ELEMENTARY
WHITEWOOD ELEMENTARY

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

ST. JOSEPH INDIAN SCHOOL
ST. JOSEPH INDIAN SCHOOL

STANLEY COUNTY PUBLIC SCHOOLS 57-1
STANLEY COUNTY ELEMENTARY

TIMBERLAKE SCHOOLS 20-3
TIMBERLAKE 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
Director: Polly Unterbrunner
Email: polly@sdstarbase.org
Website: sdstarbase.org

DOUGLAS SCHOOL DISTRICT
VANDENBERG ELEMENTARY

RAPID CITY AREA SCHOOLS
CANYON LAKE ELEMENTARY
GENERAL BEADLE ELEMENTARY
HORACE MANN ELEMENTARY
KNOLLWOOD HEIGHTS ELEMENTARY
RAPID VALLEY ELEMENTARY
ROBINSDALE ELEMENTARY
SOUTH CANYON ELEMENTARY
SOUTH PARK ELEMENTARY
VALLEY VIEW ELEMENTARY

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
Director: Vonny Revell
Email: vonny@sdstarbase.org
Website: www.sdstarbase.org

ANDES CENTRAL SCHOOL DISTRICT
LAKE ANDES ELEMENTARY

ARMOUR SCHOOL DISTRICT
ARMOUR ELEMENTARY

AVON SCHOOL DISTRICT
AVON ELEMENTARY

BIG STONE SCHOOL DISTRICT
BIG STONE CITY

BROWNS VALLEY SCHOOL DISTRICT
BROWNS VALLEY ELEMENTARY

DAY COUNTY SCHOOL DISTRICT
ENEMY SWIM DAY SCHOOL

HURON SCHOOL DISTRICT
HOLY TRINITY SCHOOL
WASHINGTON 4-5 CENTER
IROQUOIS SCHOOL DISTRICT
IROQUOIS ELEMENTARY

SISSETON SCHOOL DISTRICT
ROSHOLT ELEMENTARY
SISSETON ELEMENTARY
WESTSIDE ELEMENTARY

SUMMIT SCHOOL DISTRICT
SUMMIT ELEMENTARY

WAGNER SCHOOL DISTRICT
WAGNER ELEMENTARY

WAUBAY SCHOOL DISTRICT
WAUBAY ELEMENTARY

WEBSTER SCHOOL DISTRICT
WEBSTER ELEMENTARY

WILMONT SCHOOL DISTRICT
WILMONT ELEMENTARY

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
Director: Vonny Revell
Email: vonny@sdstarbase.org
Website: www.sdstarbase.org

GARRETSON SCHOOL DISTRICT
GARRETSON ELEMENTARY

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

PRIVATE

SIOUX FALLS LUTHERAN
ST. LAMBERT ELEMENTARY

SIOUX FALLS SCHOOL DISTRICT

ALL CITY ELEMENTARY
ANNE SULLIVAN ELEMENTARY
CLEVELAND ELEMENTARY
EUGENE FIELD ELEMENTARY
HAWTHORNE ELEMENTARY
HAYWARD ELEMENTARY
LAURA B. ANDERSON ELEMENTARY
LOWELL ELEMENTARY
RENBERG ELEMENTARY
ROBERT FROST ELEMENTARY
SUSAN B. ANTHONY ELEMENTARY
TERRY REDLIN ELEMENTARY

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
Director: Patrick Yonnone
Email: patrick@starbaseaustin.org
Website: starbaseaustin.org

AUSTIN INDEPENDENT SCHOOL DISTRICT

BARRINGTON ELEMENTARY
BROWN ELEMENTARY
SUNSET VALLEY ELEMENTARY

DEL VALLE INDEPENDENT SCHOOL DISTRICT

BATY ELEMENTARY
CREEDMOOR ELEMENTARY
HILLCREST ELEMENTARY
HORNSBY-DUNLAP ELEMENTARY
SMITH ELEMENTARY

HUTTO INDEPENDENT SCHOOL DISTRICT

COTTONWOOD CREEK ELEMENTARY
HOWARD NORMAN ELEMENTARY
HUTTO ELEMENTARY
NADINE JOHNSON ELEMENTARY
RAY ELEMENTARY
VETERAN'S HILL ELEMENTARY

PRIVATE SCHOOL

ST. AUSTIN CATHOLIC
ST. FRANCIS
ST. IGNATIUS MARTYR SCHOOL
ST. PAUL LUTHERAN
ST. THERESA'S CATHOLIC
THE GIRL'S SCHOOL OF AUSTIN

SAN ANGELO**STARBASE Goodfellow**

Service Component: Air Force
Military Location: Goodfellow Air Force Base
Address: 221 Texan Street, Building 901
76908 Goodfellow AFB
San Angelo, Texas 76908
Tel: TBD
Director: Katheryn Ganster
Email: Starbaseoffice@Samfa.org
Website: TBD

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
Director: Loraine Guillen
Email: loraine.guillen@us.af.mil
Website: None

ARCHDIOCESES OF GALVESTON-HOUSTON

OUR LADY OF FATIMA
ST. MARY CATHOLIC

GALENA PARK INDEPENDENT SCHOOL DISTRICT

CIMARRON ELEMENTARY

*Indicates location also coordinates a DoD STARBASE 2.0 Program.

CLOVERLEAF ELEMENTARY
GALENA PARK ELEMENTARY
GREEN VALLEY ELEMENTARY
HAVARD ELEMENTARY
JUCINTO CITY ELEMENTARY
NORTH SHORE ELEMENTARY
PURPLE SAGE ELEMENTARY
SAM HOUSTON ELEMENTARY
SHIRLEY J. WILLIAMSON ELEMENTARY
TICE ELEMENTARY
WOODLAND ACRES ELEMENTARY

HOUSTON INDEPENDENT SCHOOL DISTRICT

PLEASANTVILLE ELEMENTARY
SANCHEZ ELEMENTARY
VALLEY WEST ELEMENTARY
YOUNG SCHOLARS ACADEMY FOR EXCELLENCE

HUMBLE INDEPENDENT SCHOOL DISTRICT

LAKELAND ELEMENTARY
WHISPERING PINES ELEMENTARY

LA PORTE INDEPENDENT SCHOOL DISTRICT

BAYSHORE ELEMENTARY
COLLEGE PARK ELEMENTARY
HERITAGE ELEMENTARY
LA PORTE ELEMENTARY
RIZZUTO ELEMENTARY

PASADENA INDEPENDENT SCHOOL DISTRICT

BOBBY SHAW MIDDLE SCHOOL
CARTER LOMAX MIDDLE
DEZAVALA MIDDLE SCHOOL
DR. DIXIE MELILO MIDDLE SCHOOL
EARNESTEEN MILSTEAD MIDDLE SCHOOL
LONNIE B. KELLER MIDDLE SCHOOL
MARSHALL KENDRICK MIDDLE SCHOOL
MORRIS MIDDLE SCHOOL
RICK SCHNEIDER MIDDLE SCHOOL
ROBERTS ELEMENTARY
SCILLIRAN MIDDLE

PRIVATE

FALLBROOK ACADEMY
ST. THOMAS THE APOSTLE

SHELDON INDEPENDENT SCHOOL DISTRICT

CARROLL ELEMENTARY
GARRETT ELEMENTARY
MONAHAN ELEMENTARY
ROYALWOOD ELEMENTARY

TX DISTRICT LUTHERAN CHURCH-MISSOURI SYNOD

TRINITY LUTHERAN

SAN ANTONIO

STARBASE Kelly

Service Component: Air Force Reserve
Military Location: JBASA-Lackland
Address: 203 Galaxy Road
JBASA-Lackland, Texas 78236
Tel: 210-925-5397
Director: Juan Villarreal
Email: starbasekelly@gmail.com
Website: None

ARCHDIOCESE OF SAN ANTONIO CATHOLIC SCHOOLS

HOLY NAME CATHOLIC
ST. JAMES THE APOSTLE CATHOLIC
ST. JOHN BOSCO CATHOLIC
ST. THOMAS MORE CATHOLIC

EDGEWOOD INDEPENDENT SCHOOL DISTRICT

GARDENDALE ELEMENTARY
HENRY B. GONZALEZ ELEMENTARY
LAS PALMAS ELEMENTARY
LB JHONSON ELEMENTARY
LOMA PARK ELEMENTARY
ROOSEVELT ELEMENTARY
ROY CISNEROS ELEMENTARY
WINSTON ELEMENTARY

SOUTHWEST INDEPENDENT SCHOOL DISTRICT

ELM CREEK ELEMENTARY
SKY HARBOUR ELEMENTARY
SOUTHWEST ELEMENTARY
SPICEWOOD PARK ELEMENTARY

SOUTH SAN ANTONIO INDEPENDENT SCHOOL DISTRICT

ATHENS ELEMENTARY
KINDRED ELEMENTARY

NEIL ARMSTRONG ELEMENTARY

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

Director: Frances Bradshaw

Email: frances.bradshaw@starbasehill.com

Website: www.starbasehill.com

CHARTER

DAVINCI ACADEMY OF SCIENCE AND ARTS

LEADERSHIP LEARNING ACADEMY

DAVIS COUNTY SCHOOL DISTRICT

ADELAIDE ELEMENTARY

ANTELOPE ELEMENTARY

CRESTVIEW ELEMENTARY

DOXEY ELEMENTARY

HOLT ELEMENTARY

KING ELEMENTARY

LINCOLN ELEMENTARY

MEADOWBROOK ELEMENTARY

SAND SPRINGS ELEMENTARY

SNOW HORSE ELEMENTARY

SOUTH CLEARFIELD ELEMENTARY

SUNSET ELEMENTARY

WASHINGTON ELEMENTARY

WEST POINT ELEMENTARY

PRIVATE

ST. JOSEPH CATHOLIC

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

Director: Dan Myers

Email: dan@starbasevt.org

Website: www.starbasevt.org

ADDISON CENTRAL SUPERVISORY UNION

SALISBURY COMMUNITY SCHOOL

SHOREHAM ELEMENTARY

RIPTON ELEMENTARY

ADDISON RUTLAND SUPERVISORY UNION

BENSON VILLAGE SCHOOL

CASTLETON ELEMENTARY

FAIR HAVEN GRADE SCHOOL

BENNINGTON RUTLAND SUPERVISORY UNION

CURRIER MEMORIAL SCHOOL

MILL RIVER UNION SCHOOL DISTRICT

TINMOUTH ELEMENTARY

WALLINGFORD ELEMENTARY

RUTLAND CENTRAL SUPERVISORY UNION

PROCTOR ELEMENTARY

RUTLAND TOWN SCHOOL

WEST RUTLAND SCHOOL

RUTLAND CITY PUBLIC SCHOOL DISTRICT

RUTLAND INTERMEDIATE

RUTLAND DIOCESE

RUTLAND AREA CHRISTIAN SCHOOL

CHRIST THE KING SCHOOL

RUTLAND NORHTEAST SUPERVISORY UNION

BARSTOW ELEMENTARY

NESHOBE SCHOOL

RUTLAND SOUTHWEST SUPERVISORY UNION

MIDDLETOWN SPRINGS ELEMENTARY

POULTNEY ELEMENTARY

WELLS VILLAGE SCHOOL

SOUTHWEST VERMONT SUPERVISORY UNION

*Indicates location also coordinates a DoD STARBASE 2.0 Program.

SHAFTSBURY ELEMENTARY

TWO RIVERS SUPERVISORY UNION

CAVENDISH TOWN ELEMENTARY
LUDLOW ELEMENTARY

WHITE RIVER VALLEY SUPERVISORY UNION

BETHEL ELEMENTARY
ROCHESTER SCHOOL
SOUTH RAJALTON
STOCKBRIDGE CENTRAL

WINDHAM CENTRAL SUPERVISORY UNION

JAMAICA VILLAGE SCHOOL
WARDSBORO ELEMENTARY

WINDSOR SOUTHEAST SUPERVISORY UNION

KILLINGTON ELEMENTARY
MOUNT HOLLY ELEMENTARY
WINDSOR STATE STREET 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
Director: Dan Myers
Email: dan@starbasevt.org
Website: www.starbasevt.org

ADDISON NORTHWEST SUPERVISORY UNION

LINCOLN COMMUNITY SCHOOL
VERGENNES ELEMENTARY

BURLINGTON DIOCESE

CHRIST THE KING
ST. FRANCIS XAVIOR

BURLINGTON SCHOOL DISTRICT

C.P. SMITH SCHOOL
INTEGRATED ARTS ACADEMY

CHITTENDEN EAST SUPERVISORY UNION

THOMAS FLEMMING

FRANKLIN CENTRAL SUPERVISORY UNION

HIGHGATE ELEMENTARY
ST. ALBANS TOWN EDUCATIONAL CENTER
SWANTON CENTRAL SCHOOL

FRANKLIN WEST SUPERVISORY UNION

BELLOWS FREE ACADEMY - FAIRFAX
FLETCHER ELEMENTARY

GRAND ISLE SUPERVISORY UNION

FOLSOM ELEMENTARY
GRAND ISLE SCHOOL

LAMOILLE NORTH SUPERVISORY UNION

CAMBRIDGE ELEMENTARY
JOHNSON ELEMENTARY

PRIVATE

ST. MONICAS

SOUTH BURLINGTON SCHOOL DISTRICT

ORCHARD ELEMENTARY

WASHINGTON SUPERVISORY UNION

NORTHFEILD ELEMENTARY

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
Director: Susan Corrigan
Email: susan.b.corrigan.nfg@mail.mil
Website: starbasewinchester.webs.com

CLARKE COUNTY PUBLIC SCHOOLS

BOYCE ELEMENTARY

*Indicates location also coordinates a DoD STARBASE 2.0 Program.

D.G. COOLEY ELEMENTARY

FREDERICK COUNTY PUBLIC SCHOOLS

APPLE PIE RIDGE ELEMENTARY
 BASS-HOOVER ELEMENTARY
 EVENDALE ELEMENTARY
 GAINESBORO ELEMENTARY
 INDIAN HOLLOW ELEMENTARY
 MIDDLETOWN ELEMENTARY
 ORCHARD VIEW ELEMENTARY
 REDBUD RUN ELEMENTARY
 STONEWALL ELEMENTARY

INDEPENDENT

CLASSICAL COTTAGE
 RANDOLPH-MACON ACADEMY
 SACRED HEART ACADEMY

WINCHESTER PUBLIC SCHOOLS

DANIEL MORGAN INTERMEDIATE
 GARLAND QUARTES ELEMENTARY
 FREDERICK DOUGLASS ELEMENTARY
 JOHN KERR ELEMENTARY
 VIRGINIA AVENUE CHARLOTTE DEHART ELEMENTARY

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
 Director: Robin Barnette
 Email: robin.d.barnette.nfg@mail.mil
 Website: www.wvstarbase.org

KANAWHA COUNTY

ALBAN ELEMENTARY
 ALUM CREEK ELEMENTARY
 ANDREW HEIGHTS ELEMENTARY
 ANNE BAILEY ELEMENTARY
 BIBLE CENTER ELEMENTARY
 BRIDGE ELEMENTARY

CEDAR GOVE ELEMENTARY
 CHAMBERLAIN ELEMENTARY
 CHESAPEAKE ELEMENTARY
 CLENDENIN ELEMENTARY
 DAWES ELEMENTARY
 EDGEWOOD ELEMENTARY
 ELK CENTER ELEMENTARY
 KANAWHA CITY ELEMENTARY
 MALDEN ELEMENTARY
 MARMET ELEMENTARY
 MARY INGLES ELEMENTARY
 MIDLAND TRAIL ELEMENTARY
 NITRO ELEMENTARY
 OVERLOOK ELEMENTARY
 PINCH ELEMENTARY
 PRATT ELEMENTARY
 RICHMOND ELEMENTARY
 RUSHLAWN ELEMENTARY
 RUFFNER ELEMENTARY
 SHOALS ELEMENTARY
 SISSONVILLE MIDDLE
 WEBERWOOD ELEMENTARY
 WEIMER ELEMENTARY

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
 Director: Sherra Triggs
 Email: sherra.l.triggs.civ@mail.mil
 Website: www.starbasemartinsburg.webs.com

BERKELEY COUNTY PUBLIC 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 PUBLIC SCHOOLS

*Indicates location also coordinates a DoD STARBASE 2.0 Program.

BLUE RIDGE ELEMENTARY
 C.W. SHIPLEY ELEMENTARY
 DRISWOOD ELEMENTARY
 NORTH JEFFERSON ELEMENTARY
 RANSON ELEMENTARY
 SHEPHERDSTOWN ELEMENTARY
 SOUTH JEFFERSON 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
 Director: John W. Puttre
 Email: jputtre@starbasewi.org
 Website: www.starbasewi.org

MILWAUKEE PUBLIC SCHOOLS

BROWN STREET ACADEMY
 CLARA MOHAMMED SCHOOL
 CLARK STREET SCHOOL
 CLEMENT J. ZABLOCKI SCHOOL
 DOWNTOWN MONTESSORI
 DR. BENJAMIN CARSON ACADEMY OF SCIENCE
 DR. MARTIN LUTHER KING JR. SCHOOL
 EARLY VIEW ACADEMY OF EXCELLENCE
 FAIRVIEW SCHOOL
 GILBERT STUART SCHOOL
 GRANTOSA DRIVE ELEMENTARY
 HAMLIN GARLAND
 JAMES FEINMORE COOPER SCHOOL
 JAMES WHITCOMB
 KESHENA PRIMARY
 LANCASTER SCHOOL
 MARY MCLEAD BETHUNE ACADEMY
 METCALFE ELEMENTARY
 MILWAUKEE ACADEMY OF CHINESE LANGUAGE
 MILWAUKEE SPANISH IMMERSION SCHOOL
 NATHANIAL HAWTHORNE SCHOOL
 NEESKARA SCHOOL

WALT WHITMAN ELEMENTARY
 WILLIAM GEORGE BRUCE 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
 Director: Germaletta Brown
 Email: germaletta.brown@starbasewy.org
 Website: starbase.wyo.gov

LARAMIE COUNTY SCHOOL DISTRICT #1

AFFLERBACH ELEMENTARY
 ALTA VISTA ELEMENTARY
 ARP ELEMENTARY
 BAGGS ELEMENTARY
 BUFFALO RIDGE ELEMENTARY
 COLE ELEMENTARY
 FAIRVIEW ELEMENTARY
 GILCHRIST ELEMENTARY
 GOINS ELEMENTARY
 HEBARD ELEMNETARY
 PIONEER PARK ELEMENTARY
 ROSSMAN ELEMENTARY

LARAMIE COUNTY SCHOOL DISTRICT #2

ALBIN ELEMENTARY
 BURNS ELEMENTARY
 CARPENTER ELEMENTARY
 PINE BLUFF ELEMENTARY

*Indicates location also coordinates a DoD STARBASE 2.0 Program.

“DoD STARBASE is amazing, it’s teaching science in a whole new way for kids to learn and understand what’s around us and what we have to learn.”

– OBEY WOLF, STUDENT AT BOBBY SHAW MIDDLE SCHOOL ATTENDING TEXAS STARBASE-HOUSTON





For more information contact:

Office of the Assistant Secretary of Defense/Reserve Affairs (OASD/M&RA)
1500 Defense Pentagon
Washington, DC 20301-1500
Phone: 703.693.8630

www.DoDSTARBASE.org