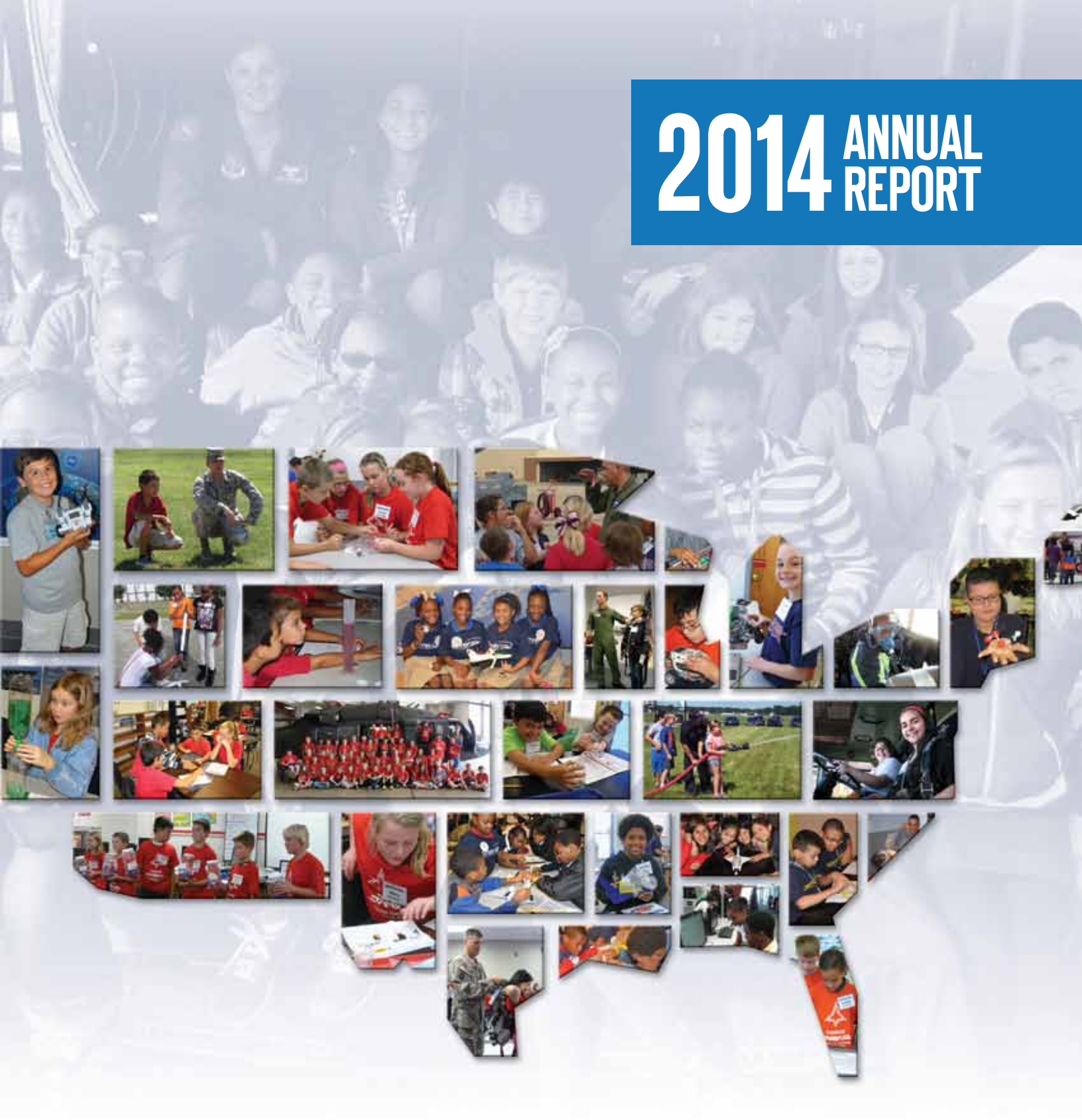
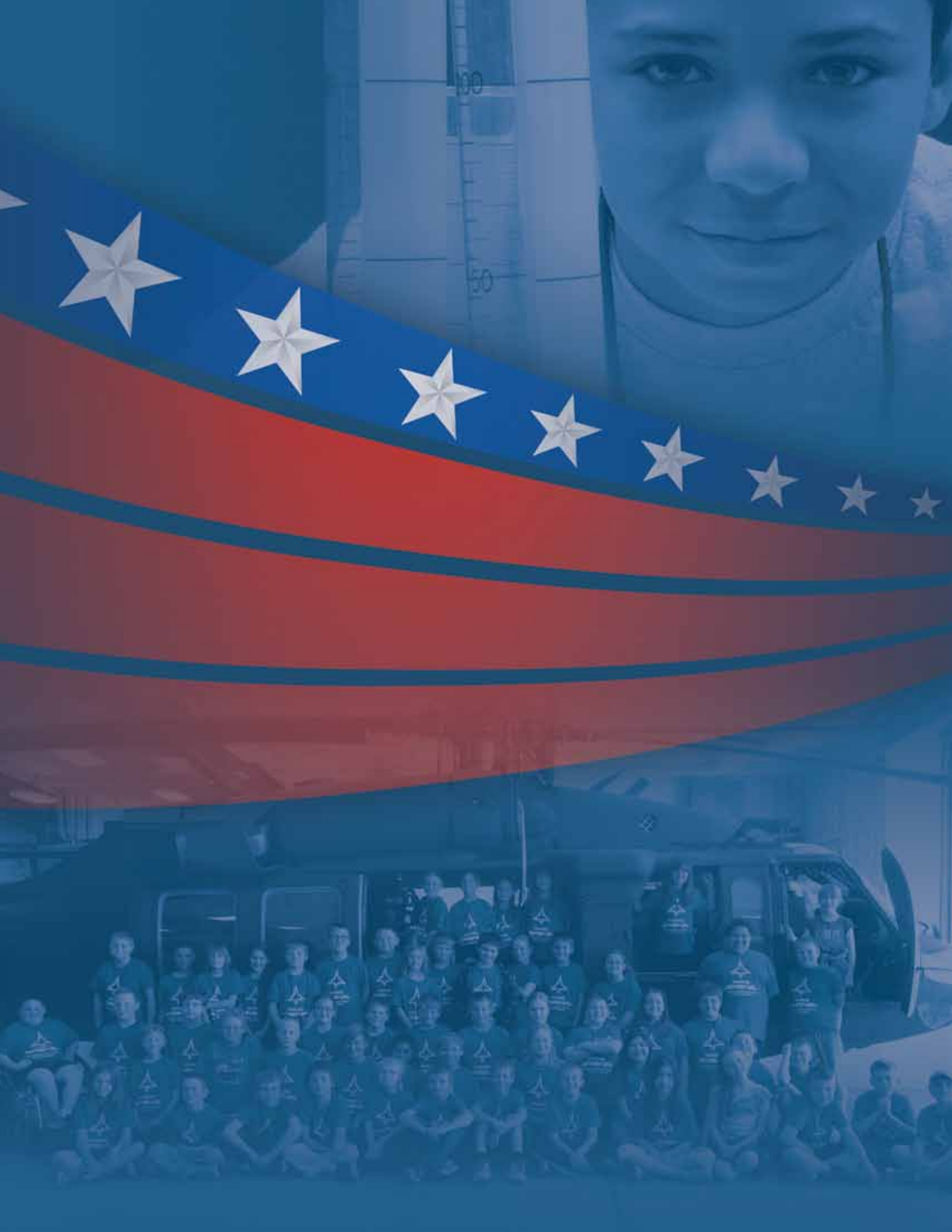
2014 ANNUAL REPORT



DoD STARBASE PROGRAM - CONNECTING WITH OUR COMMUNITIES

DoD STARBASE
A Department of Defense Youth Program



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A LETTER FROM DoD STARBASE GRADUATE, DANIEL TORRECAMPO

Dear DoD STARBASE Sacramento,

DoD STARBASE has been an important chapter in my life. This STEM program has sparked my interest in aeronautics and technology since attending Robla Elementary School in 2005-06. Thanks to DoD STARBASE, deciding on an academic focus came early; flight and engineering became my passion. Looking back, I can recall one of my most memorable 5th grade activities at DoD STARBASE in Sacramento, California.

My favorite lesson was flight mechanics. Learning about lift, drag, and the different control surfaces of an aircraft was surprisingly fun, and I always came back the following week eager to learn more. In addition to the lectures, I was also able to design my own aircraft with computer-aided design (CAD) software. I found this experience particularly helpful because it gave me more exposure to materials related to my current studies.

From day one at DoD STARBASE, our instructor emphasized the importance of teamwork. A profound moment for me was "The Acid River." This event tested our ability to collaborate using ingenuity and leadership skills. The concept of teamwork most definitely applies to my studies today. In fact, collaboration has been the key to my success as the former Aviation Club President in high school and for my current engineering coursework at the university level.

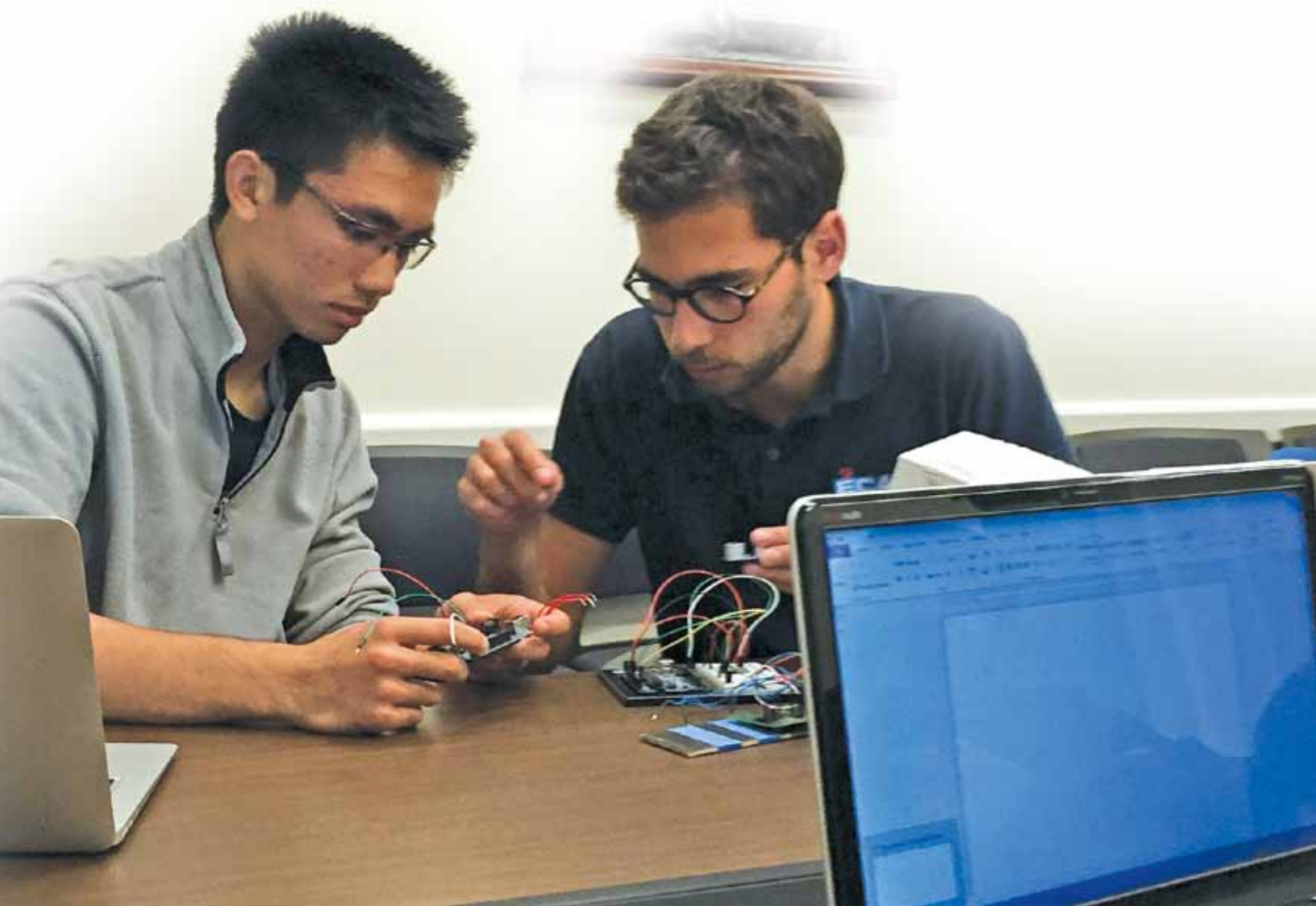
As a sophomore at UC Davis, I can whole-heartedly attribute my high aspirations for an aerospace career due to my experience at DoD STARBASE Sacramento. The engaging experiments, technology, teambuilding activities, and science instruction sparked my interest in aviation. I am currently majoring in Aerospace and Mechanical Engineering and pursuing a career in the aerospace defense industry. I would like to work for industry leaders such as Northrop Grumman or Lockheed Martin that focus on developing high performance aircraft to protect our soldiers and the interests of our nation.

Sincerely,

Daniel Torrecampo

Daniel Torrecampo attempts the "Acid River" activity while attending DoD STARBASE Sacramento as a fifth-grade student in 2006.

Daniel Torrecampo (left), 2006 DoD STARBASE Sacramento graduate, is currently attending University of California (UC), Davis, majoring in Aerospace and Mechanical Engineering. As a member of the UC Davis Advanced Modeling Aeronautics Team club, he will compete in the Society of Automotive Engineers (SAE) International Aero Design competition in April 2015. Competitors must program an Arduino module for a remotely controlled competition plane that will drop a payload on a target from certain altitudes. The module provides real-time telemetry of the plane's altitude, GPS coordinates, speed, and heading.



A LETTER FROM DoD STARBASE GRADUATE, DYLAN ONEY

Dear DoD STARBASE Oklahoma,

When I was in 5th grade at Creek Elementary in Muskogee, Oklahoma, my class attended DoD STARBASE at the old National Guard Armory just south of town. My fellow students and I were excited for the chance to get out of class and do real live science activities. I didn't realize it at the time, but I now believe that had it not been for DoD STARBASE, we would have gotten very little science education in elementary school due to the school emphasis on math and reading. That introduction to science was a very enlightening experience for me. I believe it was the beginning of an interest in all things science that has led me to where I am now. I would like to sincerely thank DoD STARBASE for the impact you have had on the direction of my life.

Even though it has been years since I attended DoD STARBASE, I still remember it being the first time I really thought about a lot of things. I discovered that things are made up of particles, atoms, molecules. I learned that a Bernoulli strip rose because it was interacting with something. I found out that air wasn't just empty space. DoD STARBASE was the first time that knowledge "clicked". That realization has stuck with me all these years. These things seemed like magic tricks at first, but I learned that crushing a can after heating up water inside it or sucking an egg into a bottle are both due to the same thing: pressure differentials. I discovered that you can view almost anything using the laws of physics and an understanding of chemistry to really understand what is going on. That type of overarching understanding of the natural world is exciting, and I can honestly say that for me it all started at DoD STARBASE.

And now, years later, I am a sophomore at Oklahoma State University (OSU) studying Chemical Engineering. Many of the concepts I am currently learning about in-depth were first introduced at DoD STARBASE. I am excited to be taking the knowledge I have gained over the years and applying it to accomplish something. As exciting as it is to learn, it is more exciting to know that you can use what you've learned.

In my home town of Muskogee, OK, nearly every 5th grader attended DoD STARBASE. It is a part of our collective memory and a shared experience that we all remember fondly. These memories reinforced my belief that STEM education in elementary school is very important. As I have gotten older, I have even participated in programs that have supported elementary STEM education. In high school, I helped when our Science Club went to elementary schools for science experiment presentations. I was also a mentor for the FIRST LEGO League Robotics club at my former elementary school. I am currently a member of Chemkidz which is part of OSU's American Institute of Chemical Engineers program to encourage STEM education at an early age. And most excitedly, this past summer I was able to work where it all began for me! I worked at DoD STARBASE as a summer intern. It was an incredible opportunity for me to be able to come back and support the program and work with young students who, like me so many years ago, are being introduced to a world of discovery and excitement.

I hope that DoD STARBASE can continue to excite and inspire students for years to come. Thank you for the impact you have had on me and countless other young people!

Sincerely,

Dylan Oney

DoD STARBASE Salina Kansas students study Newton's Three Laws of Motion

A LETTER FROM MAJOR GENERAL LEE TAFANELLI, THE ADJUTANT GENERAL OF KANSAS

The relationship between the Kansas National Guard and DoD STARBASE is a remarkable one. We are proud to help DoD STARBASE provide hours of hands-on learning for 4th, 5th, and 6th graders to apply science, technology, engineering and math concepts, or STEM to daily life. More than 200 school districts from 53 counties have participated in the Kansas DoD STARBASE program since 1993. With this amazing youth program, we have reached more than 60,000 students in Kansas.

The DoD STARBASE program addresses state standards for math and science curriculum, and is designed to help augment what schools with limited resources are able to offer students. The lessons and activities are structured to reach children of all learning styles. To accommodate the growing demand for additional STEM programs, they are working with local schools to provide DoD STARBASE 2.0 for middle school students, giving them a structured after school program.

The instructors at DoD STARBASE strive to help youth overcome adversity and understand the importance of obtaining jobs in the future. DoD STARBASE provides the opportunity for 4th-6th graders to be exposed to positive role models found on our military bases and installations. Pilots, aircraft mechanics, and other military personnel teach youth about working in STEM-related jobs. DoD STARBASE students in Kansas have the opportunity to tour a KC-135 refueling Jet, UH-60 Black Hawk, HET vehicles, and fire departments at their respective sites. Pilots and crew chiefs often aide in the instruction of Forces of Flight and Bernoulli's Principle. Our military volunteers teach students about the importance of their jobs, not only on base, but in the community as well.

With the tremendous impact DoD STARBASE has had on our local youth, I encourage the ongoing utilization of the DoD STARBASE programs to improve our children's learning experience and interest in science, technology, engineering and math. The Kansas National Guard will continue to support this great program, and we look forward to a positive future for DoD STARBASE and its students.

Sincerely,

Lee Tafanelli
Major General, The Adjutant General

A LETTER FROM GENERAL JANET C. WOLFENBARGER, COMMANDER, AIR FORCE MATERIEL COMMAND

As world class leaders in Science and Technology, the Air Force must continue to attract, develop, and retain a world-class science and engineering work force. DoD STARBASE enables just that. It guides and strengthens young students' knowledge of Science, Technology, Engineering and Mathematics (STEM) to allow a better understanding of how things function. This knowledge may, in the future, spark innovation that transforms our nation.

I am proud to share the importance of the partnership between DoD STARBASE, Air Force Materiel Command (AFMC), and the respective communities surrounding each campus. DoD STARBASE is a unique educational initiative that enables students to explore the wonders of STEM while building a foundation that prepares them to be life-long learners, a vital trait in an evolving technological era. The DoD STARBASE program provides students an alternative learning environment that awakens critical thinking skills in an advanced technical setting with the materials, tools and techniques that encourage inquisitiveness and creativity.

We have six DoD STARBASE campuses at or near AFMC bases. From the first moment the student steps into a DoD STARBASE facility, he or she is immersed into a welcoming and interactive learning environment. The rigorous five-day curriculum, coupled with hands-on experimentation, results in phenomenal learning moments guided by the positive interactions with DoD STARBASE instructors, scientists, researchers and other community role models.

The relationship between AFMC and DoD STARBASE is strong. We have an obligation to inspire and develop critical thinkers who will succeed in STEM-related careers. Our nation's future economic prosperity is closely linked with student success in STEM related careers. The United States Air Force continues to proudly support DoD STARBASE programs across the country, providing exceptional educational programs and opportunities to our youth.

JANET C. WOLFENBARGER
General, USAF
Commander, Air Force Materiel Command

VISION AND MISSION STATEMENTS OF DoD STARBASE

VISION STATEMENT

TO BE THE PREMIER DEPARTMENT OF DEFENSE YOUTH OUTREACH PROGRAM FOR RAISING THE INTEREST IN LEARNING AND IMPROVING THE KNOWLEDGE AND SKILLS OF OUR NATION'S AT RISK YOUTH SO THAT WE MAY DEVELOP A HIGHLY EDUCATED AND SKILLED AMERICAN WORKFORCE WHO CAN MEET THE ADVANCE TECHNOLOGICAL REQUIREMENTS OF THE DEPARTMENT OF DEFENSE.

MISSION STATEMENT

TO EXPOSE OUR NATION'S YOUTH TO THE TECHNOLOGICAL ENVIRONMENTS AND POSITIVE CIVILIAN AND MILITARY ROLE MODELS FOUND ON ACTIVE, GUARD, AND RESERVE MILITARY BASES AND INSTALLATIONS, NURTURE A WINNING NETWORK OF COLLABORATORS, AND BUILD MUTUAL LOYALTY WITHIN OUR COMMUNITIES, BY PROVIDING 25 HOURS OF EXEMPLARY HANDS-ON INSTRUCTION AND ACTIVITIES THAT MEET OR EXCEED THE NATIONAL STANDARDS.

DoD STARBASE CURRICULUM

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

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

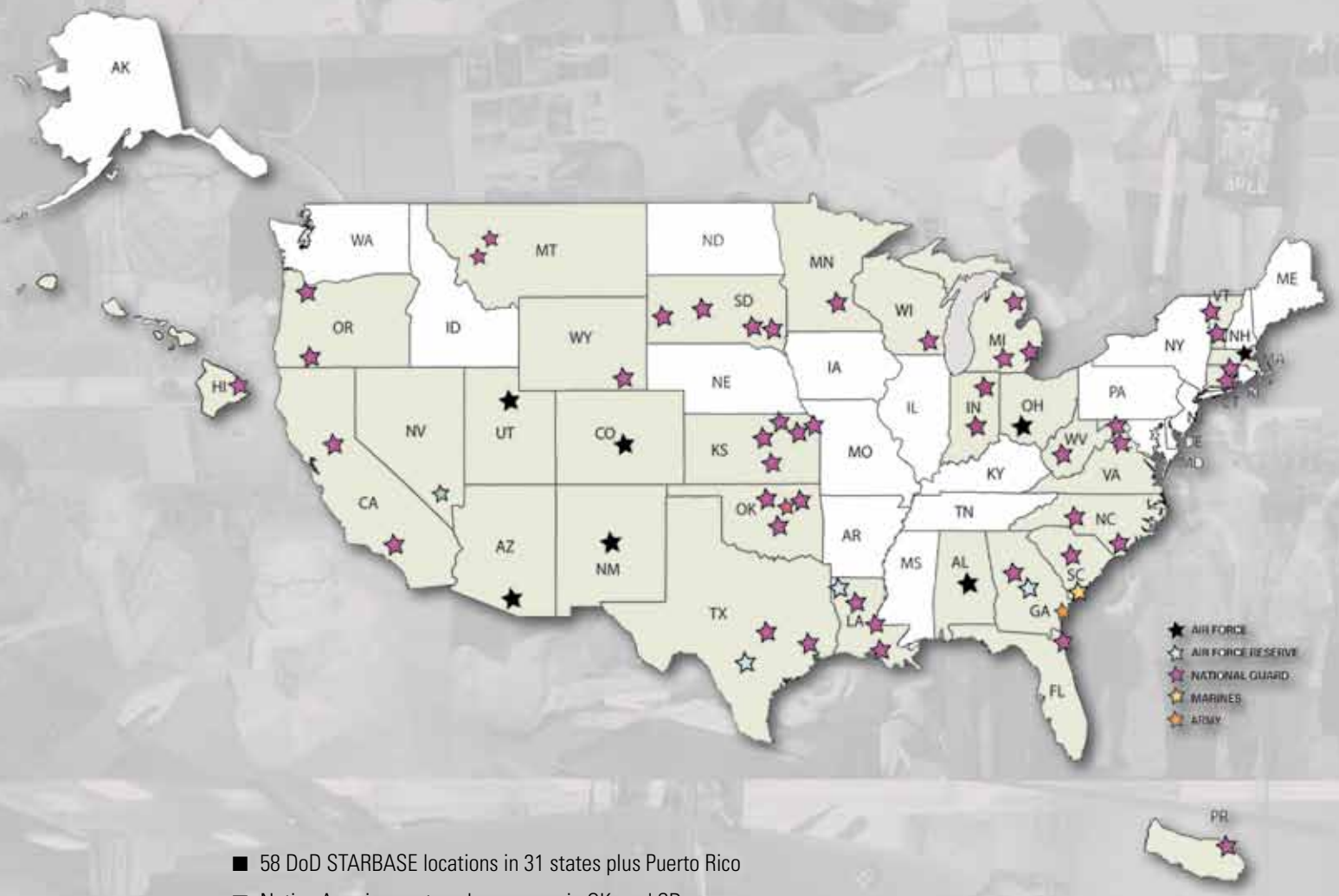
TECHNOLOGY
- A. Innovations
- B. Navigation and Mapping

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

MATHEMATICS OPERATIONS & APPLICATIONS
- A. Numbers and Number Relationships
- B. Measurement
- C. Geometry
- D. Data Analysis

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

DoD STARBASE AT A GLANCE



- 58 DoD STARBASE locations in 31 states plus Puerto Rico
- Native American outreach programs in OK, and SD
- Number of Students since 1993 878,294
- Number of students served in 2014 47,512
- Cost of program $22,888,000
- Average cost per academy $408,714

WESTINGHOUSE ELECTRIC AND STARBASE CONNECTICUT

Once a DoD STARBASE program is established in an area and the community hears about the positive impact on the students, they often want to get involved. Amanda Maguire, an employee at Westinghouse Electric and also a member of a local chapter of U.S Women in Nuclear (U.S. WIN), approached Melissa Vanek, DoD STARBASE Connecticut Director, to see how they could work together. Arrangements were immediately made for the U.S. WIN group to mentor a DoD STARBASE 2.0 robotics project and the volunteers were thrilled with what they saw. The excited mentors took their experience with DoD STARBASE Connecticut back to Westinghouse Electric and invited the North American Young Generation in Nuclear (NAYGN) to join in.

Another Westinghouse Electric employee, Andrea Dalton, who is a member of both U.S. WIN and NAYGN, said her belief in the strength of the DoD STARBASE program began with her first experience with the DoD STARBASE students:

> "Two of the three team members had used the robot before and knew how it worked and exactly what to do to successfully complete the course. Instead of diving right in and taking over, they asked the third team member, who was new to the afterschool program and had never used the robot before, if she would like to be the leader that day. She said yes, and the two more experienced team members helped her through the process step by step (and explained each step to me, too!). After a few tries, the team completed the course perfectly! I was so impressed with the great teamwork that I saw that day and with the supportive environment that was very clearly helping students build confidence as they learned about STEM!"

Andrea believes it is important to get young people excited about careers in the STEM fields and says that "Without programs like DoD STARBASE, many students in our region would not be exposed to these possibilities."

DoD STARBASE Connecticut has a strong collaboration with Westinghouse Electric and continues to partner with them on numerous events, including after school DoD STARBASE 2.0 programs, a STEM Olympiad, and a poster contest. The students benefit from the unique experiences and perspectives of each mentor, and the mentors feel good about their ability to offer support and guidance to the students. Andrea had this to say about volunteering, "I have received so much support from people and organizations during my career development. Volunteering with DoD STARBASE is a great opportunity to give back and help potential future engineers see what they are capable of."

DoD STARBASE 2.0 student assembles a robot

A LETTER FROM CALVIN BAKER, SUPERINTENDENT VAIL SCHOOL DISTRICT

November 18, 2014

To Whom It May Concern:

Innovation, community, and relationships are just a few of the underlying values and beliefs that have forged a partnership and commitment between the Vail Unified School District (VUSD) and the DoD STARBASE Arizona program. VUSD, a rural community in Southeast Arizona, serving over 11,000 students, has long been a top-ranked District in Arizona and is amongst the first districts to commit students to attend the DoD STARBASE program in Tucson. Vail understands learning extends well beyond the classroom.

Vail was approached in 2012 to partner with Davis-Monthan Air Force Base (AFB) to rebuild, strengthen, and re-launch the DoD STARBASE Arizona program. The district accepted the responsibility to ensure DoD STARBASE would continue not only for Vail students, but also for fifth graders across Tucson. Vail shared in the DoD STARBASE vision to "raise the interest and improve the knowledge and skills of at-risk youth in science, technology, engineering, and mathematics," and has confidence in DoD STARBASE and the STEM curriculum it provides to fifth graders across the nation. When a grant was awarded from the DoD to VUSD, strategic measures were taken to ensure the program was staffed with high caliber employees, held financially accountable, and maintained strong relationships among the District, DoD STARBASE, and Davis-Monthan AFB.

VUSD sought effective, certified, enthusiastic, and quality teachers to lead the program. As part of the hiring process, DoD STARBASE teachers participated in the District's New Teacher Induction program, where they received training in research-based instructional practices, lesson plan design, classroom management, and active engagement strategies. These instructional practices and the DoD STARBASE curriculum intertwine to create the optimal learning environment.

DoD STARBASE teachers and the director are observed and evaluated for efficacy semiannually to ensure high quality instruction in the program. Although the DoD STARBASE curriculum differs from the average teaching calendar of the elementary school, the high academic expectations of the district are translated into the DoD STARBASE classroom. Learning objectives are posted, essential vocabulary is reinforced, and lesson delivery aligns with the essential elements of instruction. The highly trained Vail teachers, coupled with the DoD STARBASE curriculum, create an enthusiasm for STEM related classes which transfers back into their regular education classroom.

Another area VUSD supports DoD STARBASE Arizona is through the business office to facilitate payroll, benefits of employees, and allocation of funds awarded by the grant. VUSD follows the guidelines of the grant and the state of Arizona's procurement regulations and financial management systems. Having a strong and direct partnership with the district's business office, the DoD STARBASE program is assured accountability in spending to meet the needs of students. The DoD STARBASE Director follows the protocol set forth by the district in regards to ordering and purchasing supplies. Each quarter the DoD STARBASE director submits a report detailing the expenditures and bills the Department of Defense for reimbursement to the district. The team takes great care in maintaining fiscal responsibility.

Creating and maintaining strong relationships between the Vail School District, DoD STARBASE, and Davis-Monthan AFB are foundational for the success of the program in Arizona. Davis-Monthan leadership has been attentive, generous, and welcoming to the staff and students of DoD STARBASE. The Wing Commander and his support team worked collectively with Vail to re-launch the program in 2012. Face-to-face meetings, accountability, and open communication have solidified the relationships. Now, in our second year under new leadership and partnership with the district, we serve more than 60 fifth grade classes and over 1,700 students from eight school districts.

We look forward to continuing our partnership with DoD STARBASE and Davis-Monthan AFB in providing meaningful and lasting educational opportunities for children.

Sincerely,

Calvin Baker
Superintendent

State Senator Elaine Bowers

A LETTER FROM ELAINE BOWERS, KANSAS STATE SENATOR

It has been a great privilege of mine to be involved with DoD STARBASE for the past six years. Being a member of the Kansas STARBASE Foundation Board has given me the opportunity to help spread the word on how important it is to have these STEM programs available to our youth. The U.S. Department of Defense and Kansas National Guard has formed a great relationship with DoD STARBASE, and with their help, they are able to raise students' interest in skills related to science, technology, engineering, and math.

The DoD STARBASE program provides minds on hands on learning for 4th, 5th, and 6th graders to help them understand the importance of STEM and why it is so critical to their future. Since 1993, the DoD STARBASE program has reached nearly 60,000 students representing nearly 200 of the 411 school districts in Kansas. It is so important for the program to reach as many students as possible. We are working tirelessly to expand the number of schools that participate.

It has been a great mission of mine to ensure that all of the elementary schools in Senate District 36 attend a DoD STARBASE academy, and how exciting it has been to see how the program has developed throughout the years. The Senate District I represent in north central Kansas is predominately rural. It is so important that those rural students are offered similar opportunities as those who reside in a large metropolitan area. It was my distinct honor to have successfully introduced Senate Resolution 1769 in the Kansas Senate that recognized the DoD STARBASE program and its success not only in my district but throughout the state of Kansas.

The National Guard is a valuable resource for sparking interest in STEM related fields. We are so thankful for the Kansas National Guard recognizing the value of educating our state's most valuable asset, our youth. The DoD STARBASE program is always ready to introduce new and improved technology to the children attending, which is critical for the schools that are unable to provide these opportunities. I have been lucky enough to experience these amazing activities with my own kids that have attended DoD STARBASE.

I am proud to have served on the Kansas DoD STARBASE Foundation Board as the program has had a significant impact on Kansas students, and I hope to see its' continued success in the future.

Sincerely,

Elaine Bowers

State Senator Elaine Bowers
Kansas Senate District 36
State of Kansas

A LETTER FROM DR. ANGI WILLIAMS, SUPERINTENDENT, GALENA PARK INDEPENDENT SCHOOL DISTRICT, GALENA PARK, TEXAS

To Whom It May Concern,

It is with much gratitude and respect that I thank DoD STARBASE Houston for the impact it has upon our students in the Galena Park Independent School District. DoD STARBASE Houston was introduced in Galena Park ISD in 2004 with one elementary school and 30 students. In ten years, we have served approximately 800 fifth grade students in our district and currently have over 200 fifth grade students participating in DoD STARBASE in 15 elementary schools. This year, we were very pleased to expand our program with DoD STARBASE 2.0 which allowed 20 sixth grade students to continue with their DoD STARBASE experience. The DoD STARBASE 2.0 program is held after school at Cobb 6th Grade Campus and has seen many successes since beginning in October 2014.

The DoD STARBASE and DoD STARBASE 2.0 programs have provided unique opportunities for our students in the areas of science, technology, engineering and mathematics, (STEM). Our students have been able to experience science, technology, engineering and math in a way that the classroom alone would not be able to provide. The students have experienced a virtual mission to Mars at the Challenger Learning Center and on-site tours of the National Guard, Coast Guard or NASA aviation facilities, demonstrating the use of STEM in today's work place.

Classroom experiences are inquiry-based and allow students to discover ideas in STEM. They are then able to design, conduct and evaluate their own experiments leading to a deeper understanding of content as well as a desire to know more. As one student said, "I now want to be a biologist. I wish I could have STARBASE every day." The excitement for content in STEM comes from the students' experience that cannot be offered in the everyday science or math classroom.

The DoD STARBASE experience extends to our teachers as well. They see students' excitement for the content and want to carry that over to the classroom daily. Tiffany Benitez of Havard Elementary said "I plan to utilize the additional resources provided by DoD STARBASE. The program provides great support

and motivation for students with aspiring careers in science. I would like more students to attend and am hoping to return each year if possible. It is a wonderful opportunity for our students. Please keep the program going!" I couldn't agree more.

On behalf of our students and teachers, thank you for bringing DoD STARBASE and DoD STARBASE 2.0 to Galena Park ISD. We are very blessed to have this partnership and look forward to many more years of the program helping to support STEM education beyond the classroom.

Sincerely,

Angi Williams, Ed.D.
Superintendent of Schools

DoD STARBASE OKLAHOMA BUILDS INDUSTRY COALITION THAT ALIGNS WITH THE US2020 PRESIDENT'S COMPETITIVE GRANT

"In 2018, there will be three million job openings in science, technology, engineering and math (STEM) fields in the United States. But unless something dramatic changes, there will be only about one million Americans with the skills necessary to take those jobs. In essence, our nation faces an enormous skills gap, and these jobs may very well go overseas instead of being filled here at home."

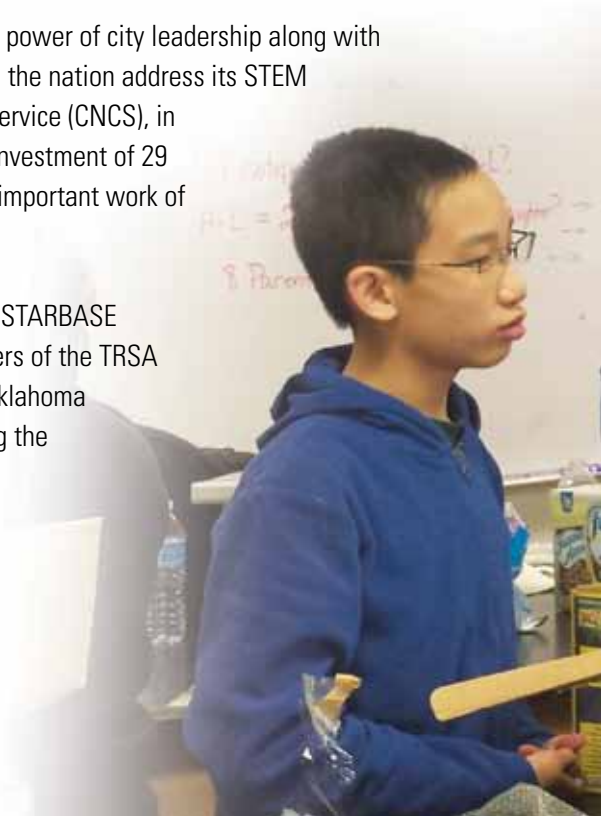
–The Huffington Post- May 28, 2014.

In recognition of this crisis, the White House called on America's civic and corporate leaders for innovative ideas, and what emerged was US2020, a bold initiative formed through a partnership of leading education nonprofits and business leaders. The goal: one million science, technology, engineering and math (STEM) professionals spending 20 hours or more a year with students in hands-on, project-based learning by the year 2020.

The concept is simple. Students can't do what they can't see. STEM mentorship helps open the eyes of students from every background to the possibilities that a career in the technology industry might hold. It's about more than rote memorization of facts and figures; it's about igniting a lifelong love for STEM. It takes many forms, from participating in robotics competitions and shadowing STEM professionals to seeing a research and development lab in action.

The US2020 competition was designed to tap into the convening power of city leadership along with the potential for national service to play a leading role in helping the nation address its STEM education needs. The Corporation for National and Community Service (CNCS), in partnership with US2020 and Citizen Schools, has made a total investment of 29 AmeriCorps Volunteers In Service To America (VISTAs) to do the important work of engaging communities in this STEM mentoring initiative.

In Oklahoma, the Tulsa Regional STEM Alliance (TRSA) and DoD STARBASE Oklahoma, who became one of the first Guiding Coalition members of the TRSA in June 2013, immediately sprang into action. DoD STARBASE Oklahoma Executive Director, Mrs. Pamela Kirk, was instrumental in guiding the application team, offering their DoD STARBASE 2.0 model as a template for implementing STEM mentorship in the Tulsa region.



In a testament to Tulsa's collaborative spirit and the strong leadership within TRSA, an application was submitted less than 48 hours after the announcement of the competition was made. The DoD STARBASE 2.0 model was a good match for the high-impact STEM mentorship defined in the US2020 City Competition which challenged communities to develop innovative mentoring plans in STEM fields for students. With strong TRSA support and DoD STARBASE Oklahoma involvement, Tulsa became one of the 13 finalists in the US2020 City Competition.

A LETTER FROM OKLAHOMA INNOVATION INSTITUTE

Oklahoma Innovation
INSTITUTE

December 13, 2013

From: George Louthan
Oklahoma Innovation Institute
100 S Cincinnati Ave, Suite 1405, Tulsa, Oklahoma 74103

To: Pamela J. Kirk
STARBASE OK

Dear Pamela:

On behalf of the Oklahoma Innovation Institute and the Tulsa Regional STEM Alliance, and as the lead point of contact for Tulsa's US2020 City Competition entry, I am writing to thank you for your support both personally and in your capacity as director of STARBASE Oklahoma. I believe that STARBASE OK's role as a member of our Guiding Coalition was instrumental to our success in our round 1 application, which resulted in Tulsa's being named one of 13 finalist communities out of 52 applicants.

The DoD STARBASE 2.0 program meets all the criteria for quality articulated by US2020's definition of high-impact mentoring by focusing on hands-on experiential learning, multi-session experiences, engagement of STEM professionals as mentors, service to girls and students of color, and high quality measurement of results. Our team believes that DoD STARBASE is perfectly positioned to provide leadership and a model for high-impact mentoring to students in the Tulsa community.

Sincerely,

George Louthan,
Director, Tandy Supercomputing Centcr
Oklahoma Innovation Institute

MANYMENTORS – A DOD STARBASE PARTNER IN CONNECTICUT

ManyMentors is a non-profit organization founded by two female science, technology, engineering and math (STEM) students who saw a need for accessible STEM peer mentoring within underrepresented groups. They found a kindred spirit in DoD STARBASE Connecticut. Keshia Ashe, ManyMentors CEO and co-founder, says that "DoD STARBASE Connecticut provides critical programming to the students in East Hartford to get engaged in STEM, and they have been an invaluable partner to ManyMentors."The goals of both organizations are aligned, and each benefits from the other's support.

This partnership has extended to the DoD STARBASE Connecticut 2.0 program. Julian Rose, a ManyMentors volunteer and UConn Biomedical Engineering major, leads one of the Connecticut 2.0 clubs. Julian started volunteering with DoD STARBASE Connecticut because he noticed that many students lack the research skills necessary to advance in the STEM fields. He passionately believes that if students learn these research skills, they will be better prepared for future STEM careers. He also believes that mentors are absolutely necessary to help support the students along that path.

As such, Julian put together a curriculum to help the students understand how to research by using the STEM topic of biomedical technology, and he is also leading the DoD STARBASE Connecticut 2.0 FIRST LEGO League team in designing an app for the research portion of their competition.

Gazment Sosoli is another ManyMentors volunteer, and he has special reasons for mentoring the Connecticut 2.0 program. Gazment, currently an engineering student at UConn, went through the DoD STARBASE program when he was in 5th grade. He fondly remembers his time at DoD STARBASE and attributes his decision to attend a STEM themed high school to his participation in the DoD STARBASE program. "DoD STARBASE first introduced me to learning about science and engineering and how cool it was." Gazment goes on to say that from then on, "I came to like things about science."

The positive impact that DoD STARBASE has on students such as Gazment is now increased with the positive impact of STEM mentors like both he and Julian have on the students as they participate in the extended activities of DoD STARBASE 2.0. Mentors are invaluable to the success of the DoD STARBASE 2.0 program, and Gazment and Julian are making a difference.

Julian Rose (back row, second from left) and the rest of the CT DoD STARBASE 2.0 mentors with the proud STARBASE Lions FIRST LEGO League team at the end of the season.

DOD STARBASE AWARDS & RECOGNITIONS

Governors from Kansas and Minnesota are among the latest local, state and national government and community officials to recognize the value of the DoD STARBASE program. In proclamation of DoD "STARBASE Day" in Kansas, Governor Sam Brownback, cited DoD STARBASE as being "distinguished for focusing on children who may have fewer opportunities than others, and encourages them to further their education by exposing them to science, technology, engineering and math." In Minnesota, Governor Mark Dayton proclaimed DoD STARBASE Minnesota Day by recognizing the Department of Defense "vision and resources to DoD STARBASE Minnesota and across the country that improve the academic and future success of our youth, leading to the socio-economic health and vitality of our cities."

STATE OF KANSAS

PROCLAMATION BY THE GOVERNOR

TO THE PEOPLE OF KANSAS, GREETINGS:

WHEREAS, the citizens of Kansas are honored to recognize Kansas STARBASE, the U.S. Department of Defense and Kansas National Guard's youth educational program, for its outstanding dedication and commitment to the children of the state of Kansas; and

WHEREAS, the Kansas STARBASE program throughout its 21 year history has shown a tireless effort to promote higher student test scores in math and science; and

WHEREAS, the Kansas STARBASE program promotes positive attitudes among young children, and cultivates job-winning skills; and

WHEREAS, Kansas citizens can take pride in knowing 57 Kansas counties and more than 57,200 Kansas children have been directly served through the services of Kansas STARBASE; and

WHEREAS, Kansas STARBASE is distinguished for focusing on children who may have fewer opportunities than others, and encourages them to further their education by exposing them to science, technology, engineering, and math; and

WHEREAS, Hundreds of Kansas Army and Air National Guard members have volunteered their time and shared their expertise with the STARBASE students to demonstrate the importance of staying in school and making positive life choices:

NOW, THEREFORE, I, Sam Brownback, GOVERNOR OF THE STATE OF KANSAS, do hereby proclaim March 20th of 2014, as

STARBASE Day

in Kansas and urge all citizens to join in this observation.

DONE: At the Capitol in Topeka under the Great Seal of the State this 20th day of March, A.D. 2014

BY THE GOVERNOR:

Secretary of State

Assistant Secretary of State

STATE *of* MINNESOTA

Proclamation

WHEREAS: Since 1993, STARBASE Minnesota has educated and inspired over 48,000 urban youth in science, technology, engineering, and math through innovative and engaging curriculum and instruction in the state-of-the-art facility at the 133rd Airlift Wing of the Minnesota Air National Guard; and

WHEREAS: The Department of Defense STARBASE has provided vision and resources to STARBASE Minnesota and communities across the country that improve the academic and future success of our youth, leading to the socio-economic health and vitality of our cities; and

WHEREAS: STARBASE Minnesota has partnered with and leveraged the resources of the Minnesota National Guard, the State of Minnesota, Minneapolis and Saint Paul Public Schools, and local STEM corporations and other STEM nonprofit partners in the community to expand programming and the capacity to prepare the next generation of highly-skilled employees and productive citizens; and

WHEREAS: The State of Minnesota has provided additional financial investment to enhance STARBASE Minnesota's programs and outreach across the State of Minnesota.

NOW, THEREFORE, I, MARK DAYTON, Governor of Minnesota, do hereby proclaim Tuesday, September 9, 2014, as:

STARBASE MINNESOTA DAY

in the State of Minnesota.

IN WITNESS WHEREOF, I have hereunto set my hand and caused the Great Seal of the State of Minnesota to be affixed at the State Capitol this 8th day of September.

GOVERNOR

SECRETARY OF STATE

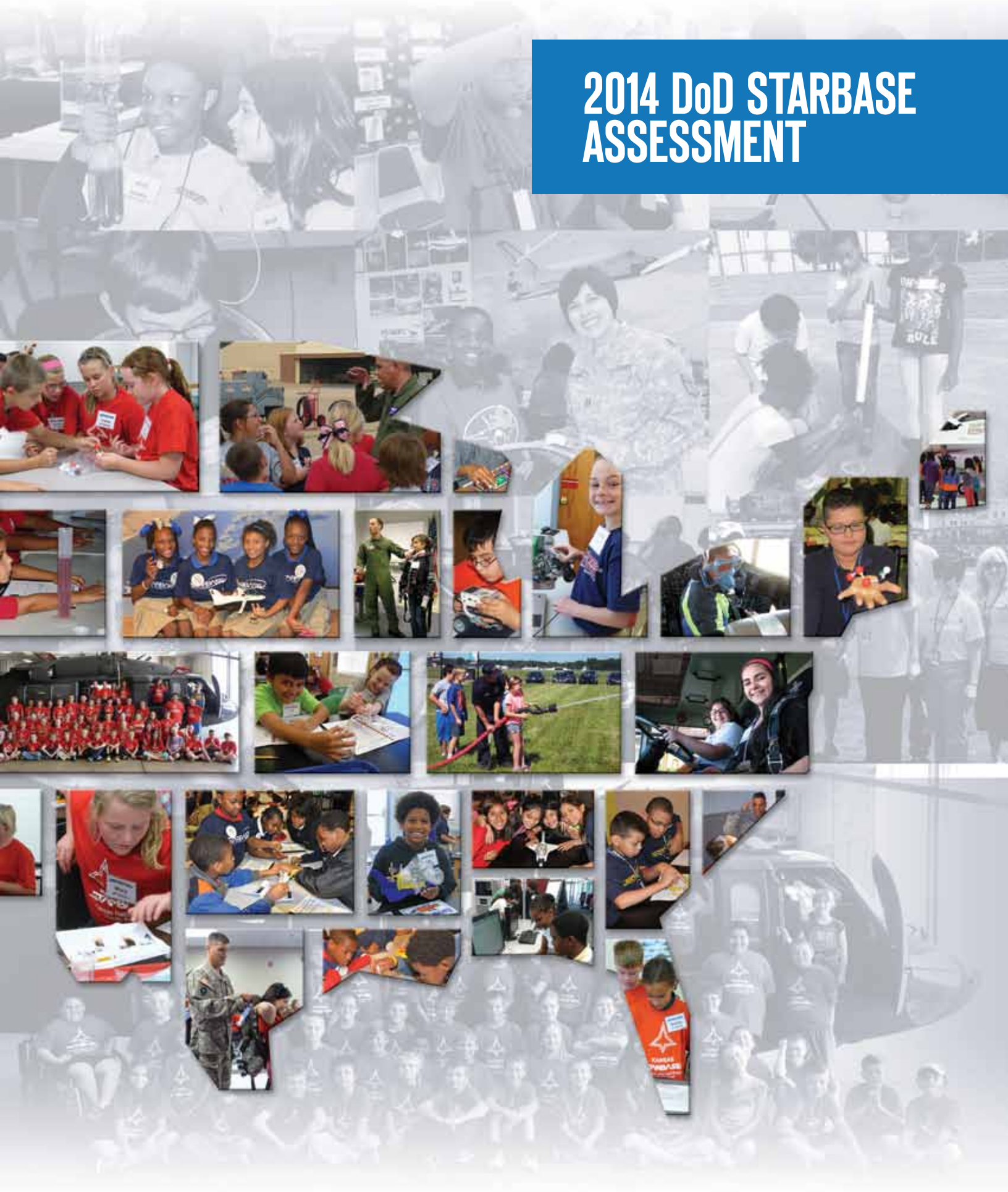
DoD STARBASE AWARDS & RECOGNITIONS

The DoD STARBASE Program received the 2014 Air Force Association (AFA) Chairman's Award for Aerospace Education Achievement for sustained outreach and support of AFA education missions which includes support to STEM programs that lead to strengthening the nation's ability to meet its defense needs with technological superiority. This special award recognizes sustained achievement as an advocate for STEM (science, technology, engineering, and mathematics) education and/or support and promotion of aerospace education. This is not an annual award, but one that is only awarded when a deserving recipient is identified by the AFA Aerospace Education Council.

The AFA honored the DoD STARBASE's accomplishments at the Anniversary Reception and Dinner held in National Harbor, Maryland in September in conjunction with AFA's 2014 Air and Space Conference and Technology Exposition. Mr. Richard Wightman, Acting ASD-RA and Ms. Barbara Koscak, the co-founder of the DoD STARBASE Program were invited to accept this educational outreach award. Also attending were Senator and Mrs. Carl Levin and Mr. Ernie Gonzales, OSD-RA. Maj Gen (Ret.) Jerry White, AFA Aerospace Education Vice Chairman, presented the award on behalf of the AFA.

Pictured from left to right: Maj Gen (Ret.) and Mrs. Jerry White, Barbara Koscak, Secretary of the Air Force Deborah Lee James, Richard Wightman, and Ernie Gonzales.

2014 DoD STARBASE ASSESSMENT



2014 ASSESSMENT

EXECUTIVE SUMMARY

Title 10, United States Code Section 2193b, authorizes the DoD STARBASE program and requires the Secretary of Defense to submit an annual report to Congress on the conduct and effectiveness of the program.

The FY 2014 assessment process obtained information via knowledge and attitudinal tests, structured interviews, questionnaires, program visits, and conversations with program participants. Assessments, interviews, and/or questionnaires were received from 1,106 students, 1,076 teachers, and all DoD STARBASE directors. A brief overview of the assessment highlights some of the key findings of the analysis.

Highlights

STUDENT ASSESSMENT

- The academy participation rate in the annual Student Assessment survey was 84%.
- 2,212 surveys were included in the study (1,106 matching surveys pre- to post-program).
- Most respondents were in the fifth grade (89%) and between 10 and 11 years old (90%).
- Approximately 51% of respondents were girls.
- 42% of the attitudinal items improved significantly pre- to post-program. Some of the largest shifts occurred in attitudes about the military, confidence towards learning, and future careers.
- Performance on knowledge items increased significantly (+5.14 points) from pre- to post-program.
- Chemistry Sciences showed the largest curriculum area improvement (increase of +1.86 points).
- 62% increase in students applying Bernoulli's Principle correctly.
- 61% increase in students knowing the correct composition of air.
- Students identified as high performers scored higher on the pre- and post-knowledge assessment and attitude survey compared to their low performing counterparts. The largest gap was on the knowledge assessment where:
    - High performers improved by 8 points pre- to post-program, and
    - Low performers improved by .75 points pre- to post-program.
- Those entering the program with low military attitudes had lower post-program knowledge scores, lower knowledge gain scores, and less favorable attitudes for both the pre- and post-program than those entering the program with high military attitudes.
- Both genders showed significant knowledge gains. There were no differences across gender for the attitude composite score, but the gender groups differed on 12 specific items.
- Students with prior knowledge of and experience with DoD STARBASE responded more favorably to attitudinal items than those with no prior knowledge or experience.
- Increased student age correlates positively with liking science and technology, goal achievement, working better in groups,

creativity and military attitude. Older students might thus serve as positive role models for younger students, and therefore might be encouraged to participate in collaborative learning with them.

TEACHER ASSESSMENT

- Almost 100% of the teachers report that the DoD STARBASE content and concepts help them reach their state requirements either directly (95.0%) or indirectly (4.6%).
- Nearly 91% have recommended DoD STARBASE to others.
- Almost 60% utilize the DoD STARBASE materials in their classroom and more than a third (36.9%) use DoD STARBASE take home activities beyond the classroom.
- Teachers were asked to list other relevant programs in their school and community to sustain student STEM interest following DoD STARBASE attendance.
    - Over 35% of 147 teachers who identified specific programs or sponsors indicated the availability of after school programs related to STEM.
    - Nearly 60% of 480 teachers indicated the focus of these programs to be science programs and clubs.
    - The main program content mentioned (19% of 190 comments) was the DoD STARBASE program itself.
    - The most cited activities available after attending DoD STARBASE were Science Fair participation (45%) and Robotics challenge (24%).

DIRECTORS' QUESTIONNAIRE

DoD STARBASE Program

- The 16-day Government shutdown in October, 2013 resulted in significant personnel losses.
- DoD STARBASE programs are located at a variety of military installations including: Air Force (8), Air Force Reserve (4), Air National Guard (32), Army (1), Army National Guard (12), and Marine Corps (1) sites.
- The DoD STARBASE program conducted 1,930 classes this year serving 893 schools across the country in 298 school districts. Of the 893 schools participating in the program, 75% were Title 1 eligible schools.
- The majority of the DoD STARBASE locations (80%) serve school districts within a 50-mile radius of their program site.
- The majority of DoD STARBASE students (88%) are fifth graders.
- Males outnumber female students 51% to 49% respectively.
- The average instructor to student ratio for FY 2014 was 1:15.
- The average class size for FY 2014 was 24 students.
- The not Hispanic or Latino, Black or African American, and White student populations are the predominate participant groups at 76%, 20%, and 55% respectively.

Continued on next page

EXECUTIVE SUMMARY (Continued)

- The percentage of American Indian or Alaskan Native, Black or African American, and Hawaiian Native or Pacific Islander participant population is higher at DoD STARBASE than at U.S. public schools.
- Contractor affiliations made up the majority (59%) of the DoD STARBASE employment relationships.
- There were 63 staff changes out of 258 staff positions in FY 2014 for an overall turnover rate of 23%, which is significantly higher than the 14% average over the years 2004 - 2012.
    - The majority (34 departures) were at the instructor level. Director positions were the next highest with seven departures.
    - Directors reported that of those staff members who left the program, 38% indicated the reason for their decision to leave DoD STARBASE was because of challenges presented at the start of the fiscal year, while 14% cited personal reasons impacted their decision to leave.
    - Of these positions, 18 remained unfilled at the end of FY 2014.
- DoD STARBASE locations documented a total of 5,223 volunteers who contributed a total of 63,527 hours to the program during FY 2014.
- 79% of the DoD STARBASE locations provide additional curriculum materials to schools/teachers, 46% provide training to local teachers, and 57% have relationships with nearby teacher colleges or training programs where student teachers may obtain practicum hours at DoD STARBASE.
- 72% of the DoD STARBASE locations report that they have relationships with other outreach programs in their area including: STEM Forward, FIRST Robotics, Project Lead the Way, Civil Air Patrol, Girl Scouts and Boy Scouts.
- The average operating costs per location was $408,714.

DoD STARBASE 2.0 Program

- Large staff turnover rates and a late start to the program year due to the 16-day Government shutdown severely impacted DoD STARBASE staffing, forcing five locations to discontinue 2.0 programs and focus solely on their basic DoD STARBASE program.
- 14 DoD STARBASE locations reported coordinating a total of 25 DoD STARBASE 2.0 programs in 13 states.
- 24 districts and 43 schools partnered with DoD STARBASE to operate a 2.0 program.
- The greatest numbers of 2.0 programs (10 programs and 17 clubs) were sponsored by the Air National Guard where the majority of the DoD STARBASE programs are also located.
- The average student retention rate within the 2.0 program was 86%. Of the students who did not complete the program 32% were females and 68% were males.
- Former DoD STARBASE students made up 57% of the DoD STARBASE 2.0 program participants.
- The 2.0 program participants included 40% females and 60% males.
- The average student attendance at 2.0 club meetings was 20 students.
- There was a 1:3 mentor to student ratio within the 2.0 program.
- The students are mostly 6th and 7th graders (47% and 23%, respectively) although some are from other grades.

- All ethnic and racial groups of students are represented at DoD STARBASE 2.0.
- Most (63%) mentors are military or other DoD affiliated professionals.
- The 25 programs are split equally in how they received funding. As such, 24% receive federal funds, 24% private funds, 24% both federal and private funds, and 28% no funding.

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
- DoD STARBASE 2.0 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 for Reserve Affairs (OASD/RA). A Congressional Appropriation to the Department of Defense (DoD) funds the operation of DoD STARBASE. Synergy between the local military base, schools, and surrounding communities enhances and strengthens the program.

During FY 2014 the DoD STARBASE program conducted 1,930 classes serving 893 schools across the country in 298 school districts. DoD STARBASE locations may schedule the 25 hour program over five consecutive days or on a weekly basis over five consecutive weeks. Most DoD STARBASE locations use the weekly schedule. Over 47,000 students attended the five-day program in FY 2014. During the summer months many DoD STARBASE locations also offer a variety of supplemental programs to area youth in grades K–12. Supplemental programs provided in FY 2014 include: aerospace education, robotics instruction, and engineering instruction. In FY 2014, 25 DoD STARBASE locations offered some type of supplemental program serving an additional 6,145 youths.

The 16-day Government shutdown in October, 2013 resulted in significant personnel losses. The shutdown also delayed the start of the program year for many DoD STARBASE locations. As a result the number of students, schools and districts served is significantly lower in FY 2014 than FY 2013.

THE MILITARY

The military houses and supports DoD STARBASE programs.[1] Programs are located at various military installations including: Air Force (8 locations), Air Force Reserve (4 locations), Air National Guard (32 locations), Army (1 location), Army National Guard (12 locations), and Marine Corps (1 location) installations. Eighteen locations were lost including all of the Navy locations (15), and three Air National Guard locations. These closed DoD STARBASE sites have not reopened.

The majority of the DoD STARBASE locations (80%) serve school districts within a 50-mile radius of the programs' duty station. Locations that extend beyond a 50-mile radius generally have made special accommodations to reach more students such as those in the Native American outreach programs. DoD has a wealth of expertise in STEM education and provides the DoD STARBASE locations access to resources and services that most school systems cannot offer. OASD/RA provides state of the art equipment and technology, but military bases provide classroom space, utilities, and security. The base may also provide additional equipment, janitorial services, maintenance, travel services, and IT support. DoD STARBASE operates at the discretion of the base commander who may view this program as a venue for military personnel to positively interface with their community. Military personnel are encouraged to volunteer their time to the program as mentors, expert speakers, tour guides, and other support activities.

Military volunteers who serve as guest lecturers explain the use of STEM in different careers and act as base tour guides highlighting the application of STEM concepts in their missions. Military volunteers provide unique, informative, and highly varied experiences for the students. 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.

[1] Most of the academies operate within the confines of a military base. A few operate in an affiliate site contiguous to the military installation, but under the property management of the base.

THE SCHOOL DISTRICT

Students from local school districts surrounding the host military installation participate in the DoD STARBASE program. In FY 2014, 298 school districts participated in the DoD STARBASE program. This is a 28% decrease from FY 2013. Participating schools include schools from Title 1 eligible, public, private, urban, and rural districts (see Table 1).

Table 1:
DoD STARBASE 2014 Participating School Demographics[2]

School Type	Number of Schools	Percentage of Total Schools
Title 1 Eligible	678	75
Public	766	85
Private	102	11
Urban	621	69
Rural	226	25
Total Schools	901	100

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

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.

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

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 grade level, class size, scheduling hours, curriculum topics and activities, the desired demographics, documentation requirements, testing, and program location. If DoD STARBASE directors wish to deviate from the DoDI requirements, they must submit a written request to OASD/RA.

DoD STARBASE Students

GRADE LEVEL

The DoD STARBASE program is authorized to serve students in kindergarten through grade twelve. Because of the dramatic decline in math and science performance by U.S. students after the fourth grade, the DoD STARBASE curriculum and standards are developed for the fifth grade level. Some locations (23) receive students in other grade levels in addition to the fifth grade, but most DoD STARBASE students are fifth graders (88%). The table below (see Table 2) shows the number of students at each grade level.

Table 2:
Grade Level of FY 2014 DoD STARBASE Students

Grade Level	Number of Students
Kindergarten through 2nd Grade	0
3rd Grade	1
4th Grade	2,353
5th Grade	42,074
6th Grade	3,022
7th Grade and Above	62

The total number of students served in FY 2014 was 47,512 The government shutdown delayed the start of the program year for many DoD STARBASE locations. Despite the challenges presented, 56% of the FY 2014 DoD STARBASE locations were able to receive 28 or more classes.

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 2014 program year was 1:16. The average class size for the FY 2014 program year was 24 students. Five locations reported averages below 20 students.[3] The highest reported average class size was 34 students.

[3] DoD STARBASE sites in Vermont, South Dakota-NOVA, Virginia, and Minnesota reported averages of less than twenty students.

ETHNIC AND RACIAL COMPOSITION

The following table shows the ethnic and racial composition of the DoD STARBASE student population (see Table 3).[4] The not Hispanic or Latino, Black or African American, and White student populations are the predominate groups at 76%, 20%, and 55% respectively.

Table 3:
Ethnicity and Racial Composition of DoD STARBASE Student Population FY 2014

Ethnicity	Percentage
Hispanic or Latino	19%
Not Hispanic or Latino	76%
Ethnicity Unknown	5%
Race	
American Indian or Alaskan Native	3%
Asian	4%
Black or African American	20%
Hawaiian Native or Pacific Islander	1%
White	55%
More Than One Race	7%
Race Unknown	10%

DoD STARBASE programs are located in areas where the need for STEM education is great. Coincidently, these neighborhoods contain groups that have been historically underrepresented in STEM fields (Hispanics and Latinos, African Americans, American Indians, Alaska Natives, Native Hawaiians and Pacific Islanders). Figure 1 (p. 36) compares these groups in the FY 2014 DoD STARBASE student population and in public and secondary school enrollment (pre-kindergarten through grade twelve) as reported by the U.S Department of Education.[5] The American Indian or Alaskan Native and Black or African American populations are higher at DoD STARBASE than at U.S. public schools. Public school statistics on Hawaiian Native or Pacific Islander populations are not available, but the percentage of DoD STARBASE students compared to the U.S. population of Hawaiian Native or Pacific Islanders are higher at DoD STARBASE (0.9 %) than are found in the U.S. population (0.2 %).[6]

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

[5] U.S. Department of Education, National Center for Education Statistics, Projections of Education Statistics to 2021; and Common Core of Data (CCD), "State Nonfiscal Survey of Public Elementary and Secondary Education," United States, 2010. See Digest of Education Statistics 2012, Table 44.

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

Underrepresented STEM Groups at DoD STARBASE and Public Schools

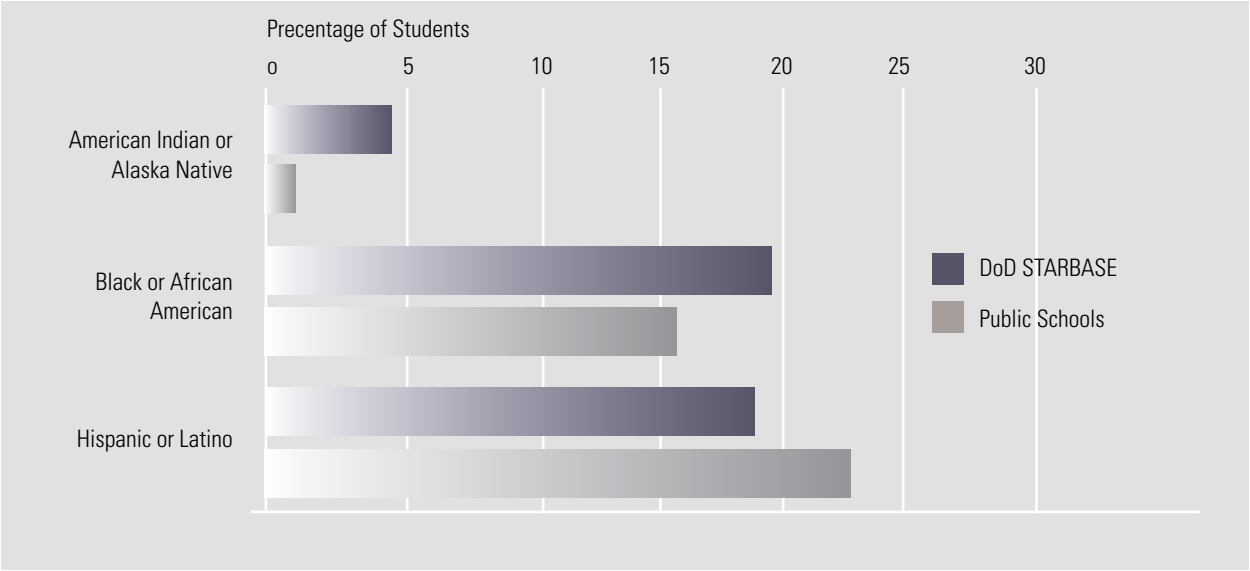


Figure 1. Public school statistics for the group Native Hawaiian or Other Pacific Islanders is not available.

GENDER COMPOSITION

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

DoD STARBASE Staff

EMPLOYMENT AFFILIATION

The DoDI provides general guidelines on personnel models, salary parameters, and position descriptions. The primary employment affiliations are federal, state, and contractor agencies. Employment affiliation is an important consideration for each location. The employee's affiliation determines his/her salary administration, hiring requirements, benefits, personnel policy and practices, as well as reporting relationships. Contractor affiliations make up 59% of the employment relationships followed by state and federal affiliations which are at 40% and 1%, respectively. Federal and state affiliations often provide retirement and health benefits, which increase a location's personnel costs and use a greater portion of the location's operating budget.

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 58 DoD STARBASE locations, 11 operate with four staff members. 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 locations have used the following adjustments: hire part-time instructors, establish job-sharing positions, consolidate job tasks, limit benefits, eliminate the deputy director position in favor of two instructors, eliminate the administrative position, and hire retirees who require fewer benefits. Of the 58 DoD STARBASE locations in FY 2014, 25 operated with more than four staff members and 22 operated with less than four staff members. If a location does not meet the DoDI prescribed manning model, the director must submit a written request for a waiver to OASD/RA.

Table 4 describes the FY 2013 and FY 2014 staffing profile for full- and part-time personnel. "Other" positions include: DoD STARBASE 2.0 coordinators, teaching assistants, tech assistants, substitute instructors and modified deputy director/office manager. There was a 31% decrease in the number of employees from FY 2013, to include those associated with the eighteen programs that closed.

Table 4:
FY 2013 - FY 2014 Staffing Profile

Position	Number of Staff		Full-Time		Part-Time	
	FY 2013	FY 2014	FY 2013	FY 2014	FY 2013	FY 2014
Director	62	44	62	44	0	0
Deputy-Director	58	44	57	44	1	0
Instructor	158	91	116	68	42	23
Office Manager	56	34	43	23	13	11
Other	41	45	10	16	31	29
Total	375	258	288	195	87	63

Table 4 also shows there are fewer staff directors than DoD STARBASE locations. Some directors manage more than one location, some STARBASE locations are new and have not hired a director yet, and other STARBASE locations are in the process of replacing directors who have left the program.[7]

STAFF DEVELOPMENT

DoD STARBASE instructors attend professional development to stay current in program content, methodologies, and curriculum. Eighty-nine percent of the DoD STARBASE locations offer staff development opportunities. Regional and national professional association programs, university courses, on-line training visits to other locations, and in-service workshops are all used as professional development. Most instructors are certified educators (86%), and ongoing professional development keeps them up-to-date on emerging technology, curriculum, resources, and instructional modalities.

[7] Directors in Connecticut, North Carolina, Oklahoma, South Dakota, and Vermont operate multiple STARBASE locations. New STARBASE locations in Colorado, Indiana, Louisiana, and North Dakota will open in FY15. Locations in Alabama, Indiana, Louisiana, North Dakota, and Puerto Rico lost directors in FY 2014.

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. During FY 2014, 21 of the 58 DoD STARBASE locations sent 100% of their staff to CAD training. An additional nine locations sent 75% of their staff, and 28 locations[8] sent less than half of their staff to CAD training.

STAFF CHANGES AND DEPARTURES

There were 63 staff departures out of 258 staff positions in FY 2014. The majority (34 departures) were at the instructor level. Director positions were the next highest with a seven departures followed by deputy directors and office managers at five and three departures respectively. The overall turnover rate in FY 2014 was 23%, and, while not as high as it was in FY 2013 (33%), it is still higher than the average departures of previous years. Prior to FY 2013 DoD STARBASE has always seen turnover rates below 20% with an average of 14% over the years 2004 - 2012 (see Table 5). Directors reported that of those staff members who left the program, 38% indicated the reason for their decision to leave DoD STARBASE was because of challenges presented at the start of the fiscal year, while 14% cited personal reasons for their decision to leave. Some of these positions (18 vacancies) remained unfilled at the end of FY 2014.

Table 5:
Staff Departure Rate Over Fiscal Years 2004 - 2014

Fiscal Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Number of Staff	238	231	233	243	267	292	285	291	367	375	258
Number of Departures	30	39	36	37	34	34	45	46	48	124	63
Turnover Rate	13%	17%	15%	15%	13%	12%	16%	16%	13%	33%	23%

VOLUNTEERS

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 military personnel, teachers, parents, and community leaders. All locations reported using volunteers.

The DoD STARBASE locations documented a total 5,223 volunteers who contributed a total of 63,527 hours to the program during FY 2014 (see Table 6). As part of the objectives outlined under the *Inspire* goal of the DoD STEM Education and Outreach Strategic Plan, military personnel are encouraged to volunteer their time to the program as mentors, expert speakers, tour guides, and other support activities. After parents, military personnel account for the greatest amount of volunteers, followed by teachers.

[8] Locations in Colorado, North Dakota, Louisiana (Baton Rouge) and Indiana (Indianapolis) were in various stages of installation during FY 2014 and did not have staff or send staff to training.

Table 6:
FY 2014 Volunteer Participation

	Volunteers	Hours
Military	1,673	12,247
Teachers	1,108	21,640
Parents	2,080	24,592
Other [9]	309	3,599

OUTREACH

Many DoD STARBASE locations provide resources and training to local teachers. Of the 58 locations, 46 reported they provide additional curriculum materials to schools/teachers and 24 locations provided some kind of training to local teachers in FY 2014. Many DoD STARBASE locations (57%) reported they have relationships with nearby teacher colleges or training programs where student teachers may obtain practicum hours at DoD STARBASE. At the locations that offer teacher training, 79% of the teachers may use this training toward their certification requirements.

Students may attend DoD STARBASE at the fifth grade level, as well as participate in other outreach programs that are available in their area at other grade levels. OASD/RA encourages DoD STARBASE locations to connect with other local outreach programs to create a STEM pipeline for students. Directors from 42 of the 58 DoD STARBASE locations report that they have relationships with other outreach programs in their area including: STEM Forward, FIRST Robotics, Project Lead the Way, Civil Air Patrol, Girl Scouts and Boy Scouts. In addition, the DoD STARBASE location may coordinate a DoD STARBASE 2.0 program at the middle school level. DoD STARBASE 2.0 is a STEM-based afterschool mentoring program that is based at a collaborating school system.[10]

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

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

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

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 the Federal STEM Education Strategic Plan as an *Engagement Investment*. 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 37 learning objectives are clearly outlined for each of the 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. For example, a number of activity station lesson plans are in the final stages of development to support teaching Bernoulli's Principles where one investigation of these principles might not be enough to ensure a higher level of understanding and application.
4. Stand-Alone lesson plans are complete, self-contained documents that fully address the stated components of the curriculum objective. They contain the necessary background information and instructional guidance and support criteria to meet the requirements for the objective.

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

This rigorous process expands and enhances the DoD STARBASE curriculum offerings. DoD STARBASE directors and instructors may choose from multiple approved lesson plans to teach the required 37 objectives.[11] 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 during visitations by the evaluation team.

CHALLENGES TO PROGRAM GROWTH

Up until the 2012-13 program year, DoD STARBASE increased the number of locations while also creating program upgrades in content, applications, operational efficiencies and curriculum. In addition, there was an aggressive expansion of STEM linkages with communities and schools to further the development of student skills and abilities beyond the DoD STARBASE experience. This included the introduction of the DoD STARBASE 2.0 program, a STEM-based afterschool mentoring initiative that is based at a collaborating school system. DoD STARBASE 2.0 proved to be an effective downstream activity with 25 DoD STARBASE locations coordinating a total of 42 DoD STARBASE 2.0 programs by the end of FY 2013. The 16-day Government shut down in October, 2013, severely impacted the overall DoD STARBASE program. Significant increases in staff turnover during FY 2013 and FY 2014 resulted in a reduction in the number of students, schools and districts served as well as the number of DoD STARBASE 2.0 programs.

Evidence of program growth is measured, in part, by the progression of DoD STARBASE locations through the Academy Performance Level system. Entry into a higher academy performance level requires a careful review and assessment of the program participants and a careful structuring of the responsibilities of each party. Checklists, protocols and support, as well as periodic reviews, are essential to their success. The FY 2013 site visitations indicated that about a third of the DoD STARBASE locations had completed all Level II requirements, but assessment and validation of Academy Performance Level was placed on hold during the FY 2014 visitations. Instead, the evaluation team focused on documenting recovery efforts as most DoD STARBASE locations struggled with staff turnover and program delivery.

Despite staff turnover issues and late program starts due to the Government shutdown, 55 of the 58 FY 2014 DoD STARBASE locations maintained operations, albeit not at the robust past service numbers, while undergoing the hiring and training process to replace lost staff positions. Some locations were not negatively impacted at all in FY 2013 and FY 2014 and were able to maintain their previous service numbers while expanding with additional activities to promote STEM linkages with community and national programs. Over the course of FY 2014, all of the remaining 58 DoD STARBASE programs have regained full operational status with 11 locations planning to expand their operations with a DoD STARBASE 2.0 program in FY 2015.

Many (15) new directors have joined the DoD STARBASE program and will need careful and continuing guidance in the nuances of the program. The orientation of these new directors along with the mentoring of four new locations will be closely monitored by DoD STARBASE Program management. Confirmation of progress in Academy Performance Level status and DoD STARBASE 2.0 participation will resume during the FY 2015 visitations. Sustainability of the entire program requires on-going monitoring, scheduling, and assessment.

[11] Currently there are 53 available lessons in addition to PTC.

DoD STARBASE PROGRAM OVERVIEW

THE DoD STARBASE 2.0 PROGRAM ELEMENTS

DoD STARBASE 2.0 is a STEM-based afterschool mentoring program that is based at a collaborating school system. The objective is to serve students at other grade levels in the STEM areas beyond their initial DoD STARBASE experience. The program was introduced in 2010 and expanded to a dozen sites during the 2011-12 program year. By FY 2013, 25 DoD STARBASE locations reported coordinating a total of 42 DoD STARBASE 2.0 programs. In FY 2014, 14 DoD STARBASE locations reported only coordinating a total of 25 DoD STARBASE 2.0 programs[12] in 13 states (see Figure 2) This is down 44% from FY 2013. Large staff turnover rates and a late start to the program year due to the 16-day Government shutdown severely impacted DoD STARBASE staffing, forcing directors to discontinue some 2.0 programs and focus solely on their basic DoD STARBASE program while undergoing the process to replace and train new staff members[13]. A few DoD STARBASE locations were able to increase their number of 2.0 programs[14]. Directors of the 14 FY 2014 locations were surveyed to obtain data on program requirements, participants, curriculum, staff, and funding for the DoD STARBASE 2.0 program.

The DoD STARBASE 2.0 Program Locations

Figure 2. The Oklahoma NOVA program at Burns Flat also coordinates a 2.0 program.

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

[13] Programs discontinued in California, Kansas (4 programs), Maryland and North Dakota. Programs reduced in Connecticut (closed 2 programs) and Oklahoma (closed 2 programs).

[14] Programs increased in Georgia (five additional programs) and Louisiana (two additional programs).

PROGRAM REQUIREMENTS

DoD STARBASE 2.0 maintains a unique school-based afterschool program that targets at-risk sixth to eighth graders. The program takes place in partnering schools that have expressed the desire for additional DoD STARBASE program resources. As with other school-based afterschool mentoring programs, DoD STARBASE 2.0 is highly structured and intends to help support school goals, provide safe environments for students, and improve student-teacher relationships while empowering schools through student referrals. Basic program requirements are outlined in the DoD STARBASE 2.0 Program Guide. The guide lists expectations for program basics, the partnering school, participant eligibility, and the STEM Mentor Coordinator position. Compliance on several of the basic requirements is given below (see Table 7).

Table 7:
Locations Meeting Basic Requirements

Basic Requirement	Percentage of Locations Meeting Requirement
DoD STARBASE 2.0 meetings are held at a school	92
There is ample space for meetings	100
Meetings are held after school hours	92
Parking is provided for mentors	100
A nutritional snack is provided for the students	84
The students are in 6th, 7th and/or 8th grades	86

PARTICIPANTS

In FY 2014, 24 districts and 43 schools partnered with DoD STARBASE at 14 locations to operate 25 - 2.0 programs. This is a 36% decrease in the number of DoD STARBASE locations who coordinated a program in FY 2013. Of the eight DoD STARBASE locations that discontinued 2.0 program coordination in FY 2014, two were at closed Navy locations and one was a closed Air Force location. The remaining five locations (Kansas –four locations and Charleston, West Virginia) reported staffing issues which debilitated their DoD STARBASE program, forcing the sites to streamline resources and eliminate outreach programs.

DoD STARBASE 2.0 programs are sponsored by the Air Force, National Guard and Air Force Reserve (see Table 8). The greatest numbers of programs (11 programs) are sponsored by the Air National Guard which also has the majority of the DoD STARBASE programs (32 DoD STARBASE locations).

Table 8:
DoD STARBASE 2.0 Programs and Clubs by Military Affiliation

Service Arm	Number of 2.0 Programs	Number of 2.0 Clubs
Air Force	5	6
Air National Guard	10	17
Air Force Reserve	9	12
Army	0	0
Army National Guard	1	1
Marine Corp	0	0
Navy	0	0
Total	25	36

In FY 2014, the DoD STARBASE 2.0 program began with 777 student participants and finished with 672 students. The retention rate is 86%. Of the students who did not complete the program, 32% were females and 68% were males. The surveyed directors did not report as to why the students dropped the program.

Many of the FY 2014 DoD STARBASE 2.0 students were former DoD STARBASE students (57%) and most were males (60%). The average student attendance at club meetings was 20 students, with a 1:3 mentor-to-student ratio. The students are mostly 6th and 7th graders (47% and 23%, respectively) although some are from other grades (see Table 9).

Table 9:
Grade Level of Participating Students

Grade Level	Percentage of Students
4th Grade	4.4
5th Grade	8.0
6th Grade	47.1
7th Grade	22.6
8th Grade	16.1
9th Grade	1.8

Figure 3 and Figure 4 (p. 45) show the ethnic and racial composition of the FY 2014 DoD STARBASE 2.0 students. Although this program is strictly a volunteer program, all groups of students are represented, including groups historically underrepresented in STEM fields (Hispanics and Latinos, American Indian or Alaska Native, and Black or African American). Higher participation of these groups in DoD STARBASE 2.0 may be due to the positive experience the students encountered at DoD STARBASE as indicated by attitudinal tests (see attitudinal test results).

Ethnic Composition of DoD STARBASE 2.0 Student Population FY 2014

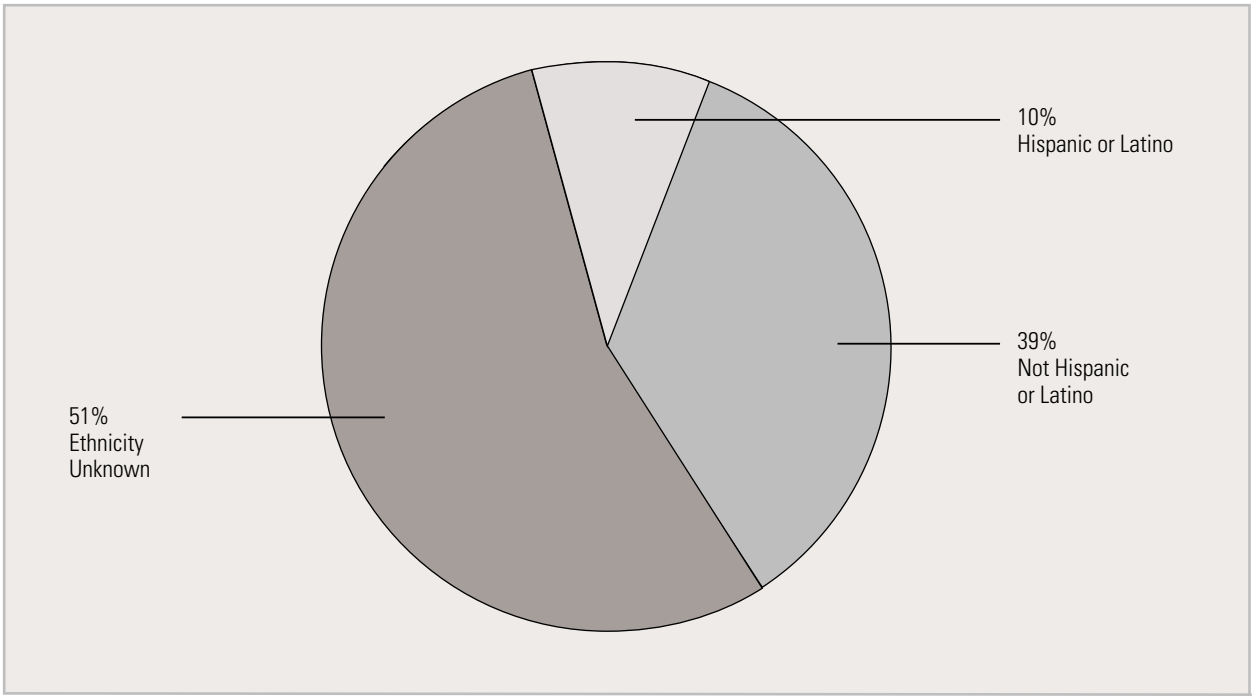


Figure 3. Ethnic groups historically underrepresented in STEM fields are: Hispanics and Latinos.

Racial Composition of DoD Starbase 2.0 Student Population FY 2014

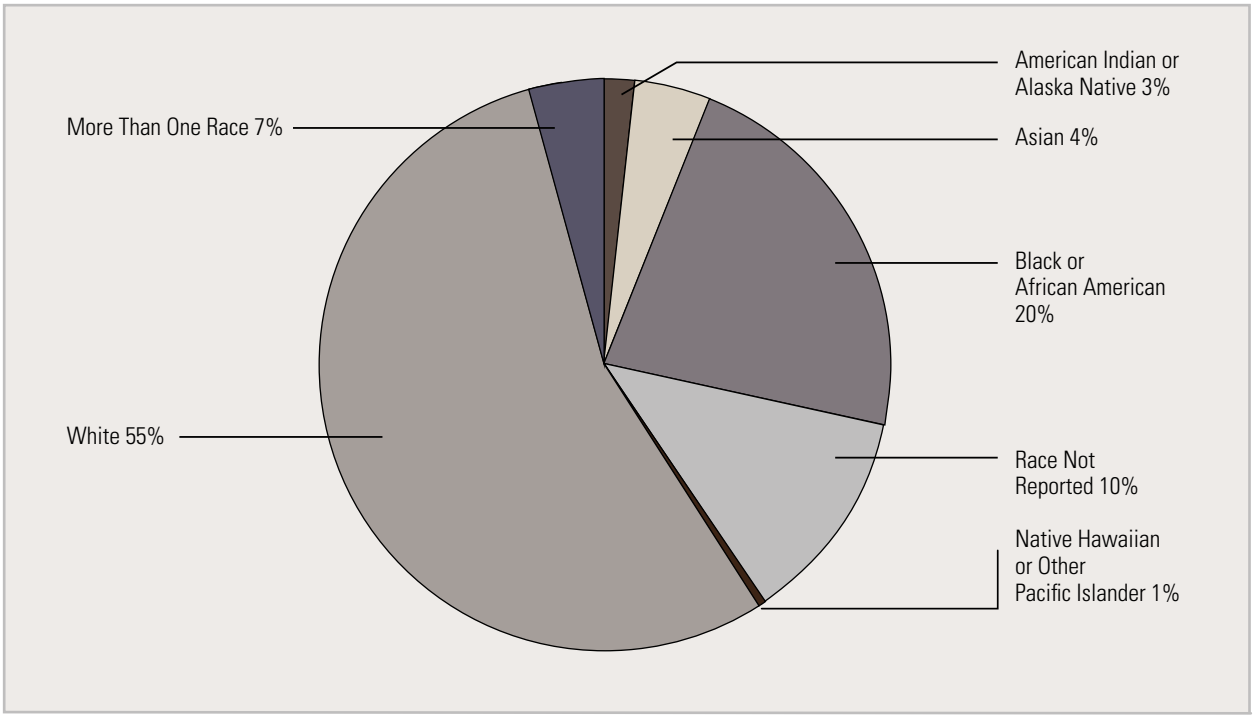


Figure 4. Racial groups historically underrepresented in STEM fields are: African Americans, American Indians, Alaska Natives, Native Hawaiians and Pacific Islanders.

CURRICULUM

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

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

Program locations use a variety of different team projects to achieve these goals. STEM projects include: Scalextrics, robotics, rocketry, engineering, physics, FIRST LEGO League, solar cars, chemistry, technology, and aerospace. Many programs (61%) culminate the program with some sort of related competition. Of those programs, 38% participate in FIRST LEGO League competitions.[15]

STAFF

DoD STARBASE 2.0 is primarily a volunteer program. The volunteer STEM mentors and volunteer classroom teacher are all coordinated by a designated STEM Mentor Coordinator. This is typically a part-time position and many programs choose to hire the STEM Mentor Coordinator in-house with their existing DoD STARBASE director, deputy director, program instructor, or office manager taking on the additional responsibilities. If hiring in-house is not possible, candidates are recruited from the partnering school or community. The responsibilities of the STEM Mentor Coordinator include:

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

These tasks play an invaluable role in the success of DoD STARBASE 2.0. Of the 25 locations that support a DoD STARBASE 2.0 program, only eight have a dedicated STEM Mentor Coordinator.

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

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

Of the mentors who participated in FY 2014 programs, 89% completed 2.0 training and 97% completed a background check. The mentors were male (53%) and female (47%). Mentors from a variety of STEM professions participated in the program including, military, non-military, DoD professionals, industry professionals and college students (see Table 10). Working with a mentor, participating students are exposed to the lifelong benefits of higher education and a career in a STEM-related field. They may also receive guidance about educational and career options.

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

Table 10:
Mentor Types

Type	Percentage of Mentors
Military	34
Non-Military, DoD, Professionals	30
Industry Professionals	15
College Students	15
Other	8

FUNDING

The DoD STARBASE 2.0 programs operate through a combination of federal and private funds. Of the 25 programs, 24% receive funding from both sources and 24% receive solely federal funds. Three programs reported that they do not receive any funds whatsoever to operate a 2.0 program.[16]

PROGRAM OVERSIGHT

COMPLIANCE

The Office of the Assistant Secretary of Defense for Reserve Affairs (OASD/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/RA guidelines. Over the past several years, DoD STARBASE locations have been evaluated using a performance assessment system that is composed of three progressive levels of program and organizational performance. Each level has a prescribed set of activities that range from obtaining adherence to the DoDI requirements that guide basic operating procedures and full installation of program delivery (Level I); to obtaining desirable operating applications, key planning strategies, and managerial efficiencies (Level II); and lastly, to exhibit advanced strategic program linkages and downstream relationships for promoting student skills and abilities in STEM-related activities (Level III). The following sections outline details and criteria of the performance assessment system.

[16] STARBASE of Rapid City, and STARBASE Louisiana- Elm Grove Middle School, and STARBASE Louisiana- T.O. Rusheon Middle School do not receive funding for a DoD STARBASE 2.0 program.

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

Due to the large staff turnover (33%) experienced in FY 2013, the assessment and validation of Academy Performance Levels was placed on hold during the FY 2014 visitations. Instead, the evaluation team focused on documenting recovery efforts as most DoD STARBASE locations struggled with replacing staff and delivering the basic program requirements. Over the course of FY 2014, the remaining 58 DoD STARBASE programs have regained full operational status, with 11 locations planning to expand their operations with a DoD STARBASE 2.0 program in FY 2015. New directors (15) who have joined the DoD STARBASE program will need careful guidance in the nuances of the program. The orientation of these new directors as well as establishing and mentoring four new locations will be closely monitored by OASD/RA. Confirmation of progress in Academy Performance Level status and DoD STARBASE 2.0 participation will resume during the FY 2015 visitations.

PERFORMANCE LEVEL DESCRIPTIONS

Level I: The Basic/Fully Operating Location

Level I criteria includes all DoDI requirements and operating guidelines stipulated by OASD/RA. This incorporates required program activities such as student numbers, classroom hours, installation of core curriculum content, military-base program delivery, emphasis on target student population, required documentation (i.e., MOU's, student waivers, etc.), reporting requirements, and a number of administrative responsibilities such as written waivers, disability building accessibility, testing samples, teacher assessment, etc.

Level II: The Advanced Performing Location

The second level of performance requires attainment of Level I status and success with a set of defined operational, planning, and managerial upgrades, fiscal program operations, and the successful installation and maintenance of DoD STARBASE 2.0. These are organizational and administrative requirements set up by OASD/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/RA.

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

COMPLIANCE ADHERENCE

Compliance visitations under DoDI 1025.7 are conducted at least once every three years for each DoD STARBASE location. The visitation involves a two to five day review of documents, audits, fiscal reports, classroom observation, and structured interviews with staff, school administration, sponsor groups, not-for-profit board members (if appropriate), and members from other participant groups. At the conclusion of the visit, a meeting is conducted with the base commander and DoD STARBASE director to review the preliminary results of the compliance visit and to discuss if any corrective action is required. A plan-of-action is developed, and a schedule for completion is mutually agreed upon. A written report is then sent to the OASD/RA program manager upon completion of the visitation. OASD/RA may share the key points of the report with the director and/or the base commander. A written summary of progress made by the DoD STARBASE director is sent to OASD/RA as corrective tasks are obtained, and copies may be forwarded to sponsors and military service representatives. Occasionally, a follow-up visitation is scheduled to document that corrective action has been taken.

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

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/RA for exceptions or revisions on DoDI 1025.7 requirements; and

incomplete implementation of the core curriculum. As previously indicated, given the number and scope of activities, the number of incidents is small, and involves only a few locations. Overall, most locations met compliance requirements. A small number of locations face challenges in obtaining student numbers, hours of instruction, audit schedules and completions, and meeting reporting requirements in a timely fashion.

FISCAL ANALYSIS

A congressional appropriation to the Department of Defense (DoD) funds the operation of DoD STARBASE. The Office of the Assistant Secretary of Defense for Reserve Affairs (OASD/RA) oversees the program and distributes funding. In FY 2014, the total program budget was $25,438,000. OASD/RA allocated $22,888,000 to 56[17] programs. A small amount of this allocation, (4%) was used to install programs in Colorado, Indiana, Louisiana, and North Dakota while the remainder was used for program operations. The remainder of the appropriation was used for evaluation/assessment activities, staff development and training programs, and overall program design and development activities.

In FY 2014, the average operating cost per location was $408,714 (see Table 11). This is a 28% increase from FY 2013 and a 50% increase from the average cost per location in FY 2004.

Table 11:
Average Cost Per Location 2004 - 2014

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

[17] DoD funds allotted to STARBASE programs in Oklahoma and South Dakota include additional funds for outreach locations in those states.

Operational costs differ among DoD STARBASE locations. Overall expenditures of DoD STARBASE funds allocated to each program site are shown in Figure 5. Staff costs range from 23% to 94% of the location's budget which, on average, account for 64% of the site budget followed by equipment (13%) and contract services (8%).

FY 2014 Expenditures of DoD Funds

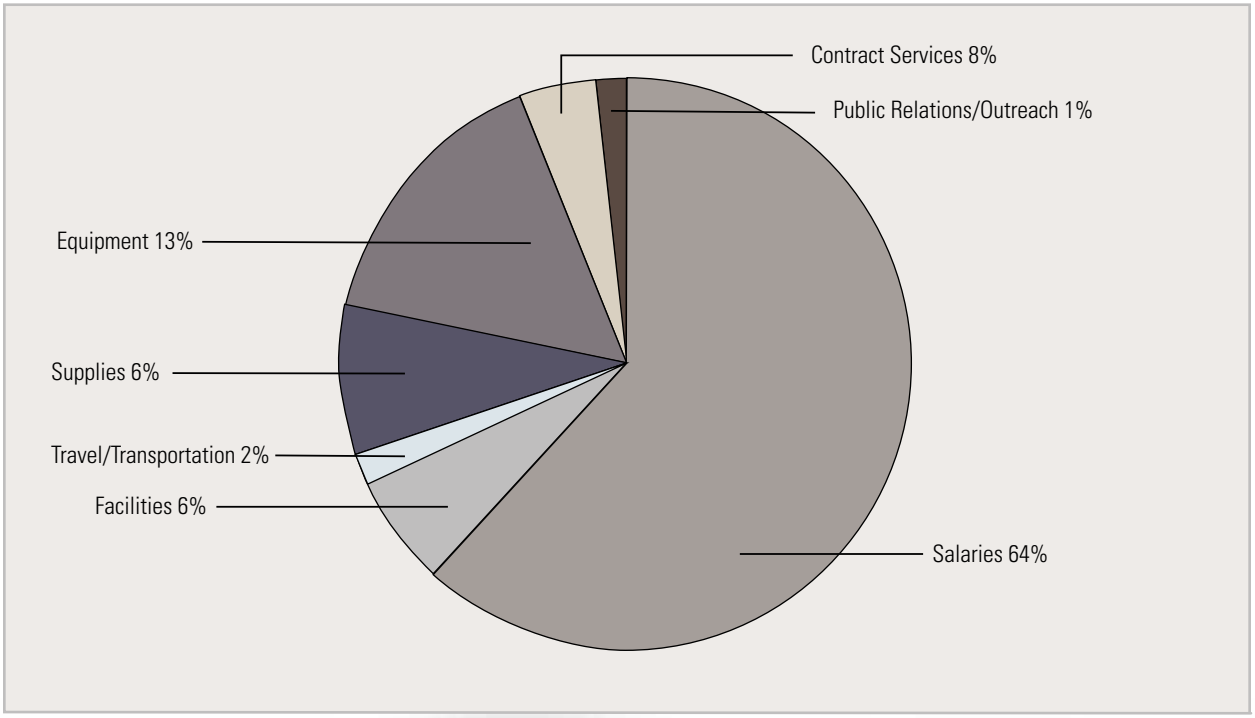


Figure 5.

FY 2014 Expenditures of Supplemental Funding

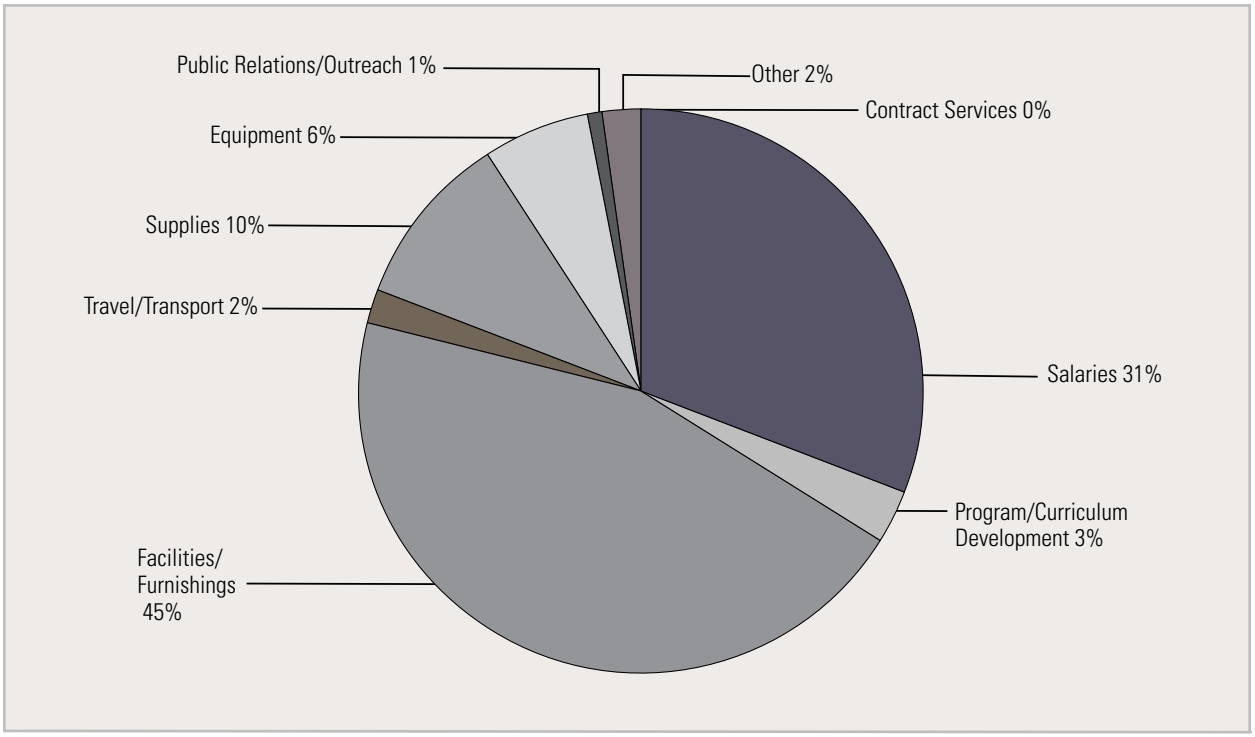


Figure 6.

Several factors contribute to the cost variances, including geographic location, outreach programs, and salary scales. OASD/RA annually reviews each location's budget to maintain an equitable distribution of funds. Twenty-one of the 58 locations obtained supplemental funding from non-DoD sources. The total raised in supplemental funding for FY 2014 was $1,228,105. The average raised by locations that secured additional funding through state allocations, grants, and donations was $22,743. The total monies received from these sources were $284,400, $143,100, and $1,232,615, respectively. A total of $898,545 (73%) of supplemental funding was expended in FY 2014. Academies used supplemental funding for staff salaries (31%); program/curriculum development (3%); facilities/furnishings (45%); transportation/travel (2%); supplies (10%); equipment (6%); public relations/outreach (1%); and other expenditures (2%). See Figure 6.

ASSESSMENT RESULTS

STUDENT ASSESSMENT

OVERVIEW

The DoD sponsored STARBASE program has been operational for over 20 years and successfully expanded to new locations and schools while promoting and extending community resources. Part of its success has been implementing strategic improvements based on annual site review and data gathered from the students. Annual program evaluation is accomplished in part by assessing student attitudes toward school, the military, and career opportunities as well as assessing knowledge gains in the core curriculum of science, technology, engineering, and math (STEM) concepts. Students complete the DoD STARBASE Student Questionnaire before the DoD STARBASE program and then again once the program is complete. The key pre- to post-assessment areas include:

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

Throughout the history of the DoD STARBASE program, incremental changes have been introduced to the core STEM curriculum resulting in the modification and adjustment to the Student Assessment. A complete redesign of the curriculum occurred during the 2009 - 2010 academic year, resulting in a major revision of the Student Assessment in 2011. This Student Assessment revision became the pilot study for the assessment delivered in 2012. The Student Assessment that year maintained many core items (both knowledge and attitudinal) assessed throughout the life of the DoD STARBASE program. These items are still relevant to the current program and provide historical reference points to gauge adjustments in results. New items introduced during the past two years were evaluated and included, excluded, or revised. Each item was evaluated based on the assessment results, feedback from the DoD STARBASE instructors, and subject matter experts in either the STEM curriculum or testing and measurement techniques.

This year's DoD STARBASE Student Assessment retains a core set of 27 knowledge and 31 attitudinal items to allow for year-to-year comparisons. Five new knowledge items were piloted based on evolving curriculum materials and classroom activities. Pilot items and historical items are maintained in an item database for possible use in future administrations.

INSTRUMENT DESIGN

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

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

Similar to previous years, the assessment this year consists of two separate instruments combined into one questionnaire. The first instrument is a 32-item multiple-choice assessment of STEM knowledge focused on the core DoD STARBASE curriculum. The second instrument is a 31-item survey measuring various aspects of students' attitudes and opinions about STEM and DoD STARBASE that impact areas such as academic success and career goals.

- Knowledge Assessment – 32 multiple-choice items were included in the knowledge assessment:
  - 27 items remained from previous surveys with three of those items having historical reference benchmarks dating back to at least 2007.
  - Five new items were piloted this year.
- Attitudinal Survey – 31 attitudinal items (26 administered both pre- and post-program; five administered post-program only) were included in the survey:
  - 31 items were retained verbatim from 2013.
  - Item order was modified in 2012 to make it easier for students to follow the response option formatting.

The results for the knowledge assessment and for the attitudinal survey are each then summarized based on item content areas to yield category scores as well as on overall score. The overall score for each instrument is presented as a mean score and also as a percent correct score for groups of students in the following report.

STUDY LOGISTICS

The DoD STARBASE Student Assessment was administered between January and June of 2014. 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 mailed directly to the DoD STARBASE academies and included the following instruction sets:

- Directors' Instructions – Overview of the DoD STARBASE evaluation components including details such as administration methodology, selection of participating classes, and an answer key for the knowledge assessment.
- Administrator Instructions – Detailed instructions to the assessment coordinators including the materials needed for administration, filling out the assigned student numbers, and instructions to be read during the administration of the questionnaire.

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

STUDENT DEMOGRAPHIC INFORMATION

The student survey was administered during the first half of 2014, with a total of 2,371 (1,200 pre-program and 1,171 post-program) surveys returned to General Dynamics IT for processing. Responses were received from 49 of the 58 DoD STARBASE academies participating (86% academy response rate). In 2013, 74 academies responded with a response rate of 99%. The decrease in the number of academies participating in 2014 was due largely to the staffing and operational issues stemming from the government shutdown.

Surveys were matched pre- and post-program based on unique student ID. Those with matching data for both the pre- and post-program were retained for analysis resulting in a total of 2,212 surveys (1,106 matching cases for pre- and post-program assessments). All of the 1,106 matching cases had no more than three missing items for the pre-questionnaire and no more than three missing items for the post-questionnaire. These 1,106 cases are referenced throughout this report.

The frequency and percent of DoD STARBASE students that reported belonging to the various demographic categories are presented in Table 12 and Table 13. As in previous years, the DoD STARBASE student population is almost evenly split between boys and girls (49.2% and 50.7%, respectively). Most of the students were in the fifth grade (88.7%) and between 10 – 11 years old (90.2%).

Table 12:
Demographic Profile of Student Sample

Item	Response	Frequency	Percent
Age	9	5	.5
	10	406	36.7
	11	592	53.5
	12	96	8.7
	13	6	.5
	Unknown/No answer	1	.1
Grade	4	4	.4
	5	981	88.7
	6	116	10.5
	7	1	.1
	8	1	.1
	Unknown/No answer	3	.3
Gender	Boy	544	49.2
	Girl	561	50.7
	Unknown/No answer	1	.1

DoD STARBASE locations throughout the United States are represented, with over half of the sample drawn from the Midwest (31.7%) and South (25.8%). The remaining students are split among the Southeast (20.1%), the West (13.7%), and the East (6.1%). Five military components sponsor DoD STARBASE programs. The Air National Guard is still the most represented component (48.6%). This year, all Navy programs were closed and did not participate. The Marine Corps has one participating site (2.7%). Fifty-five percent of DoD STARBASE programs (611 students) brought students in one day per week versus the students coming to the program every day within a one week time span (39% of academies including 431 students). Six of the DoD STARBASE academies reported being aware of testing accommodations, indicating that the program is accessible to students that may need special accommodations during the program sessions.

Table 13:
Demographic Profile of Academy Sample

Item	Response	Academy Frequency	Student Frequency	Percent
Region	East	4	66	6.0
	Midwest	15	351	31.7
	South	13	285	25.8
	Southeast	9	222	20.1
	West	8	182	16.5
Sponsoring Component	Air Force	5	111	10.0
	Air Force Reserve	4	85	7.7
	Air National Guard	26	572	51.7
	Army/Army National Guard	13	308	27.9
	Marine Corps	1	30	2.7
Class Schedule	Consecutive	18	431	39.0
	One per week	28	611	55.2
	Other schedule	3	63	5.7
	Unknown/No answer	0	1	.1
Accommodations	Not aware of testing accommodation	44	998	90.2
	Aware of testing accommodation	6	107	9.7
	Unknown/No answer	0	1	.1

Students' previous exposure to the military and the DoD STARBASE program is presented in Table 14. Familiarity with the military and/or DoD STARBASE was reviewed to gauge experience with the military in general and with DoD STARBASE in particular. Most of the students knew someone that went through DoD STARBASE (69.2%), had heard about DoD STARBASE (63.8%), or had met military people before coming to the DoD STARBASE program (58.6%).

Table 14:
Students' Prior Experience with Military and DoD STARBASE

Item	Response	Frequency	Percent
I have met military people before coming to DoD STARBASE	No	454	41.0
	Yes	648	58.6
	Unknown/No answer	4	.4
I heard about DoD STARBASE before I knew I was coming here	No	395	35.7
	Yes	706	63.8
	Unknown/No answer	5	.5
I know someone that went through DoD STARBASE before me	No	338	30.6
	Yes	765	69.2
	Unknown/No answer	3	.3

STUDENTS' ATTITUDINAL RESPONSES

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

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

PRE/POST ATTITUDINAL SURVEY MEANS

Pre- and post-program Attitudinal Survey total mean scores beginning in 2008 are shown in Table 15. Due to major revisions in the DoD STARBASE curriculum during 2009 and 2010, the student assessment was not administered in FY 2010. Total mean scores are a composite score of all the items on the survey with a possible range from one (least favorable) to seven (most favorable). The pre-program means include the 26 core survey items. The post-program means include the 26 core survey items as well as the five post-program items. Utilizing mean scores in pre- to post-program comparisons controls for the difference in the total number of items given.

As in the previous years, there was a significant increase in post-program mean scores as compared to pre-program mean scores indicating that immediately following the program, students responded more favorably. The total mean scores for the pre- and post-program are fairly typical compared to recent years. Additional details are provided in Table 15, including the total mean attitudinal scores as well as the score shift from pre- to post-program starting in 2008.

Table 15:
Pre/Post Attitudinal Survey Means and Standard Deviations (2008 – 2014)**

Survey	2008 Mean*	2009 Mean*	2011 Mean*	2012 Mean*	2013 Mean*	2014 Mean*	2008-2014 Average*
Pre-Program	5.84	5.80	5.77	5.69	5.82	5.78	5.78
Post-Program	6.06	6.00	5.93	5.89	5.97	5.91	5.96
Survey	Std. Dev.	Std. Dev.	Std. Dev.	Std. Dev.	Std. Dev.	Std. Dev.	Std. Dev.
Pre-Program	0.69	0.66	0.66	0.71	0.61	0.63	0.66
Post-Program	0.66	0.65	0.71	0.69	0.66	0.67	0.67

** Pre- and post-program means are significantly different*
*** The student assessment was not administered in FY 2010.*

Table 16 rank-orders the items based on post-program means from most favorable to least favorable. Most of the items show an increase in favorability from pre- to post-program means. The 11 bolded items (42% of the items) show a significant increase in favorability from pre-program to post-program attitudes. Dramatic improvements in attitudes and confidence toward learning, the military, and future careers include:

- DoD STARBASE instructors are kind and helpful
- Military people do lots of different things
- Military bases are exciting
- The military is a good place to work
- I am interested in being a scientist or engineer
- Learning can be fun
- I am good at math and science

Two items ranked high for both the pre-and post-program survey include "I plan to graduate from High School" and "I think about what I want to be when I grow up." The consistently high rating for both show that students are thinking about their future and have confidence in their ability to succeed. Having students coming into the program already thinking about their future provides them the opportunity to focus their attention on possible career fields within the military specifically, and careers within the scientific or engineering fields generally.

Table 16:
Pre/Post Rankings and Mean Scores of Student Attitudinal Responses

Pre-Program N=1106		Attitudinal Item	Post-Program N=1106	
Mean	Rank		Mean	Rank
6.74	1	I plan to graduate from High School.	6.75	1
6.21	**5**	**DoD STARBASE Instructors are kind and helpful.**	**6.58**	**2**
6.39	2	You can learn a lot by trying things.	6.45	3
6.32	**3**	**I like using computers.**	**6.43**	**4**
Post Only		At DoD STARBASE, I learned a lot of things that I can use.	6.35	5/6
6.31	4	I think about what I want to be when I grow up.	6.35	5/6
6.15	**7**	**Military people do lots of different things.**	**6.34**	**7**
6.17	6	I do not think DoD STARBASE will help me do better in school. (Reverse Scored)*	6.27	8
Post Only		DoD STARBASE is boring. (Reverse Scored)*	6.24	9
6.13	8	I like to make new things.	6.17	10
Post Only		I am enjoying coming to a military base.	6.14	11
Post Only		DoD STARBASE is better than I expected.	6.09	12
5.96	**9**	**I like to think of new ways to use things.**	**6.04**	**13**
Post Only		I would tell my friends to come to DoD STARBASE.	5.96	14/15
5.91	12	I set goals for myself.	5.96	14/15
5.75	**17**	**Military bases are exciting.**	**5.93**	**16**
5.92	10/11	I use a computer at home.	5.89	17
5.74	**18**	**Learning can be fun.**	**5.88**	**18/19**
5.79	**15**	**I like science.**	**5.88**	**18/19**
5.78	16	I am able to achieve my goals.	5.84	20
5.92	10/11	I want to learn more about technology.	5.83	21
5.87	13	I am good at following directions.	5.82	22
5.82	14	You can accomplish a lot in a group.	5.80	23
5.69	19	I make good decisions.	5.72	24
5.53	20	You can work better in a group.	5.55	25
5.36	**21**	**I am good at science.**	**5.51**	**26**
5.30	**23**	**The military is a good place to work.**	**5.47**	**27**
5.34	22	Learning is easy for me.	5.38	28
5.21	**24**	**I am good at math.**	**5.33**	**29**
5.17	25	I like math.	5.23	30
4.11	**26**	**I am interested in being a scientist or engineer.**	**4.30**	**31**

**Item reverse-scored (a higher score is associated with a more positive attitude).*
Bold items show statistically significant changes.

YEARLY COMPARISONS FOR POST-PROGRAM ATTITUDES

Table 17 provides a list of the seven top-rated attitudinal items for 2014. Comparisons from previous years, beginning with 2004, indicate that the top-rated items still include a focus on the military, student's future, and experiencing new things.

Table 17:
Highest Ranked Post-Program Attitudes (2006 – 2014)

	2004	2005	2006	2007	2008	2009	2011	2012	2013	2014
Attitudinal Item	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank
I plan to graduate from high school.	4	2/3*	2	1	3	3	1	1	1	1
DoD STARBASE instructors are kind and helpful.	1	2/3*	1	2	1	1	2	2	2	2
You can learn a lot by trying things.	3	1	3/4*	3	4	2	3	3/4*	4	3
I like using computers.	New item in 2012							5	3	4
At DoD STARBASE, I learned a lot of things that I can use. (post only)	2	4	3/4*	4	2	4	4	3/4*	6	5/6*
I think about what I want to be when I grow up.	6	5	6	5	6	6	10	6	7	5/6*
Military people do lots of different things.	9/10/11*	8/9*	8	8/9*	8	8	5	9	5	7

** Denotes tied rank with other item(s).*

The pre- and post-program composite mean scores in Table 18 for the attitudinal items have had some fluctuations since 2004, but generally have remained positive. This year, the total mean Pre-Program attitudes (mean = 5.78) were comparable to the average of prior years (mean = 5.79). The overall pattern across the years reflects increased favorable attitudes after DoD STARBASE attendance. Despite the year-to-year fluctuations in attitude ratings across years, the score shift from pre- to post-survey remains fairly consistent, ranging from an increase of .13 points in 2014 to a .25 increase in 2007. Changes in content for a few of the attitude items could partially account for the more recent fluctuations.

Table 18:
Pre/Post Attitudinal Survey Means (2004 – 2014)

Composite Attitudinal Mean Scores	2004*	2005*	2006*	2007*	2008*	2009*	2011*	2012*	2013*	2014*
Pre-Program Survey	5.78	5.83	5.81	5.75	5.84	5.80	5.77	5.69	5.82	5.78
Post-Program Survey	5.97	6.06	6.05	6.00	6.06	6.00	5.93	5.89	5.97	5.91
Score Shift +/-	+.19	+.23	+.24	+.25	+.22	+.20	+.16	+.20	+.15	+.13

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

Table 19 (p. 62-63) shows the means for all post-program attitudinal items beginning in 2004. As expected, there is fluctuation in responses from year to year, and the changes seen from 2013 to 2014 are no exception. The table is rank-ordered by the 2014 mean values.

The following items showed the largest increases from the 2013 responses:

- "I am interested in being a scientist or engineer" (+.11)
- "I do not think DoD STARBASE will help me do better in school." (+.07)[18]
- "I like science." (+.06)

The following items showed the largest decreases from the 2013 responses (the first two were also in this list in 2013.

- "I use a computer at home." (-.30).
- "I am enjoying coming to a military base. (post-program attitude only)." (-.14).
- "Learning is easy for me." (-.12)

[18] Reverse-scored item. A positive increase means that students more strongly disagreed.

Table 19:
Post-Program Attitudinal Item Mean Scores (2004 – 2014)

	2004	2005	2006	2007	2008	2009	2011	2012	2013	2014
Post-Program Attitudes	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean
I plan to graduate from high school.	6.47	6.54	6.53	6.53	6.54	6.50	6.55	6.73	6.78	6.75
DoD STARBASE instructors are kind and helpful.	6.54	6.54	6.61	6.51	6.61	6.57	6.47	6.46	6.55	6.58
You can learn a lot by trying things.	6.51	6.57	6.51	6.47	6.51	6.51	6.40	6.41	6.46	6.45
I like using computers.	New item in 2012							6.40	6.48	6.43
At DoD STARBASE, I learned a lot of things that I can use. (post only)	6.53	6.53	6.51	6.46	6.55	6.49	6.36	6.41	6.39	6.35
I think about what I want to be when I grow up.	6.38	6.37	6.36	6.39	6.36	6.36	6.17	6.26	6.32	6.35
Military people do lots of different things.	6.29	6.30	6.26	6.23	6.28	6.24	6.29	6.24	6.40	6.34
I do not think DoD STARBASE will help me do better in school.*	N/A	6.03	6.11	6.03	6.06	6.14	6.18	5.96	6.20	6.27
DoD STARBASE is boring*	6.44	6.36	6.45	6.32	6.41	6.38	6.18	6.21	6.25	6.24
I like to make new things.	6.29	6.36	6.24	6.25	6.27	6.20	6.20	6.16	6.27	6.17
I am enjoying coming to a military base. (post only)	6.35	6.30	6.28	6.23	6.31	6.28	6.24	6.25	6.28	6.14
DoD Starbase is better than I expected (post only)	New Item in 2012							6.04	6.20	6.09
I like to think of new ways to use things.	6.17	6.13	6.00	6.06	6.10	6.02	5.92	5.82	6.12	6.04
I set goals for myself.	6.07	6.07	6.14	6.09	6.05	5.98	5.78	5.88	6.04	5.96
I would tell my friends to come to DoD STARBASE. (post only)	6.21	6.15	6.19	6.07	6.23	6.12	5.92	5.99	5.99	5.96

Table 19: (Continued)
Post-Program Attitudinal Item Mean Scores (2004 – 2014)

	2004	2005	2006	2007	2008	2009	2011	2012	2013	2014
Post-Program Attitudes	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean
Military bases are exciting. (replaced 'Military bases are fun.')	6.02	5.93	5.94	5.84	5.93	5.49	5.61	5.91	6.01	5.93
I use a computer at home	New Item in 2012							6.25	6.19	5.89
Learning can be fun.	6.15	6.12	6.03	5.93	6.02	6.00	5.82	5.91	5.95	5.88
I like science.	5.67	5.78	5.72	5.65	5.76	5.79	5.75	5.81	5.82	5.88
I am able to achieve my goals	New Item in 2012							5.95	5.88	5.84
I want to learn more about technology	New Item in 2012							5.51	5.83	5.83
I am good at following directions.	5.70	5.79	5.82	5.74	5.78	5.76	5.73	5.80	5.85	5.82
You can accomplish a lot in a group.	6.29	6.10	6.11	5.98	6.05	5.99	5.88	5.82	5.91	5.80
I make good decisions.	5.73	5.79	5.86	5.72	5.83	5.73	5.72	5.70	5.72	5.72
You can work better in a group (replaced 'You can have fun working in a group.')	6.34	6.24	6.20	6.11	6.19	6.18	6.05	5.52	5.59	5.55
I am good at science.	5.43	5.50	5.53	5.42	5.50	5.50	5.56	5.58	5.60	5.51
The military is a good place to work.	5.40	5.40	5.38	5.25	5.34	5.20	5.37	5.37	5.52	5.47
Learning is easy for me.	5.55	5.54	5.48	5.49	5.48	5.51	5.47	5.46	5.50	5.38
I am good at math.	5.27	5.35	5.28	5.36	5.36	5.35	5.40	5.42	5.37	5.33
I like math.	5.33	5.39	5.25	5.16	5.32	5.29	5.03	5.17	5.19	5.23
I am interested in being a scientist or engineer	New Item in 2012							4.21	4.19	4.30

** Values have been reverse coded with years 2004 – 2011 estimated.*

SHIFTS IN STUDENTS' ATTITUDES

Table 20 provides the 11 significant pre- to post-program attitudinal shifts for the 2014 program. As expected, the attitudinal items resulted in a positive shift from pre-program mean responses to post-program mean responses. In particular, there was a .37 increase from pre- to post-program mean response in students reporting that the DoD STARBASE instructors are kind and helpful. There also were impressive changes, averaging +.18, on three items reflecting positive attitudes towards military people (.19), military bases (.18) and military careers (.17), indicating that the DoD STARBASE program is achieving one of its primary goals. Further indicating that the DoD STARBASE program is achieving its goals, students also responded with greater positivity toward learning, science, math and computers.

Table 20:
The Top 10 Ranking of Attitudinal Item Shifts from Pre- to Post-Program in 2014

Attitudinal Item	Mean Positive Shift Pre- to Post-program
DoD STARBASE Instructors are kind and helpful.	+.37
Military people do lots of different things.	+.19
I am interested in being a scientist or engineer.	+.19
Military bases are exciting.	+.18
The military is a good place to work.	+.17
I am good at science.	+.15
Learning can be fun.	+.14
I am good at math.	+.12
I like using computers.	+.11
I like science.	+.09
I like to think of new ways to use things.	+.08

MATH AND SCIENCE ATTITUDINAL RATINGS

Similar to previous years, students' mean attitudes in Table 21 on science and math are more positive post- as compared to pre-program. In addition, students have larger shifts in being good at math and science post-program, suggesting that the STEM curriculum taught within the program is giving the students more confidence in their abilities pertaining to math and science. Table 22 shows the historical means for the science and math items beginning in 2004. The attitudes across years remain consistently favorable, with the general trend being that science attitudes are higher than math attitudes each year.

Table 21:
Math and Science Attitudinal Item Mean Scores (2014)

Math and Science Attitudinal Items	Pre-Program Mean	Post-Program Mean	Gap Score•
I like science.	5.79	5.88	+0.09
I am good at science.	5.36	5.51	+0.15
I am good at math.	5.21	5.33	+0.12
I like math.	5.17	5.23	+0.06

Table 22:
Post-Program Attitudinal Item Mean Scores (2004 – 2014)

	2004	2005	2006	2007	2008	2009	2011	2012	2013	2014
Post-Program Attitudes	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean
I like math.	5.33	5.39	5.25	5.16	5.32	5.29	5.03	5.17	5.19	5.23
I am good at math.	5.27	5.35	5.28	5.36	5.36	5.35	5.40	5.42	5.37	5.33
I like science.	5.67	5.78	5.72	5.65	5.76	5.79	5.75	5.81	5.82	5.88
I am good at science.	5.43	5.50	5.53	5.42	5.50	5.50	5.56	5.58	5.60	5.51

MILITARY-RELATED ATTITUDES

Shifts in Military-Related Attitudes

Table 23 shows the four items in the attitudinal survey related to perceptions surrounding the military.[19] The items remained similarly ranked when compared to 2013 and previous years. The item, "I am enjoying coming to a military base," was administered post-program only and decreased slightly in rank. The lowest ranked military-related item asks about the military as a good place to work (ranked 27 in the 2014 survey). This is slightly improved from 2012 and the same as in 2013, yet lower than in prior years. In general, it appears that students' attitudes about the military are still positively influenced by their DoD STARBASE experiences.

[19] Comparisons in Table 23 are for a 6 year period rather than an 8 year period due to economy of space considerations.

Table 23:
Attitudinal Shifts on Military-Related Items (2006 – 2014)

Military Attitudinal Items	2006	2007	2008	2009	2011	2012	2013	2014
	Shift	Shift	Shift	Shift	Shift	Shift	Shift	Shift
I am enjoying coming to a military base.	+.31	+.37	+.34	Post Only	Post Only	Post Only	Post Only	Post Only
Military people do lots of different things.	+.20	+.21	+.15	+.13	+.17	+.19	+.16	+.19
Military bases are exciting.	+.43	+.46	+.41	+.40	+.40	+.41	+.26	+.18
The military is a good place to work.	+.24	+.32	+.18	+.19	+.23	+.19	+.19	+.17

COMPARISON OF HIGH VS. LOW MILITARY ATTITUDE

Overall military attitudes were calculated based on a composite of those items administered both pre- and post-program. Student responses to the following items were summed for the post-program assessment only: "Military people do lots of different things," "The military is a good place to work," and "Military bases are exciting." Students with a sum total of 20 or 21 on those three items in the post-program assessment were categorized as having high military attitudes. Students with a sum total of 13 or less on those three items were categorized as having low military attitudes. "I am enjoying coming to a military base" was administered post-program only and was not included within the Military Attitude scale.

Table 24 provides the responses for all the attitudinal items rank-ordered from largest to smallest gap score between the high and low Military Attitude groups. As expected, the first several items are those that make up the composite scale. Other large differences between high and low military attitudes reflect:

- more interest in STEM activities (e.g., "I am interested in being a scientist or engineer", "I want to learn more about technology"),
- group work ("You can accomplish a lot in a group," "You can work better in a group"),
- novel ideas (e.g., "I like to think of new ways to use things," "I like to make new things"), and
- forward thinking (e.g., "I set goals for myself," "I think about what I want to be when I grow up").

In short, students with more receptive attitudes toward the military appear to also be more highly motivated in regard to STEM learning and applications. They report being more goal-oriented and confident as well. All of the gap differences between students with high or low Military Attitude scores are statistically significant.

Table 24:
Statistically Significant Post-Program Gap Scores Based on Low and High Military Attitudes

Attitude Item	Low Military Attitude (n = 115)	High Military Attitude (n = 401)	+/- Gap
Post-program Attitudes (mean total) Composite Score	5.15	6.31	1.16
The military is a good place to work.	3.07	6.78	3.71
Military bases are exciting.	3.49	6.92	3.43
Military people do lots of different things.	4.81	6.92	2.11
I am enjoying coming to a military base.	4.95	6.62	1.67
I like math.	4.26	5.64	1.38
I like to think of new ways to use things.	5.17	6.49	1.32
You can work better in a group.	4.72	6.01	1.29
Learning is easy for me.	4.63	5.86	1.23
I would tell my friends to come to DoD STARBASE.	5.13	6.35	1.22
Learning can be fun.	5.11	6.32	1.21
I am interested in being a scientist or engineer.	3.68	4.87	1.19
I want to learn more about technology.	5.14	6.26	1.12
I am able to achieve my goals.	5.14	6.24	1.1
You can accomplish a lot in a group.	5.17	6.27	1.1
I am good at math.	4.56	5.61	1.05
I set goals for myself.	5.26	6.32	1.05
I like to make new things.	5.6	6.57	0.97
DoD STARBASE is boring.*	5.64	6.57	0.93
DoD STARBASE is better than I expected.	5.50	6.39	0.89
I think about what I want to be when I grow up.	5.79	6.61	0.82
I am good at science.	5.04	5.83	0.78
I make good decisions.	5.19	5.97	0.78
At DoD STARBASE, I learned a lot of things that I can use.	5.90	6.67	0.77
I like science.	5.42	6.14	0.72
I am good at following directions.	5.42	6.10	0.68
DoD STARBASE Instructors are kind and helpful.	6.15	6.83	0.68
I do not think DoD STARBASE will help me do better in school.*	5.77	6.42	0.65
You can learn a lot by trying things.	6.16	6.70	0.54
I like using computers.	6.20	6.62	0.42
I plan to graduate from High School.	6.48	6.86	0.38

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

Knowledge total scores were also compared against military attitudes[20]. Table 25 shows that there were differential gains on the pre- and post-program mean knowledge assessment scores between those with high military attitudes and those with low military attitudes. Both groups (high and low military attitudes) had significant gains in knowledge scores pre- to post- program, but the high military attitude group showed marginally greater improvement (5.32 vs. 4.73).

Table 25:
Pre/Post-Knowledge Assessment Mean Scores for High and Low Military Attitude Students

Military Attitudes	Sample Size	Pre-Program Mean	Std. Deviation	Post-Program Mean	Std. Deviation
High Military Attitudes	401	12.26	4.16	17.58	5.30
Low Military Attitudes	115	11.96	3.65	16.69	5.12

**Significant increase in post-program means.*

GENDER COMPARISONS AND ATTITUDINAL DIFFERENCES

The following two tables provide the Attitudinal Survey mean total scores, as well as the item-level detail comparing the responses for both boys and girls. Table 26 shows the overall differences in responses based on gender for both the pre- and post-program responses. Although no significant differences are seen overall when comparing the pre- and post-program total responses, there are significant item-level differences as outlined in Table 27.

Girls responded significantly more favorably than boys to eight items focused on future planning and learning, and favorable attitudes to the DoD STARBASE program. Boys on the other hand, responded significantly more favorably than girls to five items, with most relating to more favorable attitudes toward STEM-related areas (e.g., "I want to learn more about technology," "I am interested in being a scientist or engineer," and "I am good at math").

The appendix contains all item means for both pre- and post-program attitudes (including gap scores) for boys and girls. The largest gain for girls and boys was "DoD STARBASE Instructors are kind and helpful" with an increase of .36 and .38, respectively.

Table 26:
Gender Differences on Pre/Post Attitude Survey Mean Total Scores

	Sample Size	Pre-Program Mean	Post-Program Mean	Performance Gap Score
Boys	544	5.76	5.91	+.15
Girls	561	5.80	5.92	+.12

[20] Detailed analysis of the knowledge items is provided in later sections of this report.

Table 27:
Gender Gap Score Differences in Post-Program Attitude Survey Mean Item Scores

Attitude Item	Girls' Rank	Girls' Mean	Boys' Rank	Boys' Mean	G - B Difference
Girls More Favorable than Boys					
I am good at following directions.	14	6.06	24	5.57	0.50
I make good decisions.	18	5.91	26	5.52	0.39
I would tell my friends to come to DoD STARBASE.	12	6.12	21	5.81	0.31
DoD STARBASE is better than I expected.	10	6.23	15	5.94	0.30
I think about what I want to be when I grow up.	4	6.44	7	6.26	0.18
I do not think DoD STARBASE will help me do better in school. (reverse scored)	7	6.34	10	6.19	0.16
I plan to graduate from High School.	1	6.82	1	6.68	0.15
You can learn a lot by trying things.	3	6.52	4	6.39	0.13
Boys More Favorable than Girls					
I am interested in being a scientist or engineer.	31	3.94	31	4.68	-0.74
I want to learn more about technology.	24	5.61	12	6.06	-0.46
I am good at math.	29	5.19	28	5.48	-0.29
Military bases are exciting.	22	5.81	13	6.05	-0.24
You can work better in a group.	26	5.44	23	5.66	-0.22

PRIOR EXPERIENCE WITH THE MILITARY

Comparisons Based on Prior Experience with Military Personnel

Prior experience with military locations and/or personnel was related to the pre- and post-program attitudinal patterns of the students. Prior experience was determined by affirmative responses to the demographic item "I have met military people before coming to DoD STARBASE". As expected, those with prior military exposure had more positive attitudes before and after the program as compared to those with no prior military exposure (Table 28).

Table 28:
Significant Differences in Attitudinal Items Based on Prior Military Contact

More Positive with Prior Military Contact
I am good at math. (pre & post)
I am good at science. (pre & post)
Learning is easy for me. (pre & post)
Military people do lots of different things. (pre & post)
The military is a good place to work. (pre & post)
I like science. (pre only)
You can learn a lot by trying things. (pre only)
Military bases are exciting. (post only)
I like to think of new ways to use things. (post only)
I use a computer at home. (post only)
I think about what I want to be when I grow up. (post only)
I am enjoying coming to a military base. (post only)

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

Gender Differences Based on Prior Experience with Military Personnel

Experience with military personnel was also reviewed based on gender differences for both attitudinal (Table 29) and knowledge-based pre- and post-program responses (Table 30). No significant differences were found between boys and girls in either the pre- or post-program means for either prior experience group indicating that the differences in mean scores are more likely derived from prior military experience versus a function of gender.

Table 29:
Prior Experience with the Military Attitudinal Differences by Gender

	No Prior Experience with Military		Prior Experience with Military		Difference Between Post-Program Means
	Pre-Program Mean	Post-Program Mean	Pre-Program Mean	Post-Program Mean	
Boys	5.68	5.77	5.81	5.99	+.22
Girls	5.76	5.88	5.84	5.95	+.07

Table 30:
Prior Experience with the Military Knowledge Differences by Gender

	No Prior Experience with Military		Prior Experience with Military		Difference Between Post-Program Means
	Pre-Program Mean	Post-Program Mean	Pre-Program Mean	Post-Program Mean	
Boys	11.45	16.65	12.93	17.96	+1.31
Girls	11.65	16.64	13.17	18.50	+1.86

Comparisons Based on Prior Knowledge of DoD STARBASE

Knowledge of the program was measured by responses to, "I heard about DoD STARBASE before I knew I was coming here." Those familiar with DoD STARBASE responded significantly more favorably to two of the Attitudinal Survey items both pre- and post-program (Table 31). Those entering the program that had heard about DoD STARBASE responded significantly more favorably to 11 additional items pre-program. Finally, students that had heard of DoD STARBASE responded significantly more favorably to two additional items post-program.

The most favorable ratings both pre- and post-program indicate that the majority of students are:

- hearing positive feedback from former participants;
- entering the program with more positive expectations; and
- ending the program with more favorable attitudes than their counterparts that did not hear about DoD STARBASE before going through the program.

Table 31:
Significant Differences on Attitudinal Survey Items Based on Knowledge of DoD STARBASE Ranked High to Low

Pre-Program Only	Pre- and Post-Program
Learning is easy for me.	I like to think of new ways to use things.
Learning can be fun.	I like to make new things.
I am good at math.	
I am good at following directions.	
You can accomplish a lot in a group.	**Post-Program Only**
I make good decisions.	DoD STARBASE is boring. (Reverse Scored)
I am able to achieve my goals.	Military bases are exciting.
You can learn a lot by trying things.	
I set goals for myself.	
I plan to graduate from High School.	
DoD STARBASE Instructors are kind and helpful.	

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

IMPACT OF STUDENT AGE AND GRADE ON REPORTED ATTITUDES

Table 32 presents statistically significant correlations between a student's age and grade in school with Attitudinal Survey items. Although the magnitudes of the relationships are all fairly small, the positive relationships suggest that slightly older students may serve as role models to their younger peers for a positive engagement in the DoD STARBASE program, including an appreciation for math, working in groups, creativity and the military. The complete Pearson Correlation matrix can be found in the appendix for the Post-Program Attitudinal Student Survey and the Knowledge Assessment.

Table 32:
Relationships of Student Age and Grade With Post-Program Attitudinal Responses

	Correlation	
	Grade	Age
I like science.		.060*
I am able to achieve my goals.	.076*	.107**
You can work better in a group.	.093**	.096**
I like to make new things.	.060*	
The military is a good place to work.		.085**
Military bases are exciting.	.066*	.060*
I like to think of new ways to use things.		.090**
I want to learn more about technology.		.086**
I am enjoying coming to a military base.		.062*

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

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COMPARISONS BASED ON CLASS SCHEDULE

Academies were compared based on class schedule (Table 33). Class schedule was categorized as meeting

- on consecutive days (18 academies and 431 students),
- once per week (28 academies and 611 students), or
- some other schedule (3 academies and 63 students).

Students attending once per week demonstrated the lowest knowledge program scores, but started out the lowest and had moderate gains, showing more improvement than the other schedule group. Attitudinally, the pre-program scores were comparable across class schedule with the consecutive class schedule demonstrating the most improvement in favorable attitude scores post-program (increase of .16). Further information regarding what constitutes the "Other Schedule" may provide additional insight.

Table 33:
Class Schedule Pre-program and Post-program Knowledge and Attitudinal Scores

	Knowledge Scores•			Attitudinal Scores		
	Pre-Program	Post-Program	Gap	Pre-Program	Post-Program	Gap
Consecutive	13.09	18.34	5.26	5.79	5.95	0.16
Once per week	11.91	16.99	5.08	5.78	5.90	0.12
Other schedule	12.71	17.59	4.87	5.75	5.86	0.11

** Means are significantly different across class schedule.*

DRIVERS OF OPINION

The subsections of the table below (Table 34) provide a list of non-overlapping statistical predictors of the target attitudes rank-ordered by relative impact (beta weight) of the driver on the target attitude. That means that if the conditions in the list are present, it is very likely the target attitude will be present also. Many consider these lists to be prioritized action items for improving the target attitude.

There are repeating drivers that appear to have a broad impact on the target attitudes. The five main drivers with the most impact on at least four of the target attitudes include:

- I like science.
- The military is a good place to work.
- I am enjoying coming to a military base.
- DoD STARBASE is better than I expected.
- DoD STARBASE is boring. (reverse)

Four other drivers impacted at least three target attitudes:

- I like to make new things.
- I like to think of new ways to use things.
- I like using computers.
- Learning is easy for me.

Improving these attitudes may affect many other attitudes as well. Some of the driver attitudes are potentially more easily influenced directly by DoD STARBASE program delivery elements, such as content, activities, and instructors. To the extent that academies are able to create a stimulating, rewarding and supportive learning environment, positive student attitudes can be enhanced and reinforced, which may pay continuing dividends over the longer term after DoD STARBASE attendance. These desirable outcomes include word of mouth endorsement, further pursuit of learning about technology, STEM career motivation, and possibly military enlistment.

Table 34:
Drivers of Key Target Attitudes (Post-Program Responses)

Target Attitude	Drivers of Target Attitude	Adjusted R Square
At DoD STARBASE, I learned a lot of things that I can use.	I would tell my friends to come to DoD STARBASE.	.263
	I am enjoying coming to a military base.	.307
	DoD STARBASE is better than I expected.	.333
	I like to make new things.	.353
	You can accomplish a lot in a group.	.367
	I do not think DoD STARBASE will help me do better in school.	.376
	I like science	.381

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Table 34: (Continued)
Drivers of Key Target Attitudes (Post-Program Responses)

Target Attitude	Drivers of Target Attitude	Adjusted R Square
I would tell my friends to come to DoD STARBASE.	DoD STARBASE is better than I expected.	.309
	At DoD STARBASE, I learned a lot of things that I can use.	.406
	DoD STARBASE is boring.	.422
	You can learn a lot by trying things.	.436
	I set goals for myself.	.445
	I am enjoying coming to a military base.	.449
	I like using computers.	.452
I want to learn more about technology.	I am interested in being a scientist or engineer.	.158
	I like using computers.	.235
	I like to think of new ways to use things.	.257
	You can accomplish a lot in a group.	.269
	DoD STARBASE is boring.	.278
	I use a computer at home.	.283
	I like science.	.289
	The military is a good place to work.	.294
	DoD STARBASE is better than I expected.	.299
	DoD STARBASE Instructors are kind and helpful.	.302
	Military people do lots of different things.	.305
I am interested in becoming a scientist or engineer	I want to learn more about technology.	.158
	I like science.	.223
	Learning is easy for me.	.241
	The military is a good place to work.	.250
	I like to make new things.	.256
	I like using computers.	.260
	DoD STARBASE is better than I expected.	.264

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Table 34: (Continued)
Drivers of Key Target Attitudes (Post-Program Responses)

Target Attitude	Drivers of Target Attitude	Adjusted R Square
Military bases are exciting.	The military is a good place to work.	.308
	I am enjoying coming to a military base.	.428
	DoD STARBASE is boring.	.449
	Military people do lots of different things.	.461
	I like to think of new ways to use things.	.470
	DoD STARBASE Instructors are kind and helpful.	.472
Military people do lots of different things.	Military bases are exciting.	.131
	I plan to graduate from High School.	.181
	The military is a good place to work.	.203
	Learning is easy for me.	.211
	I am enjoying coming to a military base.	.217
Learning can be fun.	You can learn a lot by trying things.	.240
	Learning is easy for me.	.339
	I like math.	.371
	I like to think of new ways to use things.	.397
	DoD STARBASE is boring.	.408
	I like science.	.413
	I am good at math.	.417
	I think about what I want to be when I grow up.	.420
	I like to make new things.	.423
	I set goals for myself.	.426

STUDENT KNOWLEDGE AND SKILLS

The following table (Table 35) breaks down the Knowledge Assessment items into the specific curriculum areas measured. Only the item stems are presented here.

Table 35:
Scored and Pilot Knowledge Items by Curriculum Area

Chemistry Science (E3.1.1.2)	
Item #	Atmospheric Properties
5	Which pie chart represents the correct composition of air?
19	Based on the elevation shown in the table and diagram, in which city would the atmosphere be the least dense?
20	Which of the following has properties similar to the properties of air?
30	On hot days, balloons get larger as the kinetic energy of the air inside increases. Why does this happen even though no extra air is added?
Item #	Building Blocks
10	Hydrogen and Oxygen bond to form water (H2O). What does this bonded substance represent?
3	Some characteristics of one bottle of water (H2O) are given in the table below. If temperature and altitude stay the same, which characteristic will change when you compare a bottle of water to a bathtub of water?
Item #	Physical and Chemical Changes
4	Which of the following is an example of physical change?
18	Which of the following states of matter have the least amount of kinetic energy?
Engineering (E3.1.1.4)	
Item #	3-D Computer-Aided Design
22	Which of the following statements about 3-D Computer-Aided Design (CAD) is true?
Item #	Engineering Design Process
8	Why are prototypes a key part of the engineering design process?
27	You have produced a new candy bar with all of your favorite ingredients. You have asked your family and friends to try your new candy bar. What step of the engineering design process (EDP) are you completing?
Mathematics Operations & Applications (E3.1.1.5)	
Item #	Data Analysis
13	An experiment calls for 150 milliliters of water. If you are performing the experiment three times, what is the total amount of water you will need?
24	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.
Item #	Geometry
12	In the graph above, find the letter that is at the coordinates (3,-2). Is it A, B, C, or D?

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Table 35: (Continued)
Scored and Pilot Knowledge Items by Curriculum Area

Item #	Measurement
17	Which of the following is typically measured in nanometers?
23	Based on the boxes above, which container will hold the most amount of water when completely filled?
26	Of the following, which tool would be appropriate to measure the volume of a glass of milk?
Item #	Numbers and Number Relationships
31	Which of the following conversions is accurate?
29	What is the decimal equivalent to 89%
Physics (E3.1.1.1)	
Item #	Fluid Mechanics & Aerodynamics
2	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?
14	You blow air through a tube that is smaller in the center and equal sizes at the ends. As the air moves from left to right through the tube, the air pressure is measured at three points: A, B, and C. Based on the above diagram, where would you expect the air pressure to be highest?
Item #	Newton's Three Laws of Motion
1	Two rockets are launched using the same amount of force. One rocket is heavier than the other. Which rocket will go higher?
11	You are holding a cup filled to the rim with water as you drive around an oval track. You maintain a constant speed without changing directions. As expected, the water in the cup spilled at predicted points during your drive. When did the water NOT spill from the cup?
16	Two trains are getting ready to race. The mass of Train A is greater than the mass of Train B. The trains begin to move down the tracks but neither train can get ahead of the other. What can you conclude?
28	According to Newton's third law of motion, when a car windshield strikes and exerts force on a bug, the bug _____.
25	What scientific law makes it important to wear a seat belt?
Technology (E3.1.1.3)	
Item #	Innovations
6	Which of the following questions is testable in a scientific investigation?
9	You are working on a new product to melt snow and ice on walkways. You test the product by measuring the time it takes for the area to become safe for walking. What conclusion would you make based on the following results?
Item #	Navigation and Mapping
32	What do the following three technology tools have in common? • G.P.S. technology • Remote imagery • Electronic/computerized maps
15	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?
21	If you were asked to draw a latitude line and a longitude line on the above map, which of the arrow symbols below would point in the same direction as the latitude line?
7	Which of the following would be a good reason to use latitude and longitude coordinates?

PRE/POST KNOWLEDGE ITEMS BY CURRICULUM AREA

The 27 core items of the knowledge assessment were categorized according to the DoD STARBASE curriculum area they most closely measure in order to calculate scale scores. Table 36 shows the pre- and post-program assessment mean score by curriculum area (sample size=1,106). All item categories (e.g., Chemistry Sciences, Physics) show significant improvement post-program as compared to responses prior to participation in DoD STARBASE. Similar to last year, the largest improvement was seen in Chemistry Sciences (+1.86), with Atmospheric Properties (+.98) showing the most gain. The smallest post-program increases were in the Engineering (+.29) and Technology (+.73) areas, where there were only modest improvements for Navigation and Mapping (+.60) and Innovation (+.12).

Table 36:

Pre/Post Knowledge Scores by Curriculum Area

Curriculum Area	# of Items	Pre-Program Mean Score	Post-Program Mean Score*	Gap
KNOWLEDGE ITEM TOTAL (Excludes pilot items)	27	12.42	17.56	5.14
Chemistry Sciences (Subtotal)	**8**	**2.72**	**4.58**	**1.86**
Building Blocks of Matter	2	.66	1.08	0.42
Physical and Chemical Changes	2	.71	1.18	0.47
Atmospheric Properties	4	1.34	2.32	0.98
Physics (Subtotal)	**4**	**1.51**	**2.65**	**1.14**
Fluid Mechanics and Aerodynamics	1	.06	.68	0.62
Newton's Three Laws of Motion	3	1.44	1.97	0.53
Mathematics Operations and Applications (Subtotal)	**7**	**3.75**	**4.87**	**1.12**
Data Analysis	2	1.30	1.49	0.19
Geometry	1	.49	.66	0.17
Measurement	3	1.28	1.94	0.66
Numbers and Number Relationships	1	.68	.78	0.10
Technology (Subtotal)	**5**	**2.45**	**3.18**	**0.73**
Innovation	1	.59	.71	0.12
Navigation and Mapping	4	1.87	2.47	0.60
Engineering: 3-D Computer-Aided Design	**3**	**1.99**	**2.28**	**0.29**
3-D Computer	1	.59	.68	0.09
Engineering Design Process	2	1.40	1.60	0.20
Piloted Items (Subtotal – Not included in totals)	**5**	**2.09**	**2.62**	**0.53**
New Mathematics Numbers and Number Relationships Item	1	.48	.61	0.13
New Physics Fluid Mechanics and Aerodynamics item	1	.31	.43	0.12
New Physics Newton's Three Laws of Motion items	2	.69	.90	0.21
New Technology Innovation Item	1	.61	.68	0.07

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

PRE/POST KNOWLEDGE SCORES

Table 37 compares the pre- and post-program mean scores, percent correct, and gap differences for the Knowledge Assessment since 2002. The content changes in 2011 were carried over to 2014, 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 2011-2014 assessments presented students with situations where they must apply the facts learned in order to answer the question. The application-based items have made the assessment more difficult than in the past. The difference between pre- and post-assessment scores for each of the years is statistically significant. The 2011-2014 versions of the test are more difficult, resulting in fewer correct answers for both pre- and post-assessments. However, the gain scores have remained substantial (average gain score 2002-2009 = 5.36 and average gain score 2011-2013 = 5.67). The comparatively lower pre- and post-assessment scores in 2014 may also be due partly to the disruption caused by sequestration, especially with non-participation of some of the more established programs during this past year. Even while the average pre- and post-assessment scores were a bit higher in 2014 than in 2013, the percentage of correct answers given fell somewhat again to their lowest observed points although the gap percentage is still above the long term average (19% vs. 18%).

Table 37:
Pre/Post Knowledge Assessment Mean Total Scores and Percent Correct (2002 – 2014)

Year	2002	2003	2004	2005	2006	2007	2008	2009	2011*	2012	2013	2014
# of Items	30	30	30	30	32	30	33	33	32	30	25	27
Pre-Program Score	18.44	19.12	19.09	17.81	19.06	19.05	20.62	21.15	15.77	14.88	12.18	12.42
	(61.5%)	(63.7%)	(63.6%)	(59.4%)	(59.6%)	(63.5%)	(62.5%)	(64.1%)	(49.3%)	(49.6%)	(48.7%)	(46.0%)
Post-Program Score	22.67	24.42	24.25	23.28	25.40	24.31	26.23	26.62	21.53	21.45	17.37	17.56
	(75.6%)	(81.4%)	(80.8%)	(77.6%)	(79.4%)	(81.0%)	(79.5%)	(80.7%)	(67.3%)	(71.5%)	(69.5%)	(65.0%)
Gap	+4.23	+5.30	+5.16	+5.47	+6.34	+5.26	+5.61	+5.47	+5.76	+6.57	+5.19	+5.14
	(14.1%)	(17.7%)	(17.2%)	(18.2%)	(19.8%)	(17.5%)	(17.0%)	(16.6%)	(18%)	(21.9%)	(20.8%)	(19%)

* *Knowledge items were updated in 2011 to reflect new content areas based on current DoD STARBASE curriculum standards.*

Table 38 rank-orders the gap difference for each item based on pre- to post-program percentage correct for the past three years. The percentage of students answering an item correctly increased for all items 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 that answered certain items correctly pre-program. For example, 82% of the incoming students responded correctly to a question about rocket maximum altitude, resulting in a small gap score improvement (6%) to the same item post-program (88%). Using this example, it is expected that most students will have smaller gap scores pre- to post-program on items measuring core concepts already taught as part of their formal school programs. 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 6% to 68%, resulting in a 62% increase in those responding correctly pre- to post-program. The average increase in correct responding from pre- to post-program in 2014 was 18%.

Table 38:
2012 - 2014 Pre/Post Knowledge Item Mean Percentage Correct
With Rank-Ordered Difference Post- to Pre-Program for 2014

	2012		2013		2014		
Knowledge Item	Pre-Program % Correct	Post-Program % Correct	Pre-Program % Correct	Post-Program % Correct	Pre-Program % Correct %	Post-Program Correct	% Difference (2014 Post-Pre)
2. Two boats are floating by each other and passing cargo from one boat to the other. Based on Bernoulli's Principle, what happens if water is forced between the two boats?*	7%	67%	7%	67%	6%	68%	62%
5. Which pie chart represents the correct composition of air?	12%	75%	13%	71%	12%	73%	61%
10. Hydrogen and Oxygen bond to form water (H2O). What does this bonded substance represent?	39%	70%	43%	71%	36%	70%	34%
25. What scientific law makes it important to wear a seat belt?	39%	75%	39%	75%	38%	72%	34%
17. Which of the following is typically measured in nanometers?*	40%	72%	38%	71%	41%	69%	28%
7. Which of the following would be a good reason to use latitude and longitude coordinates? *	--	--	43%	70%	41%	69%	28%
18. Which of the following states of matter have the least amount of kinetic energy?*	46%	72%	51%	73%	36%	62%	26%
26. Of the following, which tool would be appropriate to measure the volume of a glass of milk?*	--	--	39%	60%	53%	75%	22%
4. Which of the following is an example of physical change?	31%	57%	33%	61%	35%	55%	20%
21. If you were asked to draw a latitude line and a longitude line on the above map, which of the arrow symbols below would point in the same direction as the latitude line?	43%	61%	38%	62%	40%	57%	17%
12. In the graph above, find the letter that is at coordinates (3, -2). Is it A, B, C, or D?	49%	69%	48%	67%	49%	66%	17%
23. Based on the boxes above, which container will hold the most amount of water when completely filled?†	--	--	31%	50%	34%	50%	16%

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Table 38: (Continued)
2012 - 2014 Pre/Post Knowledge Item Mean Percentage Correct
With Rank-Ordered Difference Post- to Pre-Program for 2014

	2012		2013		2014		
Knowledge Item	Pre-Program % Correct	Post-Program % Correct	Pre-Program % Correct	Post-Program % Correct	Pre-Program % Correct	Post-Program % Correct	% Difference (2014 Post-Pre)
19. Based on the elevation shown in the table and diagram, in which city would the atmosphere be the least dense?	25%	51%	29%	51%	30%	46%	16%
28. According to Newton's third law of motion, when a car windshield strikes and exerts force on a bug, the bug _____.†	--	--	--	--	26%	40%	14%
20. Which of the following has properties similar to the properties of air?	--	--	--	--	40%	53%	13%
8. Why are prototypes a key part of the engineering design process?	56%	68%	56%	69%	64%	77%	13%
31. Which of the following conversions is accurate?†	--	--	--	--	48%	61%	13%
24. An engineer is testing how well three different towels absorb liquids over three trials. The data for the experiment is in the table below. Select the graph that correctly represents the data of the experiment.	55%	69%	54%	69%	55%	67%	12%
14. You blow air through a tube that is smaller in the center and equal sizes at the ends. As the air moves from left to right through the tube, ... Based on the above diagram, where would you expect the air pressure to be highest?†	--	--	--	--	31%	42%	11%
16. Two trains are getting ready to race. The mass of Train A is greater than the mass of Train B. The trains begin to move down the tracks but neither train can get ahead of the other. What can you conclude?	19%	38%	22%	34%	25%	37%	12%
9. You are working on a new product to melt snow and ice on walkways. You test the product by measuring the time it takes for the area to become safe for walking. What conclusion would you make based on the following results?*	--	--	60%	71%	59%	71%	12%

Continued on next page

Table 38: (Continued)
2012 - 2014 Pre/Post Knowledge Item Mean Percentage Correct
With Rank-Ordered Difference Post- to Pre-Program for 2014

	2012		2013		2014		
Knowledge Item	Pre-Program % Correct	Post-Program % Correct	Pre-Program % Correct	Post-Program % Correct	Pre-Program % Correct	Post-Program % Correct	% Difference (2014 Post-Pre)
15. You start out at the flag (coordinates -1, 3) and walk two kilometers North, then one kilometer West and stop for lunch. After lunch, you head to your friend's house which is five kilometers to the East. Where does your friend live? *	46%	63%	46%	62%	59%	70%	11%
29. What is the decimal equivalent to 89%?	87%	94%	72%	87%	68%	78%	10%
22. Which of the following statements about 3-D Computer-Aided Design (CAD) is true? *	65%	76%	63%	73%	59%	68%	9%
3. Some characteristics of one bottle of water (H2O) are given in the table below.*	--	--	31%	37%	30%	39%	9%
11. You are holding a cup filled to the rim with water as you drive around an oval track. You maintain a constant speed without changing directions. As expected, the water in the cup spilled at predicted points during your drive. When did the water NOT spill? †	--	--	--	--	42%	51%	9%
27. You have produced a new candy bar with all of your favorite ingredients. You have asked your family and friends to try your new candy bar. What step of the engineering design process (EDP) are you completing? *	75%	86%	76%	88%	76%	83%	7%
6. Which of the following questions is testable in a scientific investigation?†	--	--	--	--	61%	68%	7%
1. Two rockets are launched using the same amount of force. One rocket is heavier than the other. Which rocket will go higher?	79%	92%	82%	91%	82%	88%	6%
30. On hot days, balloons get larger as the kinetic energy of the air inside increases. Why does this happen even though no extra air is added? *	57%	60%	51%	61%	53%	59%	6%

Continued on next page

Table 38: (Continued)
2012 - 2014 Pre/Post Knowledge Item Mean Percentage Correct
With Rank-Ordered Difference Post- to Pre-Program for 2014

	2012		2013		2014		
Knowledge Item	Pre-Program % Correct	Post-Program % Correct	Pre-Program % Correct	Post-Program % Correct	Pre-Program % Correct %	Post-Program Correct	% Difference (2014 Post-Pre)
13. An experiment calls for 150 milliliters of water. If you are performing the experiment three times, what is the total amount of water you will need?	78%	88%	77%	84%	75%	81%	6%
32. What do the following three technology tools have in common?*	22%	39%	28%	44%	46%	52%	6%

**Item content modified from last administration*
† New item for 2014

YEARLY COMPARISONS FOR POST-PROGRAM KNOWLEDGE ASSESSMENT

In 2011, the content of the knowledge assessment was updated based on curriculum changes throughout the DoD STARBASE program. The assessment began measuring new concepts that were more challenging to the students resulting in lower scores overall. Table 39 shows the year-over-year post-program knowledge scores beginning in 2002. The post-program percent correct knowledge scores remained fairly consistent from 2002 through 2009. The lower percent correct in 2011 through 2014 is indicative of the updates to the assessment content every year. Note that in 2014 only 27 items were scored which, though two more than in 2013, were designed to be somewhat harder, as evidenced by the almost 5% lower percentage of correct answers.

Table 39:
Post-Program Knowledge Assessment Mean Total Scores and Percent Correct (2002 – 2014)

Year	2002	2003	2004	2005	2006	2007	2008	2009	2011	2012	2013	2014
	30	30	30	30	32	30	33	33	32	30	25	27
Post-Program Mean Score	22.67	24.42	24.25	23.28	25.40	24.31	26.23	26.62	21.53	21.45	17.37	17.56
% Correct	75.6%	81.4%	80.8%	77.6%	79.4%	81.0%	79.5%	80.7%	67.3%	71.5%	69.5%	65.0%

Table 40 highlights the knowledge measures over the past six years including the pre- and post-program means as well as the post-program average student percentage correct and gap score. The 2008 and 2009 results show the two years prior to the core STEM changes implemented in 2010. The 2011 and 2012 results show the two years after the curriculum changes. The gap scores for 2011 and 2012 are higher despite the more challenging items on the assessment, indicating that the DoD STARBASE program was effective in helping the students to better understand the complex concepts on which they were assessed. In 2013 and 2014, both the pre-program mean and the post-program mean were lower than in previous years, which may reflect the decrease in number of items scored beginning in 2013 and/or the academic preparation of the students coming to the DoD STARBASE program. Nonetheless, the program continues to create a demonstrable increase in student knowledge.

Table 40:
Mean Scores on Pre/Post Knowledge Assessment (2008 – 2014)

Program Year	# of Items	Pre-Program Mean	Post-Program Mean	Post Average Student %	Gap Score
2008	33	20.62	26.23	79.5	+5.61
2009	33	21.15	26.62	80.7	+5.47
2011	32	15.77	21.53	67.3	+5.76
2012	30	14.88	21.45	71.5	+6.57
2013	25	12.18	17.37	69.5	+5.19
2014	27	12.42	17.56	65.0	+5.14

The three knowledge items that were retained from previous assessments are presented in Table 41 along with the percentage of correct responses beginning in 2007. The percent correct for the item asking about the scientific law regarding wearing a seat belt has been the most variable between 2009 and 2012. This is most likely due to the modifications made to the response options in 2011 and 2012. Although there has been slight variability in correct response since 2007, the largest difference occurred this year with fewer students responding correctly (11% decrease) to the state of matter having the least amount of kinetic energy. The dramatic decrease is most likely due to the verbiage change this year taking out the clarifying statement for kinetic energy. In 2013, the item read "In what state of matter do molecules have the least amount of kinetic energy or motion?"

Table 41:
Post-Program Percentage Correct Responses for Recurrent Knowledge Items
(2007 – 2014)

	2007	2008	2009	2011	2012	2013	2014	
Post-Program Knowledge	% Correct	% Correct	% Correct	% Correct	% Correct	% Correct	% Correct	2014-2013 Difference
25. What scientific law makes it important to wear a seat belt?*	74	73	76	64	75	75	72	-3
1. Two rockets are launched using the same amount of force. One rocket is heavier than the other. Which rocket will go higher?*	87	87	86	86	92	91	88	-3
18. Which of the following states of matter have the least amount of kenetic energy?*	70	70	73	74	72	73	62	-11

**Modifications made to the original item verbiage.*

GENDER DIFFERENCES ON KNOWLEDGE TEST

Table 42 presents the pre- and post-program scores and gap differences between scores, based on gender. Unlike the prior year, the pre-program knowledge score was slightly higher for girls than for boys. The average post-program knowledge score for girls is also higher, but neither gender difference was statistically significant. By contrast, the knowledge increase from pre- to post-program is significant for both boys and girls.

Table 42:
Pre/Post Knowledge Assessment Mean Scores by Gender

	Sample Size	Pre-Program Score	Post-Program Score*	Individual Gap Score
Boys	544	12.35	17.45*	+5.10
Girls	561	12.50	17.67*	+5.17

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

The differences in gap scores between girls and boys from 2004 to 2014 range from the smallest absolute difference of .07 in 2014 to the largest absolute difference of .72 in 2007 (Table 43). Girls obtained larger gap scores across the years with the exceptions in 2011 and 2013 where boys obtained a larger gap score than the girls.

Table 43:
Gender Gap Score Differences (2004-2014) on Knowledge Test

Gender	2004	2005	2006	2007	2008	2009	2011	2012	2013	2014
# of Items	30	30	32	30	33	33	32	30	25	27
Boys	+5.08	+5.33	+6.09	+5.09	+5.37	+5.19	+5.83	+6.39	+5.31	+5.10
Girls	+5.25	+5.64	+6.58	+5.81	+5.80	+5.74	+5.69	+6.76	+5.09	+5.17
Difference	+.17	+.31	+.49	+.72	+.43	+.55	-.14	+.37	-.22	+.07

HIGH VS. LOW PERFORMERS ON KNOWLEDGE TEST

Figure 7 illustrates the differences between high and low performers on the pre- and post-program knowledge assessment. Performance was measured using the post-program total assessment score sample mean of 17.56 and standard deviation of 5.20. High performance was considered to be a total score of 23 or higher (17.56 + 5.20, rounded to whole unit value). A total of 19% of the sample was classified as high performers. Low performance was defined to be a total score of 12 or lower (17.56 - 5.20, rounded to whole unit value). A total of 19% of the sample was tagged as low performers. Both the low and high performers showed significant improvements after participating in the DoD STARBASE program. Similar to the past several years' results, those students who scored low on the post-assessment also scored low on the pre-assessment and did not improve as much. The low performers' average gap score was a .75-point increase from pre- to post-program, compared to the high performers who improved on average by 8 points. The differences between the two groups in pre- and post-program total scores are statistically significant. The pre- and post-program averages on the attitude survey overall were also lower for low knowledge assessment performers. The low performing group had a significantly lower mean attitude rating both pre- and post-program (5.57 and 5.69 respectively) as compared to the high performing group (5.96 and 6.09 respectively).

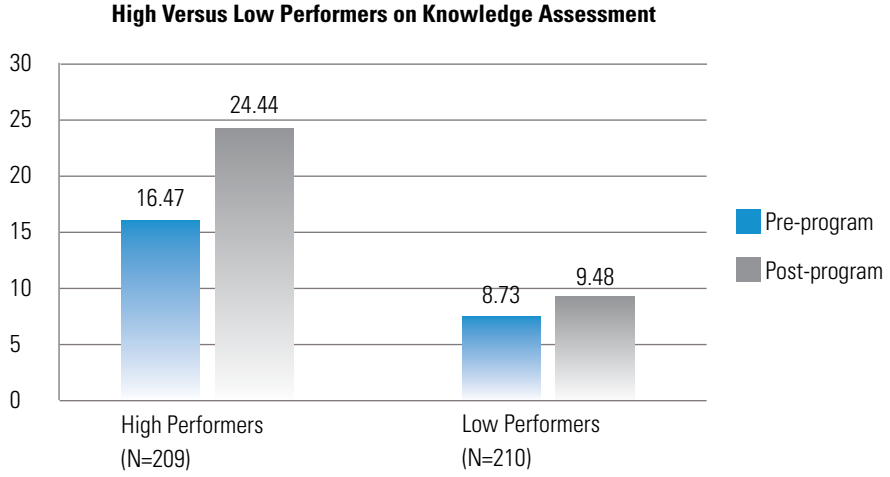


Figure 7.

PARTICIPATING TEACHER ASSESSMENT

Introduction

Classroom teachers participating in the DoD STARBASE program were invited by the individual DoD STARBASE academies to complete the online Teacher Survey. The Teacher Survey collects background information along with teacher views about the DoD STARBASE program and curriculum, as well as the program's perceived impact on their students, themselves and the school system. Each academy was requested to provide at least 10 completed Teacher Surveys. During the 2013-2014 program year, (August 2013 to June 2014)[21], 1,076 teachers from 49 academies across the U.S. completed the online survey. This report provides a summary of the Teacher Survey responses from the current program year. In addition, historical comparisons provide trends over recent years as a component of evaluating the DoD STARBASE program.

Historical Trends

The Teacher Survey has been a formal component of the DoD STARBASE evaluation program since the 2000-2001 program year. Over the 14 year span of the survey, teacher responses have remained consistently favorable on most of the dimensions measured by the survey, and this also is largely true of the latest results. The figures below illustrate several of the more notable recent trends. The average ratings obtained in 2014, 2013, and 2012 are compared to the average ratings achieved during the combined three previous years (2009-2011). Although the magnitude of year-to-year differences is relatively small, ratings are consistently high.

This year, teachers again indicated that students were more interested in learning math. They also reported increased participation in science fairs compared to years prior to 2012 (see Figure 8). Even so, the ratings of both student behaviors are somewhat lower than in the last two years, though still above the prior three year period. This may be indicative of a continuing downward trend in student STEM interest as a function of STARBASE exposure but cannot be determined with certainty from presently available data. It should be monitored in coming program years, along with other information.

[21] In the remainder of this report, this will simply be referenced as 2014.

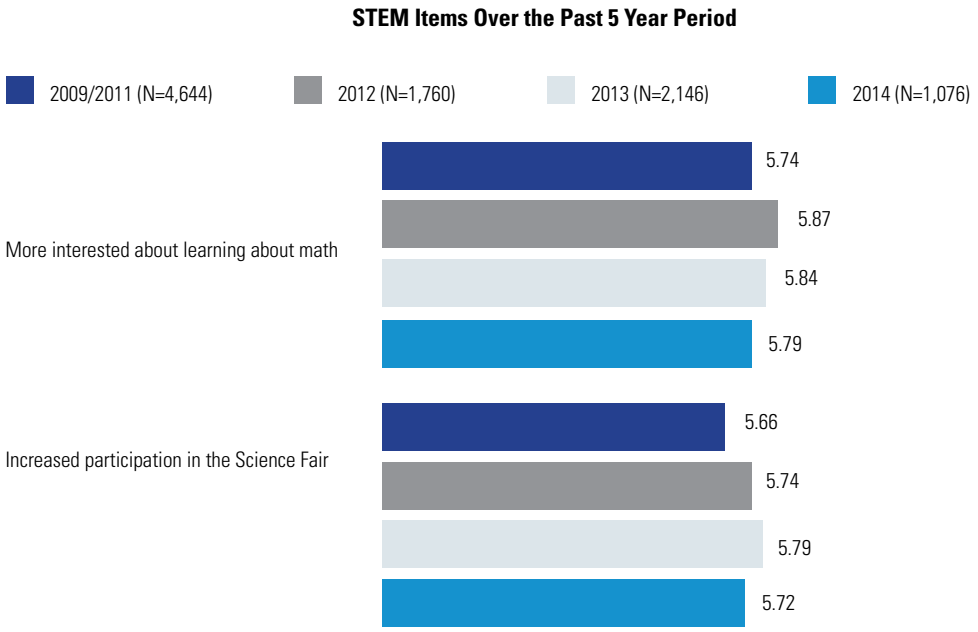


Figure 8.

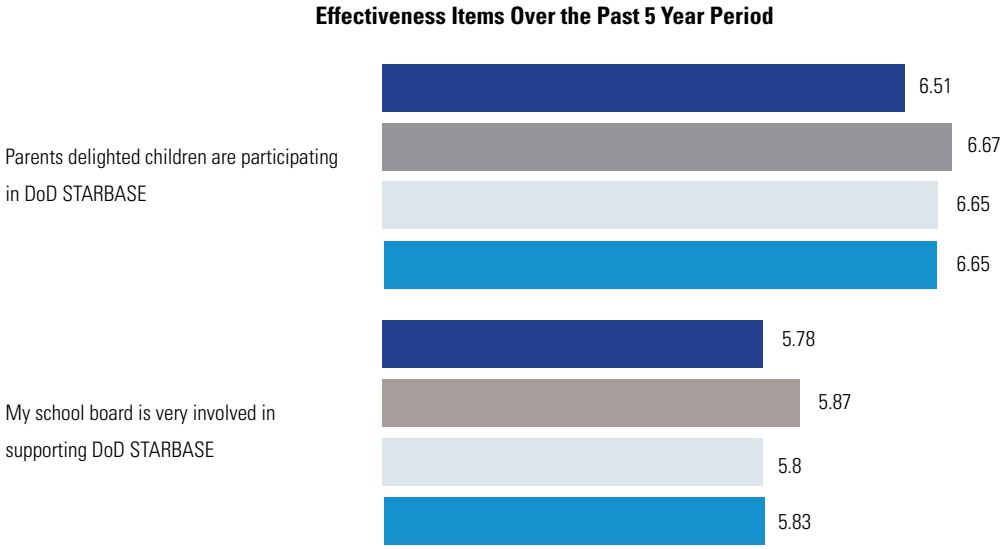


Figure 9.

Overall, the recent (i.e., 2013 and 2014) trends in teacher attitudes related to DoD STARBASE have exceeded the level of favorability seen in the three years prior to 2012. Given the program's contraction, it is remarkable that that DoD STARBASE maintained a reliable degree of program consistency. Teacher ratings on the Overall Index[22] were closely similar in 2014 when compared to 2013 (6.11 vs. 6.13).

[22] The Overall Index is the average of all the attitudinal items. Ratings on each item are made on a 7 point scale from Disagree at the low end to Agree at the high end. Higher scores always reflect more positive teacher attitudes.

DoD STARBASE TEACHER SURVEY ANALYSIS

Demographic Information

For the 2013-2014 academic year, 1,076 school personnel completed the online DoD STARBASE Teacher Survey[23]. This represents an approximately 50% drop in total responses as compared to last year. There were 894 females (83%) and 192 males (17%) in 2014, a gender ratio that is unchanged from 2013. Ages ranged from under 30 (17.6% of respondents) to over 60 (4.6% of respondents). The age cohort with the highest frequency of respondents was 31-40 years of age (32.2%), all of which remains comparable with 2013. Table 44 describes the characteristics of the survey respondents over the most recent three year period in relationship to the grade taught, prior military exposure, experience with DoD STARBASE programs and teaching experience.

In general, the respondents are established fifth grade teachers with some exposure to military bases previous to the program. The majority of teachers (82.2%) taught fifth grade. Approximately 75% of the teachers had visited a military base prior to the 2013-2014 DoD STARBASE program while approximately 35% visited a military base for activities unrelated to the program.

The teachers represent a range of experience with teaching in general and with DoD STARBASE in particular. Slightly over 36% of the teachers for the 2013-2014 DoD STARBASE program report being new to the program, while another 41% report being involved with the program from two to four years. Even so, the sample characteristics have remained relatively consistent over the four-year period, indicating much similarity between the survey respondents during each academic program year.

Table 44:
Teacher Characteristics Over a 3-Year Period

	2012 (N=1,760)		2013 (N=2,146)		2014 (N=1,076)	
Response	Frequency	Percent	Frequency	Percent	Frequency	Percent
Grade Taught						
Grade 3	0	0.0%	0	0.0%	0	0.0%
Grade 4	86	4.9%	86	4.9%	63	5.9%
Grade 5	1,426	81.0%	1,426	81.0%	884	82.2%
Grade 6	93	5.3%	93	5.3%	65	6.0%
Grade 7	4	0.2%	4	0.2%	1	.1%
Grade 8	13	0.7%	13	0.7%	1	.1%
I am a special class teacher	39	2.2%	39	2.2%	19	1.8%
I am a teaching assistant	31	1.8%	31	1.8%	14	1.3%
I am an administrator	3	0.2%	3	0.2%	5	.5%
Other[24]	65	3.7%	65	3.7%	63	5.9%

Continued on next page

[23] The sample consisted mainly of teachers, but also included a small percentage of administrators (see Table 44).

[24] The majority of the "Other" responses include teaching a combination of different grades (e.g., grades 4 and 5), focusing on specific content areas (e.g., math or science), a specialized teacher (e.g., special education, paraprofessional), or a counselor (e.g., school counselor, peer facilitator).

Table 44: (Continued)
Teacher Characteristics Over a 3-Year Period

	2012 (N=1,760)		2013 (N=2,146)		2014 (N=1,076)	
Response	Frequency	Percent	Frequency	Percent	Frequency	Percent
Ever visit a military base prior to your current DoD STARBASE involvement?						
Never, this is my first DoD STARBASE Program.	341	19.4%	540	25.2%	271	25.2%
Yes, for prior DoD STARBASE programs only.	447	25.4%	369	17.2%	163	15.1%
Yes, for activities not related to DoD STARBASE.	430	24.4%	748	34.9%	356	33.1%
Yes, for DoD STARBASE and non-DoD STARBASE activities.	487	27.7%	393	18.3%	231	21.5%
Other[25]	55	3.1%	96	4.5%	55	5.1%
Number of years with DoD STARBASE						
This is my first year	626	35.6%	969	45.2%	390	36.2%
2-4 years	697	39.6%	686	32.0%	446	41.4%
5-7 years	291	16.5%	306	14.3%	146	13.6%
8-10 years	93	5.3%	125	5.8%	60	5.6%
11-15 years	37	2.1%	39	1.8%	28	2.6%
Over 15 years	16	0.9%	21	1.0%	6	.6%
Number of years teaching						
This is my first year	81	4.6%	31	6.1%	66	6.1%
2-4 years	217	12.3%	273	12.7%	145	13.5%
5-7 years	243	13.8%	292	13.6%	132	12.3%
8-10 years	235	13.4%	276	12.9%	153	14.2%
11-15 years	335	19.0%	449	20.9%	206	19.1%
Over 15 years	649	36.9%	725	33.8%	374	34.8%

[25] The majority of the "Other" responses include family members either active 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.

DOD STARBASE'S IMPACT ON THE SCHOOL SYSTEM

As part of the Teacher Survey, teachers were asked to share their knowledge of specific practices in their school that helps to create support for the DoD STARBASE program, ranging from building community awareness to using classroom educational materials themselves (see Table 45). For the most part, a majority of respondents gave positive answers, and this remained fairly comparable with the previous two years' responses in the areas of use of DoD STARBASE materials in their classroom and teacher recommendations. Use of DoD STARBASE materials in their classrooms did decrease 6% in the 2013-2014 program year from the last year, and dipping under the 60% utilization seen in 2012. The use of DoD STARBASE materials for take home and follow-up activities also declined by about 6% from the level reported in 2012-13, falling below 40% for the first time to just under 37%. The utilization rate of DoD STARBASE supplemental materials for take home activities had been greater than 60% for a number of years and was still close to that level as recently as two years ago.

A large majority of teachers (90.5%) indicated that they have recommended DoD STARBASE to other teachers, principals, or school systems, which is consistent with prior years. This stable trend demonstrates the value that teachers place on the program. In addition, all but a handful of teachers report that the DoD STARBASE program content helps the school reach state requirements either directly or indirectly (95.0% and 4.6%, respectively), which provides further documentation that academic success is helped through the DoD STARBASE program.

Less than half of the respondents for the 2013-2014 program year (42.8%) report that the school distributes a formal communication that raises community awareness of the DoD STARBASE program, a decrease of 2.5% from 2012-13. The remaining responses were divided about equally between those reporting no formal communication (29.2%) and those indicating that they did not know whether there was formal communication to increase community awareness (28.2%). It may be that the relative absence of knowledge about communication plans in 2013 is due in part to the disruption and uncertainty caused by the sequestration in 2014. Yet there was also a decrease of 5% in 2013 from the prior year, when just over half (50.5%) of teachers reported some formal communication from their school about the DoD STARBASE program. Thus, there has been a relative drop off of approximately 15% in the past two years, from the historical average of around 50%. There may, however, be local school policies concerning communication of DoD STARBASE that may hamper such dissemination. Some schools may also have experienced funding and staffing challenges themselves during this period due to the national economic conditions. Future Teacher Surveys might explore the possibility of local impediments to formal communication about the program.

Table 45:
DoD STARBASE's Impact on the School System

Item	Positive (Yes) Responses	Positive (Yes) Responses	Positive (Yes) Responses
	2012	2013	2014
Is there formal communication from the school that raises community awareness of the DoD STARBASE program?	50.5%	45.3%	42.8%
Do you use DoD STARBASE materials/applications in your own classroom?	60.1%	64.2%	58.1%
Do you have DoD STARBASE take home/follow-through activities beyond your classroom presentation?	58.8%	43.0%	36.9%
Have you recommended DoD STARBASE to other teachers, principals, or school systems?	89.5%	91.9%	90.5%
In your view, do the DoD STARBASE content and concepts help you reach your state requirements either directly or indirectly?	96.5%	99.6%	99.6%

In summary, the percentage of favorable responses to key support actions has generally remained about the same in two areas (reaching state requirements and recommending DoD STARBASE) as in 2013. However, the percentage of 'No' responses has increased somewhat for the other support actions. Thus the relative degree of positive support for DoD STARBASE compared to less supportive orientations appears to be narrowing a bit.

SCHOOL & TEACHER SUPPORT AND TEACHER ATTITUDINAL RATINGS

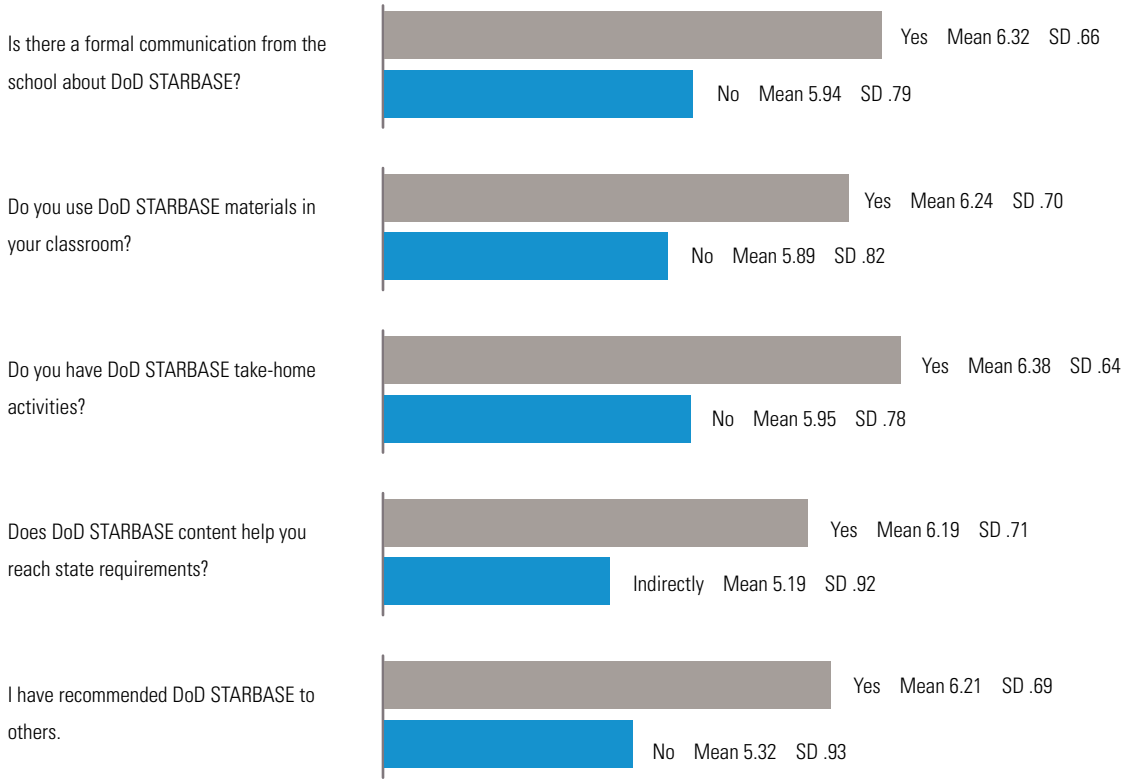
Teachers were asked to rate 40 attitudinal items on a 7-point Likert scale from Disagree (1) to Agree (7) based on their experience with the DoD STARBASE program. The mean teacher attitudes across the survey items (i.e., the Overall Index) were compared based on the support provided to the teachers. In all instances, those teachers who received support from the school and were supplied with resource materials responded with more favorable attitudes to the DoD STARBASE program as a whole than those teachers with little or no perceived support. Figure 10 shows the mean Overall Index for the selected teacher characteristics according to response category (e.g., yes or no). Highlights of the specific outcome comparisons include:

- Those schools that promoted DoD STARBASE through formal communications had higher teacher ratings (6.32) than schools that did not have formal communication plans (5.94).
- Likewise, teachers that utilized DoD STARBASE materials in class and for take-home activities responded more favorably (6.24 and 6.32, respectively) than teachers who did not utilize the materials (5.89 and 5.95, respectively).
- Additionally, almost all of the teachers indicated that the program helps them reach state requirements either directly or indirectly. Those teachers seeing a direct relationship (95%) reported more positive attitudes (6.32) than those seeing only an indirect relationship (5.95).
- Finally, 91% of the teachers reported that they have recommended the DoD STARBASE program to others, which is indicative of the value those teachers place on all aspects of the program.

- Of concern, 102 teachers (9%) have not recommended DoD STARBASE to others. The average attitudinal response for this group of teachers is significantly lower than those that have recommended the program to others (5.17 versus 6.16, respectively).

In general, these results indicate that teachers who specifically believe that they are receiving appropriate promotional communication and instructional material, who believe that the DoD STARBASE program helps them to meet state requirements, and who recommend the program to others, generally have more positive attitudes toward the DoD STARBASE program.

Significant Differences in Average Teacher Overall Index by Response to Key Support Actions*



** Note: Mean of all responses on a 7-point Likert scale from 1(Disagree) to 7 (Agree)*

Figure 10.

TEACHER ATTITUDES BY DoD STARBASE EVALUATION FACTOR

The attitudinal survey items were grouped into the following five areas for evaluating the effectiveness of the DoD STARBASE program. An Overall Index is also provided as a single combined measure.

- STEM = science, technology, engineering and math
- Perception about the military
- Citizenship and pro-social attitudes
- Overall effectiveness of DoD STARBASE
- Career reflections for the future

All attitudinal items are aggregated into an Overall Index for a summary mean of total responses comparable across years (see Table 46). During the past decade, the mean ratings have fluctuated, with high points achieved during the period from 2009 to 2012. The mean Overall Index of 6.11 attained for 2014 does not differ significantly from the mean Overall Index (6.13) attained in 2013 and is not out of line with levels realized in 2008 and earlier. Although the mean attitudinal ratings by teachers generally have been consistent over the past decade, there appears to be a declining trend from the peak Overall Index scores that were seen a few years ago. Possible reasons for this inversion toward a relatively lower range of values are not entirely clear at this time. Perhaps the 16-day Government shutdown has some bearing on it. It is also important to take into account the program features and strengths that contributed to the higher teacher ratings observed in the earlier period to help isolate factors that could help regain and sustain momentum in a positive direction. In retrospect, the years from 2009 to 2012 were a period of substantial growth and change in the DoD STARBASE program with expanded sites and new standards. That could have generated excitement, energy, and enthusiasm among both staff and teachers, influencing their perceptions in a favorable manner. The contraction of the DoD STARBASE program due to the Government shutdown, however, may have created a degree of uncertainty and diminished the favorable image and experience of the program by teachers.

Table 46:
Mean Overall Attitudinal Index Scores for the Teacher Survey (2003-2014) [26]

Overall Index	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
(Summative Mean Ratings)	6.10	6.15	6.17	6.10	6.08	6.14	6.24	6.26	6.22	6.26	6.13	6.11

Gap differences between years provide another indication of the impact of changes in the DoD STARBASE program. Table 47 shows the averaged ratings and gaps for the Overall Index and the evaluation areas across the latest 6-year period. Response analysis shows gradual increases in favorable responses until 2012, then slight decreases in all categories. The lower mean value of 5.97 for the new Career Future factor added in 2013 may have contributed to the lower mean value of 6.13 and 6.11 for the Overall Index in 2013 and 2014, respectively. Drops from 2012 in Military (-.17), and Effectiveness (.11) also contributed and suggest the need for continued efforts to maintain positive Teacher Attitudes.

The largest gain since 2009 has been on the STEM factor (gap of +.06 since 2009) indicating the overall importance of science, technology and math. The clearest pattern exhibited since 2009 is that almost all evaluation factor means approach 6.00 or higher.

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

Table 47:
Average Mean Ratings and Gap Difference Scores by Assessment Group Factors (2009-2014)

Factor Items	2009	2010	2011	2012	2013	2014	Gap Difference 2014 – 2009 (+/-)
Overall Index	6.24	6.26	6.22	6.26	6.13	6.11	-.13
STEM	6.10	6.17	6.16	6.21	6.17	6.16	+.06
Military	6.36	6.37	6.36	6.39	6.29	6.22	-.13
Citizenship/Pro-Social	6.06	6.07	5.98	6.03	6.01	5.97	-.09
Effectiveness	6.41	6.41	6.39	6.44	6.35	6.33	-.08
Career Future	N/A	N/A	N/A	N/A	5.97	5.97	+.00

As shown in Table 47, the Career Future measure added in 2013 had a mean teacher rating of 5.97 which is lower than the means for the other factors and probably accounts, in part, for the lower Overall Index mean for this year. This could indicate that the (mostly fifth grade) students participating in DoD STARBASE do not spend a substantial amount of time reflecting on their future careers or possibly that the teachers comprising the survey sample are not especially attuned to paying attention to the students' future career interests. As the mission shifts in future program years to place greater emphasis on awareness of STEM-related careers in DoD and the military, it may be that teachers could benefit from training on the relevance of the DoD STARBASE program to the students' career enhancement.

Figure 11 illustrates the mean values of the factors used from 2009 through 2014. Since 2009, perceptions have been fairly consistent and above or very near a mean of 6.00 for areas measuring the core STEM Awareness aspect of the program, perceptions relating to the military (e.g., personnel), overall effectiveness/impact of the DoD STARBASE program and citizenship/pro-social attitudes. Considering that the mean has a ceiling of 7.00, these values reflect high teacher endorsement of these DoD STARBASE components.

Teacher Ratings by Factor (2009-2014)

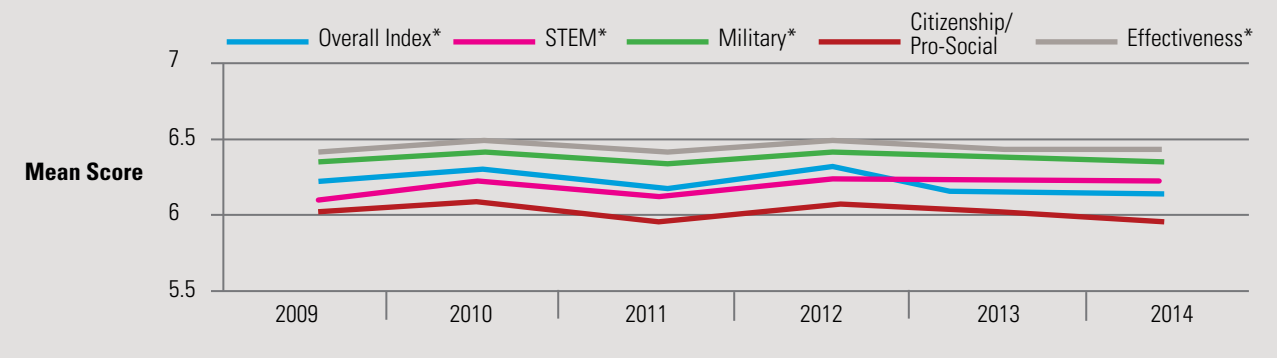


Figure 11.

**Represents a statistically significant difference (p<.05)*

TEACHER ATTITUDINAL RATINGS ON STEM ACTIVITIES

Teacher attitudes reflecting core curriculum program are measured by six items focusing on science, technology and math. Table 48 compares the ratings of these six items for the past five years. Teachers saw substantive improvement in students' attitudes and behaviors for all aspects of STEM addressed by the survey in 2012. During 2014, the six STEM items showed a slight decline or remained level from 2013. This relative stability might be attributable to the most committed DoD STARBASES and teachers staying with the program despite challenges presented at the start of the fiscal year.

Table 48:
Teachers' Perceptions of Student Interests and Behavior Related to Science, Technology and Math (STEM) Awareness 2009 - 2014

	Mean Scores Across Years					
Items	2009	2010	2011	2012	2013	2014
More interested in learning about math	5.67	5.77	5.79	5.87	5.84	5.79
More interested in learning about science	6.54	6.54	6.51	6.56	6.54	6.53
The students ask more questions about technology	5.90	5.90	5.91	5.95	5.93	5.92
DoD STARBASE has helped improve the students' understanding of science	6.61	6.60	6.54	6.59	6.57	6.54
DoD STARBASE has helped to improve appreciation of how math can be applied to a variety of situations	6.12	6.23	6.26	6.32	6.30	6.26
After DoD STARBASE attendance, there is increased participation in the science fair	5.53	5.78	5.66	5.74	5.79	5.72
Combined STEM Mean Score	6.10	6.17	6.16	6.21	6.17	6.16

TOP TEACHER ATTITUDINAL ITEM RATINGS (2014)

Table 49 provides the top 10-rated attitudinal items with a 5-year historical comparison, rank ordered by favorability based on the 2014 mean ratings. In general, the teachers rate the experiential aspects of DoD STARBASE program for themselves as well as for their students and their students' families as the highest. Over half of the top 10-rated items for this year refer to perceptions of feelings about the experience of attending DoD STARBASE and its immediate or future effects. Two of the three highest rated items in 2014 are future-oriented toward anticipated benefits. Teachers also have high regard for DoD STARBASE instructors, as evidenced by the top rating of the instructors as role models. In addition, teachers gave high ratings in 2014 to the impact of DoD STARBASE on key learning objectives, especially with respect to science. Historically, the top 10-rated attitudinal items all have a mean rating above 6.00. The appendix presents complete rankings of all survey items from 2009 to 2014, within key topic categories.

Teachers' experience: (Ranked 1 and 3 in 2014)

- I look forward to my classes' continued participation in the DoD STARBASE program.
- The DoD STARBASE experience has been a positive influence on me personally.

Students' experience: (Ranked 4 and 9 in 2014)

- The students enjoyed being on a military base.
- The students talk about DoD STARBASE long after the program has ended.

Structural components of the program: (Ranked 2 and 7 in 2014)

- The DoD STARBASE instructors are good role models for the students.
- DoD STARBASE has helped improve students' understanding of science.

Table 49:

Top 10 2014 Teacher Ratings Over a 5-Year Period (2009-2014)

2014 Rank	Item	2009	2010	2011	2012	2013	2014
1	I look forward to my classes' continued participation in the DoD STARBASE program.	6.85	6.83	6.81	6.86	6.83	6.87
2	The DoD STARBASE instructors are good role models for the students.	6.84	6.84	6.80	6.85	6.85	6.84
3	The DoD STARBASE experience has been a positive influence on me personally.	6.76	6.73	6.71	6.75	6.72	6.75
4	The students enjoyed being on a military base.	6.61	6.63	6.66	6.67	6.71	6.72
5	Parents are delighted that their children are participating in DoD STARBASE.	6.63	6.62	6.59	6.67	6.65	6.65
6	DoD STARBASE reinforces many positive behaviors I try to teach my students.	6.71	6.69	6.65	6.67	6.64	6.63
7	DoD STARBASE has helped improve students' understanding of science	6.61	6.60	6.54	6.59	6.57	6.54
8	More interested in learning about science	6.54	6.54	6.51	6.56	6.54	6.53
9	The students talk about DoD STARBASE long after the program has ended.	6.61	6.59	6.58	6.50	6.52	6.52
10	After attending DoD STARBASE, students understand better that developing their current skills/abilities is necessary to have good future career choices. (New item in 2013)	NA	NA	NA	NA	6.44	6.43

COMPARISON OF ATTITUDES ACROSS TEACHER CHARACTERISTICS

Experience with DoD STARBASE and Teaching Experience

Shifts in teacher attitudes are fairly consistent across years of teaching experience in general and years of teacher experience with DoD STARBASE in particular. Teachers who have more experience with DoD STARBASE and generally longer teaching experience typically reported more positive attitudes and behaviors on average for each summary factor (STEM, Military, Citizenship, Effectiveness, Career and Overall Index).

- Experience with DoD STARBASE: Generally, teachers who have more experience with the DoD STARBASE program tended to respond more positively than teachers with less experience (see Figure 12).[27]
  - Statistically significant differences by years of program experience were found for the Military Perception, Citizenship and Career Future composites.
    - » On the Military Perception and Citizenship indices, teachers with five or more years of experience gave higher ratings than did teachers with one to four years of experience.
    - » In the Career Future area, teachers with one year of experience gave lower ratings than teachers with two to four years' experience, and those with two to four years' experience gave marginally lower ratings than teachers with five to seven years' experience.
    - » On the Military Perception factor, teachers with over 10 years of experience gave higher ratings than did first year participants.
- Generally, as teaching experience increased, so did favorability of responses (see Figure 13).
  - In particular, teachers with more than 11 years of teaching experience gave significantly higher ratings on the Overall Index than did teachers with less experience.
  - With respect to the STEM Awareness measure, first year teachers were significantly lower than teachers with five or more years of experience. Teachers with 11 or more years of experience also gave higher ratings than their colleagues.
  - On the Military Perception, Citizenship, Effectiveness and Career Future indices, teachers with 11 or more years of experience gave higher ratings than those with one to four years of experience.

Shift in Teacher Attitudes Based on Number of Years with DoD STARBASE

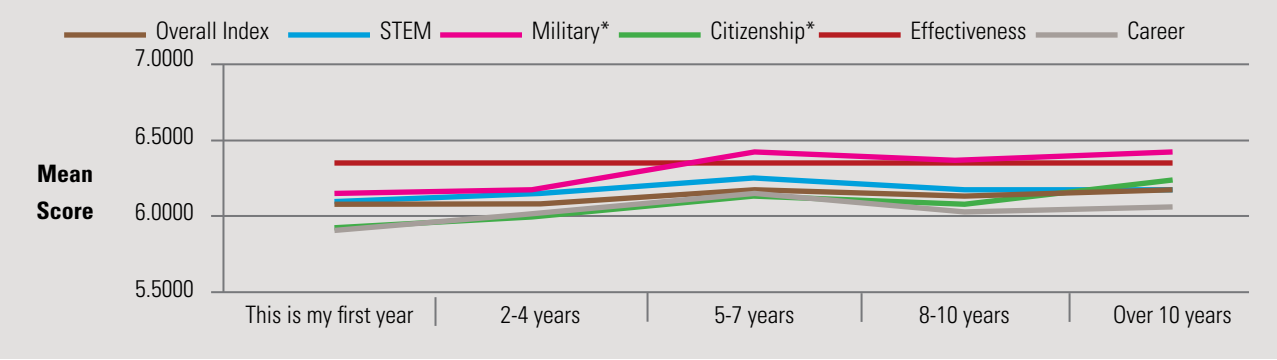


Figure 12.

**Represents a statistically significant difference (p<.05)*

[27] Teachers with 11-15 or more than 15 years of DoD STARBASE experience were combined due to small sample sizes.

Shift in Teacher Attitudes Based on Number of Years of Teaching Experience

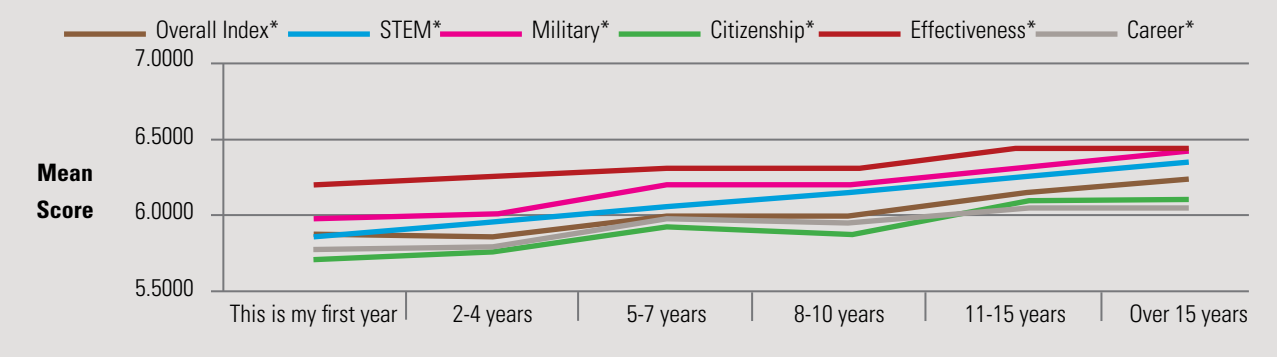


Figure 13.

**Represents a statistically significant difference (p<.05)*

Familiarity with Military Bases

Teachers' attitudes in the latest program year were also reviewed based on experience being at a military base for a DoD STARBASE activity. The criteria for grouping teachers by military exposure are below.

No previous base visits for a DoD STARBASE program (58.3%) included responses to:

(1) Never, this is my first DoD STARBASE program

(3) Yes, for activities not related to DoD STARBASE and

(5) Other.

Visited a base for a DoD STARBASE program (36.5%) included responses to:

(2) Yes, for prior DoD STARBASE programs only and

(4) Yes, for DoD STARBASE and non-DoD STARBASE activities.

While there were no significant differences, teachers who have been on a military base for DoD STARBASE programs responded slightly more favorably than those who had not been on a military base for DoD STARBASE activities, as shown in Figure 14. Effectiveness received the most favorable ratings regardless of prior military exposure (6.33) and Citizenship/Pro-Social (5.97), closely followed by Career Future (5.98), received the least favorable ratings regardless of prior military exposure.

Teacher Attitudes as a Function of Prior Visiting a Military Base

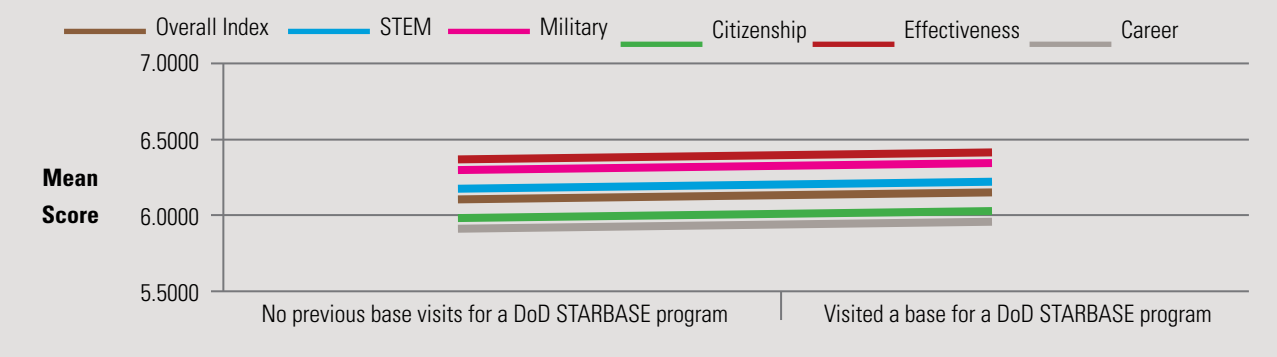


Figure 14.

Drivers of Target Ratings

Stepwise multiple regression analyses were utilized to determine the important drivers of key teacher attitudes and ratings about DoD STARBASE[28]. The key teacher ratings selected this year were determined to be:

1. Estimates of teachers' perceived student outcomes or gains made by students on specific items, and
2. Teacher advocacy of the DoD STARBASE program
   - Perceived student outcomes
     - Students performing better on standardized state assessments
     - Increases in students' school attendance
     - Increases in students' participation in the science fair

     The predictive model selected for perceived student outcomes was that the more support from their various stakeholders that teachers believed they received the better the outcome ratings by the teachers (Table 50). The significance of the overall model, as well as the significance of any changes in the model as variables were entered, was evaluated via stepwise multiple regressions. Results showed that, as ratings of support from each stakeholder group were entered into the model, significant increases in prediction of perceived student outcomes were evident. Thus, as support grows so does teachers' perception of student outcomes. Because the multiple correlation (R) provides a quantitative measure of how well the combination of survey items contributes to the target attitude based on the chosen model, consideration may need to be given to building stakeholder support to improve the student performance.

   - Teacher advocacy of the DoD STARBASE program

   The predictive model selected for teacher advocacy was that the greater the teachers' perception of the student outcomes the more likely the teachers would be advocates of the program. This is evidenced by teacher plans to refer students to additional STEM programs or resources after DoD STARBASE to sustain their enthusiasm and promote knowledge development. Additionally, a second model evaluated with regard to teacher advocacy was the same as the student outcome model. That is, the more support from the various stakeholders that teachers believed they received the more likely they would be program advocates. As can be seen in Table 50, similar to the results for the models involving student outcomes, greater perceived program effectiveness and perceived stakeholder support were both significant predictors of teacher advocacy.

[28] The appendix provides a definition of multiple regression and other statistical techniques used in this report.

The overall implication of these findings is that perceived stakeholder support predicts teachers' perceived program effectiveness. Additionally, perceived program effectiveness and perceived stakeholder support predict teacher advocacy of the DoD STARBASE program. DoD STARBASE academies that put forth effort into "selling" key stakeholders can influence teachers' positive perceptions and advocacy for further STEM related programs and activities for their students beyond the initial DoD STARBASE experience.

Table 50:
Drivers of Key Target Ratings

Target Rating	Drivers of Target Ratings	R
Students that attend DoD STARBASE perform better on standardized state assessments.	My school board is very involved in supporting DoD STARBASE	.405*
	Parents are delighted that their children are participating in DoD STARBASE	.469*
	My principal is a strong advocate of DoD STARBASE	.494*
	Overall model	.494*
After DoD STARBASE students have better school attendance.	My school board is very involved in supporting DoD STARBASE.	.342*
	Parents are delighted that their children are participating in DoD STARBASE.	.405*
	Overall model	.405*
After DoD STARBASE attendance there is increased participation in the science fair.	My principal is a strong advocate of DoD STARBASE.	.401*
	Parents are delighted that their children are participating in DoD STARBASE.	.466*
	My school board is very involved in supporting DoD STARBASE.	.487*
	Overall model.	.487*
I plan to refer students to additional STEM programs or resources after DoD STARBASE.	Students that attend DoD STARBASE perform better on standardized state assessments.	.330*
	After DoD STARBASE attendance there has been increased participation in the science fair.	.360*
	Overall model	360*
I plan to refer students to additional STEM programs or resources after DoD STARBASE.	Parents are delighted that their children are participating in DoD STARBASE.	.232*
	My principal is a strong advocate of DoD STARBASE.	.268*
	Overall model	.268*

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

CONSIDERATIONS FOR THE 2015 PROGRAM YEAR

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

The assessment process captures valuable information from each of these key participant groups through surveys, reports on operational activities, after-action investigations, compliance activities, academy visitations, reviews of academy documents, observations of program activity, and special ad-hoc studies on newly established initiatives. The "considerations" dimension explains the implications of this data for program applications and the potential for improving operational activities. This year, as in the past, the considerations and challenges are positioned and designed to be supportive of improving program operations, practices, policy implementation, and the integration with national strategic initiatives. The key "considerations" include:

Outreach

Collaborations with Other STEM Programs

- Continue pursuit of STEM collaborations with other community, state and national STEM organizations to expand their knowledge of the DoD STARBASE program and solidify the DoD STARBASE position in raising awareness of STEM in regard to the future needs of our nation.
- Establish protocols for developing potential collaborations with third-party STEM organizations.
- Each academy should develop a complete inventory and vetting assessment of STEM programs in its community. This document should be shared with key participants (i.e. schools, partnerships, military base public relations officer, collaborative partners, etc.).
- Identify inventoried STEM programs with the highest potential for collaboration. Consider a visitation by DoD STARBASE students to the program and/or invite them to the DoD STARBASE academy for a presentation to the students of the collaborative programs' activities.
- Review Memorandum of Understanding (MOU) protocols for collaborations and develop a standard for nationwide academy use.
- Create criteria for a DoD STARBASE academy to obtain a "sustainability' status on a collaborative program activity.

Program Marketing

- Develop a set of materials regarding student advocacy needs and distribute information to collaborative partnerships as well as to participant teachers to promote downstream student development.

Classroom Teachers

- Find innovative ways to increase the direct involvement of participating classroom teachers in the DoD STARBASE experience.
- Explain operational expectations to participating classroom teachers to ensure they keep appropriate discipline and conduct of their students while at DoD STARBASE, so DoD STARBASE instructors can concentrate on lessons, not disciplinary issues.
- Ensure participating teachers understand the importance of timely arrival and departure of students in order to fulfill the DoD STARBASE requirements of five classroom contact hours per day. This may require increased participating teacher interaction with transportation providers and school administrative staff.
- Develop materials and information classroom teachers need for students to further explore career development activities in STEM careers within the military and the DoD after their DoD STARBASE experience.

Program Operations

- The Government shutdown caused a later start in many programs during Fiscal Year 2014. DoD STARBASE Directors must ensure maximum use of scheduling to accommodate the required 28 classes per year.
- Develop an Action Plan for DoD STARBASE Directors and Federal Program Managers to follow in the event of another shutdown.
    - When program and funding uncertainties occur, academies need to notify the OASD/RA office about the negative impact of the event (i.e. staff losses and the need to obtain support to maintain program integrity, quality and maintenance).
    - Systematically capture shutdown-related information on the impact and capabilities of DoD STARBASE academies to assist in designing appropriate functional response strategies across the total program.
- Stabilize current DoD STARBASE program.
- Increase operational communications from OASD/RA. Recommend a series of communications regarding standard operational procedures to guide new and established staff members who, during site visits, have reported feeling isolated and uninformed. Such communications should include:
    - Timely and accurate information of the status of program funding each fiscal year.
    - Current operational requirements/standards from DoDI 1025.7 and related supplemental policy memorandums. (number of classes required, grade levels served, classroom hours, etc.).
    - Curriculum issues.
    - Reporting expectations and requirements for annual financial plans and director's questionnaires.
    - Site visit procedures.
    - Where to find information/help regarding DoD STARBASE operations.
- Develop new DoDI to document and provide current program guidelines.
- Reinstate annual DoD STARBASE directors and staff training conferences. The large number of new staff members hired over the past two years would greatly benefit from face-to-face interaction and information exchange with experienced staff members from other locations.
- Continue mentoring relationships between new DoD STARBASE directors with veteran DoD STARBASE directors to provide guidance and support during initial program start-up through their first Level I Compliance Visit.
- Continue pursuit of program support in the form of a dedicated or associated non-profit organization to allow DoD STARBASE to benefit from additional community support and partnerships in an official (and tax deductible) capacity. Such relationships would also be beneficial in cases of future funding shortages or start-up delays.
- Develop prototype memorandums of understanding (MOU's) as resources for DoD STARBSE academies to use in formalizing relationships with their key participant groups. A properly documented MOU should outline mutual commitments, responsibilities and objectives.
- Identity those academies that consider themselves in a Level III status and validate their status through site visitation assessment.

Curriculum

- Remind all DoD STARBASE academies of current approved curriculum and execution requirements.
- Continue emphasis on standardization of curriculum schedules.
- Clarify when variations to the standard DoD STARBASE curriculum can/cannot be used, etc.
- Communicate the linkage of the DoD STARBASE curriculum to national standards to participating classroom teachers and school administrators.
- Ensure that all DoD STARBASE academies focus solely on the target population of fifth grade students in their traditional, five-day program. Other age groups should be served through outreach and summer programs only.
- Ensure activities and experiments are conducted by pairs of students to maintain maximum participation and engagement by all students.
- Reinstate the internal processes and procedures for submission of new curriculum activities to be added to the current pool of options.

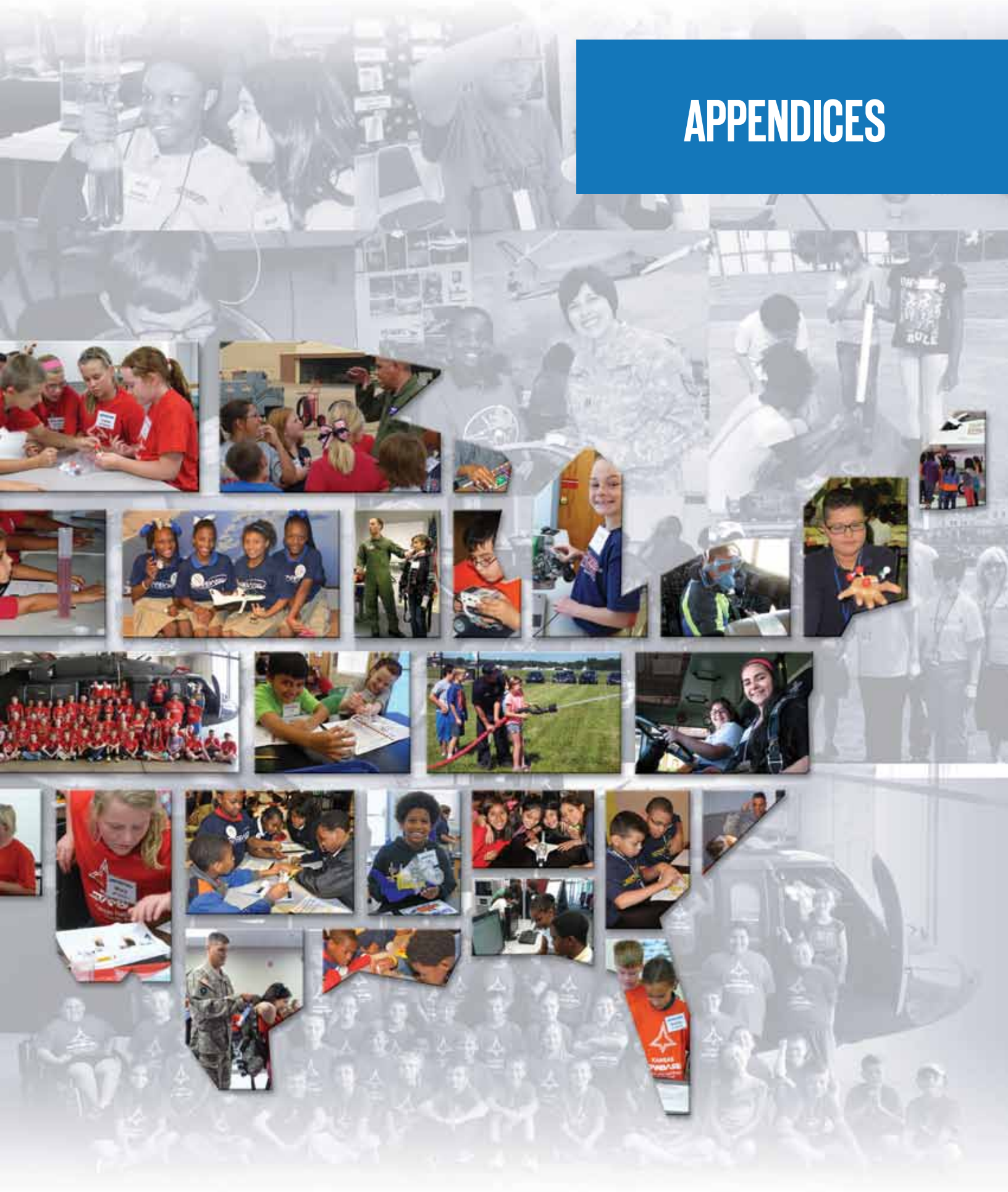
Student Testing

- Ensure that DoD STARBASE classroom teachers and directors receive annual student test results and know how they can be used to improve local operations.
- Encourage use of a local "satisfaction" survey to obtain immediate student and teacher feedback on program operations.
- Develop methods to assess the effectiveness of collaborations and their ability to promote student skills, abilities and problem-solving in STEM for use in conjunction with a data base on student performance.
- Develop a longitudinal assessment and its requirements to track students through participation in collaborative relationships and STEM activities offered at school.

DoD STARBASE 2.0

- Expand original DoD STARBASE 2.0 program intent of school partnerships to include formalized partnerships with other youth programs (i.e. Big Brothers/Big Sisters, local clubs, museums, etc.) to leverage existing resources and reinforce the STEM-based 2.0 program as an active and integral part of the community (not just in schools).
- Continue efforts to increase the volunteer mentor pool to enhance community buy-in to DoD STARBASE 2.0 as a model after-school STEM Program.

APPENDICES



Locations Based on Military Branch

8 Air Force

4 Air Force Reserves

44 National Guard

1 Marines

1 Army

Table 51:
Expressed Attitudinal Differences by Gender

Pre STARBASE			Post STARBASE		Individual Gaps
Mean			Mean		Mean Post - Pre
5.23	Boy	I like math.	Boy	5.30	0.07
5.12	Girl		Girl	5.17	0.05
5.31	Boy	I am good at math.	Boy	5.48	0.17
5.12	Girl		Girl	5.19	0.07
5.77	Boy	I like science.	Boy	5.88	0.11
5.81	Girl		Girl	5.89	0.08
5.34	Boy	I am good at science.	Boy	5.49	0.15
5.38	Girl		Girl	5.54	0.16
5.58	Boy	I am good at following directions.	Boy	5.57	-0.01
6.14	Girl		Girl	6.06	-0.08
5.27	Boy	Learning is easy for me.	Boy	5.37	0.10
5.39	Girl		Girl	5.40	0.01
5.62	Boy	Learning can be fun.	Boy	5.80	0.18
5.86	Girl		Girl	5.97	0.11
6.32	Boy	You can learn a lot by trying things.	Boy	6.39	0.07
6.46	Girl		Girl	6.52	0.06
6.64	Boy	I plan to graduate from High School.	Boy	6.68	0.04
6.84	Girl		Girl	6.82	-0.02
6.20	Boy	Military people do lots of different things.	Boy	6.38	0.18
6.10	Girl		Girl	6.30	0.20
5.83	Boy	I set goals for myself.	Boy	5.89	0.06
5.98	Girl		Girl	6.02	0.04
5.46	Boy	I make good decisions.	Boy	5.52	0.06
5.91	Girl		Girl	5.91	0.00
5.77	Boy	I am able to achieve my goals.	Boy	5.84	0.07
5.78	Girl		Girl	5.85	0.07
5.81	Boy	You can accomplish a lot in a group.	Boy	5.83	0.02
5.84	Girl		Girl	5.76	-0.08
5.59	Boy	You can work better in a group.	Boy	5.66	0.07
5.48	Girl		Girl	5.44	-0.04
6.07	Boy	I like to make new things.	Boy	6.18	0.11
6.18	Girl		Girl	6.17	-0.01
5.38	Boy	The military is a good place to work.	Boy	5.54	0.16
5.22	Girl		Girl	5.40	0.18
5.93	Boy	Military bases are exciting.	Boy	6.05	0.12
5.58	Girl		Girl	5.81	0.23

Table 51: (Continued)
Expressed Attitudinal Differences by Gender

Pre STARBASE			Post STARBASE		Individual Gaps
Mean			Mean		Mean Post - Pre
5.94	Boy	I like to think of new ways to use things.	Boy	6.04	0.10
5.97	Girl		Girl	6.04	0.07
6.33	Boy	I like using computers.	Boy	6.44	0.11
6.31	Girl		Girl	6.41	0.10
5.91	Boy	I use a computer at home.	Boy	5.89	-0.02
5.92	Girl		Girl	5.90	-0.02
6.03	Boy	I want to learn more about technology.	Boy	6.06	0.03
5.82	Girl		Girl	5.61	-0.21
6.17	Boy	DoD STARBASE Instructors are kind and helpful.	Boy	6.53	0.36
6.25	Girl		Girl	6.63	0.38
6.16	Boy	I think about what I want to be when I grow up.	Boy	6.26	0.10
6.46	Girl		Girl	6.44	-0.02
5.97	Boy	I do not think DoD STARBASE will help me do better in school. (R)	Boy	6.19	0.22
6.35	Girl		Girl	6.34	-0.01
4.44	Boy	I am interested in being a scientist or engineer.	Boy	4.68	0.24
3.79	Girl		Girl	3.94	0.15
	Boy	DoD STARBASE is boring. (R)	Boy	6.24	
	Girl		Girl	6.25	
	Boy	At DoD STARBASE I learned a lot of things that I can use.	Boy	6.30	
	Girl		Girl	6.40	
	Boy	I would tell my friends to come to DoD STARBASE	Boy	5.81	
	Girl		Girl	6.12	
	Boy	I am enjoying coming to a military base.	Boy	6.22	
	Girl		Girl	6.07	
	Boy	DoD STARBASE is better than I expected	Boy	5.94	
	Girl		Girl	6.23	

Table 52:
Gender Gap Score Differences 2014 Post-Program Attitudes

	Girls' Rank by Mean	Girls' Mean	Boys' Rank by Mean	Boys' Mean	Gap
I plan to graduate from High School.	**1**	**6.82**	**1**	**6.68**	**0.15**
DoD STARBASE Instructors are kind and helpful.	2	6.63	2	6.53	0.10
You can learn a lot by trying things.	**3**	**6.52**	**4**	**6.39**	**0.13**
I think about what I want to be when I grow up.	**4**	**6.44**	**7**	**6.26**	**0.18**
I like using computers.	5	6.41	3	6.44	-0.03
At DoD STARBASE, I learned a lot of things that I can use.	**6**	**6.40**	**6**	**6.30**	**0.10**
I do not think DoD STARBASE will help me do better in school. (reverse scored)	**7**	**6.34**	**10**	**6.19**	**0.16**
Military people do lots of different things.	8	6.30	5	6.38	-0.07
DoD STARBASE is boring. (reverse scored)	9	6.25	8	6.24	0.01
DoD STARBASE is better than I expected.	**10**	**6.23**	**15**	**5.94**	**0.30**
I like to make new things.	11	6.17	11	6.18	-0.01
I would tell my friends to come to DoD STARBASE.	**12**	**6.12**	**21**	**5.81**	**0.31**
I am enjoying coming to a military base.	13	6.07	9	6.22	-0.15
I am good at following directions.	**14**	**6.06**	**24**	**5.57**	**0.50**
I like to think of new ways to use things.	15	6.04	14	6.04	0.00
I set goals for myself.	16	6.02	16/17	5.89	0.13
Learning can be fun.	17	5.97	22	5.80	0.17
I make good decisions.	**18**	**5.91**	**26**	**5.52**	**0.39**
I use a computer at home.	19	5.90	16/17	5.89	0.00
I like science.	20	5.89	18	5.88	0.01
I am able to achieve my goals.	21	5.85	19	5.84	0.00
Military bases are exciting.	**22**	**5.81**	**13**	**6.05**	**-0.24**
You can accomplish a lot in a group.	23	5.76	20	5.83	-0.07
I want to learn more about technology.	**24**	**5.61**	**12**	**6.06**	**-0.46**
I am good at science.	25	5.54	27	5.49	0.05
You can work better in a group.	**26**	**5.44**	**23**	**5.66**	**-0.22**
The military is a good place to work.	27/28	5.40	25	5.54	-0.14
Learning is easy for me.	27/28	5.40	29	5.37	0.03
I am good at math.	**29**	**5.19**	**28**	**5.48**	**-0.29**
I like math.	30	5.17	30	5.30	-0.13
I am interested in being a scientist or engineer.	**31**	**3.94**	**31**	**4.68**	**-0.74**

Bold items show significant differences based on gender

PEARSON CORRELATION MATRIX FOR POST-PROGRAM STUDENT ATTITUDE SURVEY

		Gr	A	Ge	1	2	3	4	5	6
Gr	Grade	1								
A	Age	.461**	1							
Ge	Gender	-.069*	-.052	1						
1	I like math.	-.020	.016	-.034	1					
2	I am good at math.	.006	-.014	-.091**	.653**	1				
3	I like science.	.016	.060*	.004	.104**	.161**	1			
4	I am good at science.	-.021	.021	.019	.146**	.318**	.628**	1		
5	I am good at following directions.	-.013	.011	.187**	.275**	.281**	.206**	.321**	1	
6	Learning is easy for me.	.019	.032	.010	.381**	.481**	.251**	.361**	.423**	1
7	Learning can be fun.	.039	.050	.058	.338**	.236**	.297**	.260**	.309**	.442**
8	You can learn a lot by trying things.	.049	.022	.068*	.204**	.153**	.263**	.226**	.266**	.319**
9	I plan to graduate from High School.	.036	.022	.092**	.183**	.184**	.125**	.175**	.263**	.227**
10	Military people do lots of different things.	.019	.045	-.034	.153**	.152**	.164**	.194**	.189**	.250**
11	I set goals for myself.	.001	.054	.050	.207**	.188**	.168**	.232**	.296**	.291**
12	I make good decisions.	-.006	.038	.160**	.243**	.244**	.158**	.250**	.513**	.354**
13	I am able to achieve my goals.	.076*	.107**	.001	.243**	.268**	.166**	.252**	.284**	.405**
14	You can accomplish a lot in a group.	.048	.042	-.023	.199**	.121**	.179**	.128**	.201**	.204**
15	You can work better in a group.	.093**	.096**	-.067*	.145**	.050	.127**	.091**	.175**	.159**
16	I like to make new things.	.060*	-.018	-.006	.120**	.100**	.244**	.241**	.152**	.242**
17	The military is a good place to work.	.024	.085**	-.046	.208**	.142**	.056	.110**	.131**	.202**
18	Military bases are exciting.	.066*	.060*	-.086**	.227**	.198**	.140**	.186**	.162**	.225**
19	I like to think of new ways to use things.	.057	.090**	-.001	.186**	.161**	.259**	.279**	.231**	.272**
20	I like using computers.	.003	-.002	-.014	.093**	.080**	.162**	.186**	.038	.099**
21	I use a computer at home.	.015	-.023	.001	.034	.105**	.019	.099**	.040	.116**
22	I want to learn more about technology.	.059	.086**	-.147**	.138**	.110**	.255**	.188**	.133**	.256**
23	DoD STARBASE Instructors are kind and helpful.	.044	.044	.054	.200**	.135**	.204**	.204**	.231**	.246**
24	I think about what I want to be when I grow up.	.034	.005	.074*	.137**	.089**	.122**	.145**	.193**	.154**
25	I do not think DoD STARBASE will help me do better in school. (R)	-.022	-.011	.048	.072*	.036	.172**	.108**	.046	.080*
26	I am interested in being a scientist or engineer.	.011	.004	-.175**	.148**	.151**	.351**	.249**	.123**	.249**
27	DoD STARBASE is boring. (R)	.006	.018	.004	.109**	.037	.155**	.083**	.181**	.119**
28	At DoD STARBASE, I learned a lot of things that I can use.	.030	.026	.043	.202**	.123**	.264**	.184**	.201**	.252**
29	I would tell my friends to come to DoD STARBASE.	.029	.017	.101**	.175**	.095**	.222**	.130**	.222**	.220**
30	I am enjoying coming to a military base.	.031	.062*	-.055	.145**	.164**	.133**	.113**	.115**	.182**
31	DoD STARBASE is better than I expected.	.014	.027	.095**	.131**	.047	.175**	.092**	.172**	.160**
Tot	Post-program Attitude Score	.053	.066*	.008	.487**	.448**	.481**	.497**	.495**	.594**

PEARSON CORRELATION MATRIX FOR POST-PROGRAM STUDENT SURVEY (CONTINUED)

		7	8	9	10	11	12	13	14	15
Gr	Grade									
A	Age									
Ge	Gender									
1	I like math.									
2	I am good at math.									
3	I like science.									
4	I am good at science.									
5	I am good at following directions.									
6	Learning is easy for me.									
7	Learning can be fun.	1								
8	You can learn a lot by trying things.	.490**	1							
9	I plan to graduate from High School.	.217**	.324**	1						
10	Military people do lots of different things.	.215**	.256**	.302**	1					
11	I set goals for myself.	.269**	.240**	.252**	.244**	1				
12	I make good decisions.	.261**	.248**	.226**	.180**	.395**	1			
13	I am able to achieve my goals.	.282**	.257**	.274**	.198**	.549**	.450**	1		
14	You can accomplish a lot in a group.	.282**	.273**	.111**	.142**	.276**	.249**	.290**	1	
15	You can work better in a group.	.205**	.201**	.054	.109**	.231**	.230**	.252**	.699**	1
16	I like to make new things.	.328**	.299**	.159**	.139**	.197**	.153**	.281**	.263**	.213**
17	The military is a good place to work.	.196**	.115**	.096**	.323**	.241**	.147**	.241**	.211**	.217**
18	Military bases are exciting.	.287**	.212**	.101**	.348**	.250**	.143**	.282**	.254**	.225**
19	I like to think of new ways to use things.	.368**	.339**	.198**	.272**	.342**	.263**	.303**	.194**	.156**
20	I like using computers.	.111**	.177**	.092**	.097**	.109**	.096**	.075*	.090**	.116**
21	I use a computer at home.	.056	.075*	.109**	.085**	.071*	.051	.059	-.027	-.025
22	I want to learn more about technology.	.247**	.152**	.084**	.109**	.117**	.104**	.181**	.202**	.180**
23	DoD STARBASE Instructors are kind and helpful.	.263**	.259**	.189**	.184**	.208**	.196**	.200**	.286**	.256**
24	I think about what I want to be when I grow up.	.099**	.183**	.221**	.131**	.243**	.224**	.212**	.146**	.134**
25	I do not think DoD STARBASE will help me do better in school. (R)	.157**	.166**	.097**	.109**	.085**	.011	.038	.111**	.081*
26	I am interested in being a scientist or engineer.	.265**	.184**	.033	.112**	.118**	.091**	.160**	.126**	.122**
27	DoD STARBASE is boring. (R)	.244**	.132**	.074*	.091**	.104**	.098**	.117**	.190**	.164**
28	At DoD STARBASE, I learned a lot of things that I can use.	.322**	.350**	.146**	.195**	.230**	.236**	.238**	.308**	.300**
29	I would tell my friends to come to DoD STARBASE.	.319**	.317**	.156**	.202**	.244**	.172**	.228**	.261**	.288**
30	I am enjoying coming to a military base.	.228**	.221**	.117**	.238**	.182**	.124**	.197**	.147**	.142**
31	DoD STARBASE is better than I expected.	.255**	.238**	.116**	.145**	.196**	.199**	.199**	.255**	.244**
Tot	Post-program Attitude Score	.602**	.533**	.371**	.428**	.519**	.487**	.552**	.511**	.456**

PEARSON CORRELATION MATRIX FOR POST-PROGRAM STUDENT SURVEY (CONTINUED)

		16	17	18	19	20	21	22	23	
Gr	Grade									
A	Age									
Ge	Gender									
1	I like math.									
2	I am good at math.									
3	I like science.									
4	I am good at science.									
5	I am good at following directions.									
6	Learning is easy for me.									
7	Learning can be fun.									
8	You can learn a lot by trying things.									
9	I plan to graduate from High School.									
10	Military people do lots of different things.									
11	I set goals for myself.									
12	I make good decisions.									
13	I am able to achieve my goals.									
14	You can accomplish a lot in a group.									
15	You can work better in a group.									
16	I like to make new things.	1								
17	The military is a good place to work.	.212**	1							
18	Military bases are exciting.	.243**	.536**	1						
19	I like to think of new ways to use things.	.429**	.244**	.332**	1					
20	I like using computers.	.163**	.107**	.124**	.254**	1				
21	I use a computer at home.	.030	.019	.048	.107**	.259**	1			
22	I want to learn more about technology.	.257**	.222**	.223**	.316**	.319**	.158**	1		
23	DoD STARBASE Instructors are kind and helpful.	.266**	.212**	.291**	.266**	.122**	.105**	.237**	1	
24	I think about what I want to be when I grow up.	.188**	.197**	.187**	.170**	.043	.026	.051	.194**	
25	I do not think DoD STARBASE will help me do better in school. (R)	.144**	.087**	.118**	.135**	.101**	.032	.140**	.236**	
26	I am interested in being a scientist or engineer.	.237**	.190**	.194**	.261**	.088**	.036	.363**	.176**	
27	DoD STARBASE is boring. (R)	.139**	.109**	.289**	.203**	.035	.001	.178**	.327**	
28	At DoD STARBASE, I learned a lot of things that I can use.	.251**	.170**	.275**	.314**	.151**	.023	.262**	.396**	
29	I would tell my friends to come to DoD STARBASE.	.227**	.167**	.285**	.307**	.060*	.014	.173**	.371**	
30	I am enjoying coming to a military base.	.190**	.248**	.449**	.239**	.078*	.046	.169**	.256**	
31	DoD STARBASE is better than I expected.	.195**	.129**	.239**	.243**	.090**	-.014	.152**	.396**	
Tot	Post-program Attitude Score	.487**	.449**	.555**	.580**	.317**	.207**	.473**	.534**	

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

(R) This item was reverse-coded; therefore a higher average reflects a more positive attitude.

PEARSON CORRELATION MATRIX FOR POST-PROGRAM STUDENT SURVEY (CONTINUED)

		24	25	26	27	28	29	30	31	Tot
Gr	Grade									
A	Age									
Ge	Gender									
1	I like math.									
2	I am good at math.									
3	I like science.									
4	I am good at science.									
5	I am good at following directions.									
6	Learning is easy for me.									
7	Learning can be fun.									
8	You can learn a lot by trying things.									
9	I plan to graduate from High School.									
10	Military people do lots of different things.									
11	I set goals for myself.									
12	I make good decisions.									
13	I am able to achieve my goals.									
14	You can accomplish a lot in a group.									
15	You can work better in a group.									
16	I like to make new things.									
17	The military is a good place to work.									
18	Military bases are exciting.									
19	I like to think of new ways to use things.									
20	I like using computers.									
21	I use a computer at home.									
22	I want to learn more about technology.									
23	DoD STARBASE Instructors are kind and helpful.									
24	I think about what I want to be when I grow up.	1								
25	I do not think DoD STARBASE will help me do better in school. (R)	.059	1							
26	I am interested in being a scientist or engineer.	.059	.058	1						
27	DoD STARBASE is boring. (R)	.090**	.283**	.142**	1					
28	At DoD STARBASE, I learned a lot of things that I can use.	.173**	.285**	.209**	.290**	1				
29	I would tell my friends to come to DoD STARBASE.	.154**	.216**	.182**	.355**	.521**	1			
30	I am enjoying coming to a military base.	.156**	.168**	.139**	.226**	.358**	.377**	1		
31	DoD STARBASE is better than I expected.	.133**	.229**	.151**	.395**	.472**	.542**	.354**	1	
Tot	Post-program Attitude Score	.352**	.330**	.437**	.419**	.588**	.555**	.470**	.499**	1

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

(R) This item was reverse-coded; therefore a higher average reflects a more positive attitude.

KENDALL'S TAU-B CORRELATION MATRIX FOR POST-PROGRAM STUDENT KNOWLEDGE

		Gr	A	Ge	1	2	3
Gr	Grade	1.000					
A	Age	.404**	1.000				
Ge	Gender	-.064*	-.047	1.000			
1	Two rockets are launched using the same amount of force. One rocket is heavier than the other. Which rocket will go higher?	.007	-.019	.014	1.000		
2	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?	.042	.054	.024	.000	1.000	
3	Some characteristics of one bottle of water (H2O) are given in the table below.	-.081**	-.058*	.001	.053	.089**	1.000
4	Which of the following is an example of physical change?	.121**	.034	-.006	.110**	.111**	.165**
5	Which pie chart represents the correct composition of air?	.108**	-.016	-.013	.015	.168**	.139**
6	Which of the following questions is testable in a scientific investigation?	-.035	.006	-.017	-.001	.083**	.047
7	Which of the following would be a good reason to use latitude and longitude coordinates?	.049	.007	-.031	.085**	.144**	.072*
8	Why are prototypes a key part of the engineering design process?	.048	-.001	.000	.077*	.144**	.055
9	You are working on a new product to melt snow and ice on walkways. You test the product by measuring the time it takes for the area to become safe for walking. What conclusion would you make based on the following results?	.029	.027	.006	.090**	.139**	.120**
10	Hydrogen and Oxygen bond to form water (H2O). What does this bonded substance represent?	.091**	.035	-.004	.047	.157**	.116**
11	You are holding a cup filled to the rim with water as you drive around an oval track. You maintain a constant speed without changing directions. As expected, the water in the cup spilled at predicted points during your drive. When did the water NOT spill?	-.030	-.042	.050	.079**	.052	.103**
12	In the graph above, find the letter that is at coordinates (3, -2). Is it A, B, C, or D?	.131**	.105**	.047	.065*	.087**	.067*
13	An experiment calls for 150 milliliters of water. If you are performing the experiment three times, what is the total amount of water you will need?	.002	-.033	.026	.144**	.147**	.064*
14	You blow air through a tube that is smaller in the center and equal sizes at the ends. As the air moves from left to right through the tube, ... Based on the above diagram, where would you expect the air pressure to be highest?	.041	.007	.012	.020	.003	.030
15	You start out at the flag (coordinates -1, 3) and walk two kilometers North, then one 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?	.023	-.005	.059*	.075*	.114**	.092**
16	Two trains are getting ready to race. The mass of Train A is greater than the mass of Train B. The trains begin to move down the tracks but neither train can get ahead of the other. What can you conclude?	.056	-.040	-.042	.142**	.086**	.106**
17	Which of the following is typically measured in nanometers?	.088**	.022	-.019	.065*	.128**	.136**
18	Which of the following states of matter have the least amount of kinetic energy?	.011	-.042	-.018	.046	.148**	.107**
19	Based on the elevation shown in the table and diagram, in which city would the atmosphere be the least dense?	.016	-.045	-.040	.084**	.080**	.170**
20	Which of the following has properties similar to the properties of air?	-.026	.002	-.035	.076*	.115**	.158**
21	If you were asked to draw a latitude line and a longitude line on the above map, which of the arrow symbols below would point in the same direction as the latitude line?	.008	-.039	-.016	.060*	.078**	.104**
22	Which of the following statements about 3-D Computer-Aided Design (CAD) is true?	-.029	-.051	.032	.106**	.044	.140**
23	Based on the boxes above, which container will hold the most amount of water when completely filled?	.001	-.013	.043	.073*	.041	.168**
24	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.	-.053	-.027	.038	.085**	.110**	.094**

Continued

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

KENDALL'S TAU-B CORRELATION MATRIX FOR POST-PROGRAM STUDENT KNOWLEDGE (CONTINUED)

		Gr	A	Ge	1	2	3
25	What scientific law makes it important to wear a seat belt?	.060*	.006	-.016	.107**	.137**	.081**
26	Of the following, which tool would be appropriate to measure the volume of a glass of milk?	.046	-.016	.042	.080**	.142**	.075*
27	You have produced a new candy bar with all of your favorite ingredients. You have asked your family and friends to try your new candy bar. What step of the engineering design process (EDP) are you completing?	.004	.033	-.015	.082**	.091**	.065*
28	According to Newton's third law of motion, when a car windshield strikes and exerts force on a bug, the bug _____.	.109**	.080**	-.009	.062*	.016	.097**
29	What is the decimal equivalent to 89%?	.074*	.032	.089**	.033	.112**	.032
30	On hot days, balloons get larger as the kinetic energy of the air inside increases. Why does this happen even though no extra air is added?	.020	.043	.000	.124**	.105**	.107**
31	Which of the following conversions is accurate?	-.011	-.042	.075*	.054	.145**	.031
32	What do the following three technology tools have in common?	-.014	.019	.087**	.036	.076*	.187**
Total Post-Knowledge Score		.057*	.003	.008	.191**	.273**	.294**

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

KENDALL'S TAU-B CORRELATION MATRIX FOR POST-PROGRAM STUDENT KNOWLEDGE (CONTINUED)

		4	5	6	7	8	9
Gr	Grade						
A	Age						
Ge	Gender						
1	Two rockets are launched using the same amount of force. One rocket is heavier than the other. Which rocket will go higher?						
2	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?						
3	Some characteristics of one bottle of water (H2O) are given in the table below.						
4	Which of the following is an example of physical change?	1.000					
5	Which pie chart represents the correct composition of air?	.254**	1.000				
6	Which of the following questions is testable in a scientific investigation?	.116**	.129**	1.000			
7	Which of the following would be a good reason to use latitude and longitude coordinates?	.225**	.145**	.121**	1.000		
8	Why are prototypes a key part of the engineering design process?	.195**	.157**	.088**	.266**	1.000	
9	You are working on a new product to melt snow and ice on walkways. You test the product by measuring the time it takes for the area to become safe for walking. What conclusion would you make based on the following results?	.193**	.156**	.131**	.220**	.186**	1.000
10	Hydrogen and Oxygen bond to form water (H2O). What does this bonded substance represent?	.265**	.198**	.120**	.233**	.242**	.210**
11	You are holding a cup filled to the rim with water as you drive around an oval track. You maintain a constant speed without changing directions. As expected, the water in the cup spilled at predicted points during your drive. When did the water NOT spill?	.119**	.101**	.167**	.144**	.111**	.146**
12	In the graph above, find the letter that is at coordinates (3, -2). Is it A, B, C, or D?	.154**	.138**	.114**	.187**	.120**	.129**
13	An experiment calls for 150 milliliters of water. If you are performing the experiment three times, what is the total amount of water you will need?	.224**	.146**	.089**	.206**	.198**	.170**
14	You blow air through a tube that is smaller in the center and equal sizes at the ends. As the air moves from left to right through the tube, ... Based on the above diagram, where would you expect the air pressure to be highest?	.084**	.115**	-.009	.051	.050	.030
15	You start out at the flag (coordinates -1, 3) and walk two kilometers North, then one 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?	.176**	.150**	.061*	.169**	.135**	.149**
16	Two trains are getting ready to race. The mass of Train A is greater than the mass of Train B. The trains begin to move down the tracks but neither train can get ahead of the other. What can you conclude?	.146**	.122**	.092**	.162**	.123**	.156**

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

KENDALL'S TAU-B CORRELATION MATRIX FOR POST-PROGRAM STUDENT KNOWLEDGE (CONTINUED)

		10	11	12	13	14	15
Gr	Grade						
A	Age						
Ge	Gender						
1	Two rockets are launched using the same amount of force. One rocket is heavier than the other. Which rocket will go higher?						
2	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?						
3	Some characteristics of one bottle of water (H2O) are given in the table below.						
4	Which of the following is an example of physical change?						
5	Which pie chart represents the correct composition of air?						
6	Which of the following questions is testable in a scientific investigation?						
7	Which of the following would be a good reason to use latitude and longitude coordinates?						
8	Why are prototypes a key part of the engineering design process?						
9	You are working on a new product to melt snow and ice on walkways. You test the product by measuring the time it takes for the area to become safe for walking. What conclusion would you make based on the following results?						
10	Hydrogen and Oxygen bond to form water (H2O). What does this bonded substance represent?	1.000					
11	You are holding a cup filled to the rim with water as you drive around an oval track. You maintain a constant speed without changing directions. As expected, the water in the cup spilled at predicted points during your drive. When did the water NOT spill?	.129**	1.000				
12	In the graph above, find the letter that is at coordinates (3, -2). Is it A, B, C, or D?	.158**	.099**	1.000			
13	An experiment calls for 150 milliliters of water. If you are performing the experiment three times, what is the total amount of water you will need?	.211**	.112**	.188**	1.000		
14	You blow air through a tube that is smaller in the center and equal sizes at the ends. As the air moves from left to right through the tube, ... Based on the above diagram, where would you expect the air pressure to be highest?	.075*	.020	.096**	.097**	1.000	
15	You start out at the flag (coordinates -1, 3) and walk two kilometers North, then one 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?	.176**	.155**	.187**	.173**	.052	1.000
16	Two trains are getting ready to race. The mass of Train A is greater than the mass of Train B. The trains begin to move down the tracks but neither train can get ahead of the other. What can you conclude?	.122**	.096**	.083**	.125**	.053	.151**
17	Which of the following is typically measured in nanometers?	.191**	.121**	.134**	.122**	.077*	.088**
18	Which of the following states of matter have the least amount of kinetic energy?	.247**	.119**	.121**	.190**	.077*	.116**
19	Based on the elevation shown in the table and diagram, in which city would the atmosphere be the least dense?	.202**	.119**	.090**	.119**	.031	.093**
20	Which of the following has properties similar to the properties of air?	.227**	.097**	.099**	.119**	.074*	.194**
21	If you were asked to draw a latitude line and a longitude line on the above map, which of the arrow symbols below would point in the same direction as the latitude line?	.147**	.062*	.107**	.113**	.143**	.074*
22	Which of the following statements about 3-D Computer-Aided Design (CAD) is true?	.182**	.130**	.108**	.223**	.032	.182**
23	Based on the boxes above, which container will hold the most amount of water when completely filled?	.182**	.062*	.145**	.174**	.038	.152**
24	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.	.195**	.125**	.200**	.180**	.052	.136**

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

Continued

KENDALL'S TAU-B CORRELATION MATRIX FOR POST-PROGRAM STUDENT KNOWLEDGE (CONTINUED)

		10	11	12	13	14	15
25	What scientific law makes it important to wear a seat belt?	.159**	.093**	.128**	.174**	.081**	.177**
26	Of the following, which tool would be appropriate to measure the volume of a glass of milk?	.257**	.105**	.157**	.240**	.047	.148**
27	You have produced a new candy bar with all of your favorite ingredients. You have asked your family and friends to try your new candy bar. What step of the engineering design process (EDP) are you completing?	.139**	.072*	.085**	.121**	.013	.089**
28	According to Newton's third law of motion, when a car windshield strikes and exerts force on a bug, the bug _____.	.140**	.098**	.109**	.071*	.101**	.073*
29	What is the decimal equivalent to 89%?	.138**	.054	.116**	.118**	.035	.158**
30	On hot days, balloons get larger as the kinetic energy of the air inside increases. Why does this happen even though no extra air is added?	.161**	.101**	.178**	.147**	.012	.151**
31	Which of the following conversions is accurate?	.168**	.066*	.133**	.143**	.039	.118**
32	What do the following three technology tools have in common?	.219**	.115**	.182**	.161**	.067*	.158**
Total Post-Knowledge Score		.424**	.214**	.328**	.358**	.111**	.349**

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

KENDALL'S TAU-B CORRELATION MATRIX FOR POST-PROGRAM STUDENT KNOWLEDGE (CONTINUED)

		16	17	18	19	20	21
Gr	Grade						
A	Age						
Ge	Gender						
1	Two rockets are launched using the same amount of force. One rocket is heavier than the other. Which rocket will go higher?						
2	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?						
3	Some characteristics of one bottle of water (H2O) are given in the table below.						
4	Which of the following is an example of physical change?						
5	Which pie chart represents the correct composition of air?						
6	Which of the following questions is testable in a scientific investigation?						
7	Which of the following would be a good reason to use latitude and longitude coordinates?						
8	Why are prototypes a key part of the engineering design process?						
9	You are working on a new product to melt snow and ice on walkways. You test the product by measuring the time it takes for the area to become safe for walking. What conclusion would you make based on the following results?						
10	Hydrogen and Oxygen bond to form water (H2O). What does this bonded substance represent?						
11	You are holding a cup filled to the rim with water as you drive around an oval track. You maintain a constant speed without changing directions. As expected, the water in the cup spilled at predicted points during your drive. When did the water NOT spill?						
12	In the graph above, find the letter that is at coordinates (3, -2). Is it A, B, C, or D?						
13	An experiment calls for 150 milliliters of water. If you are performing the experiment three times, what is the total amount of water you will need?						
14	You blow air through a tube that is smaller in the center and equal sizes at the ends. As the air moves from left to right through the tube, ... Based on the above diagram, where would you expect the air pressure to be highest?						
15	You start out at the flag (coordinates -1, 3) and walk two kilometers North, then one 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?						
16	Two trains are getting ready to race. The mass of Train A is greater than the mass of Train B. The trains begin to move down the tracks but neither train can get ahead of the other. What can you conclude?	1.000					
17	Which of the following is typically measured in nanometers?	.109**	1.000				
18	Which of the following states of matter have the least amount of kinetic energy?	.125**	.185**	1.000			
19	Based on the elevation shown in the table and diagram, in which city would the atmosphere be the least dense?	.095**	.117**	.125**	1.000		
20	Which of the following has properties similar to the properties of air?	.153**	.207**	.175**	.133**	1.000	
21	If you were asked to draw a latitude line and a longitude line on the above map, which of the arrow symbols below would point in the same direction as the latitude line?	.123**	.148**	.128**	.142**	.108**	1.000
22	Which of the following statements about 3-D Computer-Aided Design (CAD) is true?	.102**	.136**	.130**	.163**	.111**	.167**
23	Based on the boxes above, which container will hold the most amount of water when completely filled?	.150**	.172**	.140**	.105**	.162**	.118**
24	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.	.147**	.170**	.174**	.110**	.120**	.134**

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

Continued

KENDALL'S TAU-B CORRELATION MATRIX FOR POST-PROGRAM STUDENT KNOWLEDGE (CONTINUED)

		16	17	18	19	20	21
25	What scientific law makes it important to wear a seat belt?	.117**	.175**	.197**	.163**	.138**	.170**
26	Of the following, which tool would be appropriate to measure the volume of a glass of milk?	.106**	.151**	.205**	.132**	.186**	.064*
27	You have produced a new candy bar with all of your favorite ingredients. You have asked your family and friends to try your new candy bar. What step of the engineering design process (EDP) are you completing?	.050	.121**	.088**	.029	.082**	.150**
28	According to Newton's third law of motion, when a car windshield strikes and exerts force on a bug, the bug _____.	.093**	.124**	.092**	.101**	.152**	.141**
29	What is the decimal equivalent to 89%?	.107**	.062*	.145**	.087**	.112**	.087**
30	On hot days, balloons get larger as the kinetic energy of the air inside increases. Why does this happen even though no extra air is added?	.097**	.135**	.156**	.127**	.148**	.033
31	Which of the following conversions is accurate?	.102**	.122**	.134**	.118**	.116**	.127**
32	What do the following three technology tools have in common?	.130**	.085**	.142**	.127**	.140**	.140**
Tot	Post-Knowledge Score	.318**	.338**	.367**	.331**	.372**	.305**

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

KENDALL'S TAU-B CORRELATION MATRIX FOR POST-PROGRAM STUDENT KNOWLEDGE (CONTINUED)

		22	23	24	25	26	27
17	Which of the following is typically measured in nanometers?						
18	Which of the following states of matter have the least amount of kinetic energy?						
19	Based on the elevation shown in the table and diagram, in which city would the atmosphere be the least dense?						
20	Which of the following has properties similar to the properties of air?						
21	If you were asked to draw a latitude line and a longitude line on the above map, which of the arrow symbols below would point in the same direction as the latitude line?						
22	Which of the following statements about 3-D Computer-Aided Design (CAD) is true?	1.000					
23	Based on the boxes above, which container will hold the most amount of water when completely filled?	200** .	1.000				
24	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.	.165**	.183**	1.000			
25	What scientific law makes it important to wear a seat belt?	.175**	.131**	.159**	1.000		
26	Of the following, which tool would be appropriate to measure the volume of a glass of milk?	.199**	.218**	.184**	.183**	1.000	
27	You have produced a new candy bar with all of your favorite ingredients. You have asked your family and friends to try your new candy bar. What step of the engineering design process (EDP) are you completing?	.158**	.137**	.070*	.081**	.164**	1.000
28	According to Newton's third law of motion, when a car windshield strikes and exerts force on a bug, the bug _____.	.082**	.067*	.072*	.080**	.077*	.096**
29	What is the decimal equivalent to 89%?	.156**	.133**	.110**	.143**	.146**	.142**
30	On hot days, balloons get larger as the kinetic energy of the air inside increases. Why does this happen even though no extra air is added?	.191**	.121**	.142**	.207**	.213**	.096**
31	Which of the following conversions is accurate?	.107**	.113**	.123**	.134**	.129**	.100**
32	What do the following three technology tools have in common?	.289**	.190**	.184**	.107**	.209**	.136**
Tot	Post-Knowledge Score	.374**	.371**	.356**	.345**	.383**	.260**

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

KENDALL'S TAU-B CORRELATION MATRIX FOR POST-PROGRAM STUDENT KNOWLEDGE (CONTINUED)

		28	29	30	31	32	Tot
17	Which of the following is typically measured in nanometers?						
18	Which of the following states of matter have the least amount of kinetic energy?						
19	Based on the elevation shown in the table and diagram, in which city would the atmosphere be the least dense?						
20	Which of the following has properties similar to the properties of air?						
21	If you were asked to draw a latitude line and a longitude line on the above map, which of the arrow symbols below would point in the same direction as the latitude line?						
22	Which of the following statements about 3-D Computer-Aided Design (CAD) is true?						
23	Based on the boxes above, which container will hold the most amount of water when completely filled?	.					
24	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.						
25	What scientific law makes it important to wear a seat belt?						
26	Of the following, which tool would be appropriate to measure the volume of a glass of milk?						
27	You have produced a new candy bar with all of your favorite ingredients. You have asked your family and friends to try your new candy bar. What step of the engineering design process (EDP) are you completing?						
28	According to Newton's third law of motion, when a car windshield strikes and exerts force on a bug, the bug _____.	1.000					
29	What is the decimal equivalent to 89%?	.100**	1.000				
30	On hot days, balloons get larger as the kinetic energy of the air inside increases. Why does this happen even though no extra air is added?	.049	.118**	1.000			
31	Which of the following conversions is accurate?	.112**	.167**	.111**	1.000		
32	What do the following three technology tools have in common?	.170**	.125**	.181**	.056	1.000	
Tot	Post-Knowledge Score	.214**	.285**	.350**	.230**	.386**	1.000

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

HISTORICAL COMPARISONS ACROSS YEARS (2009 - 2014)

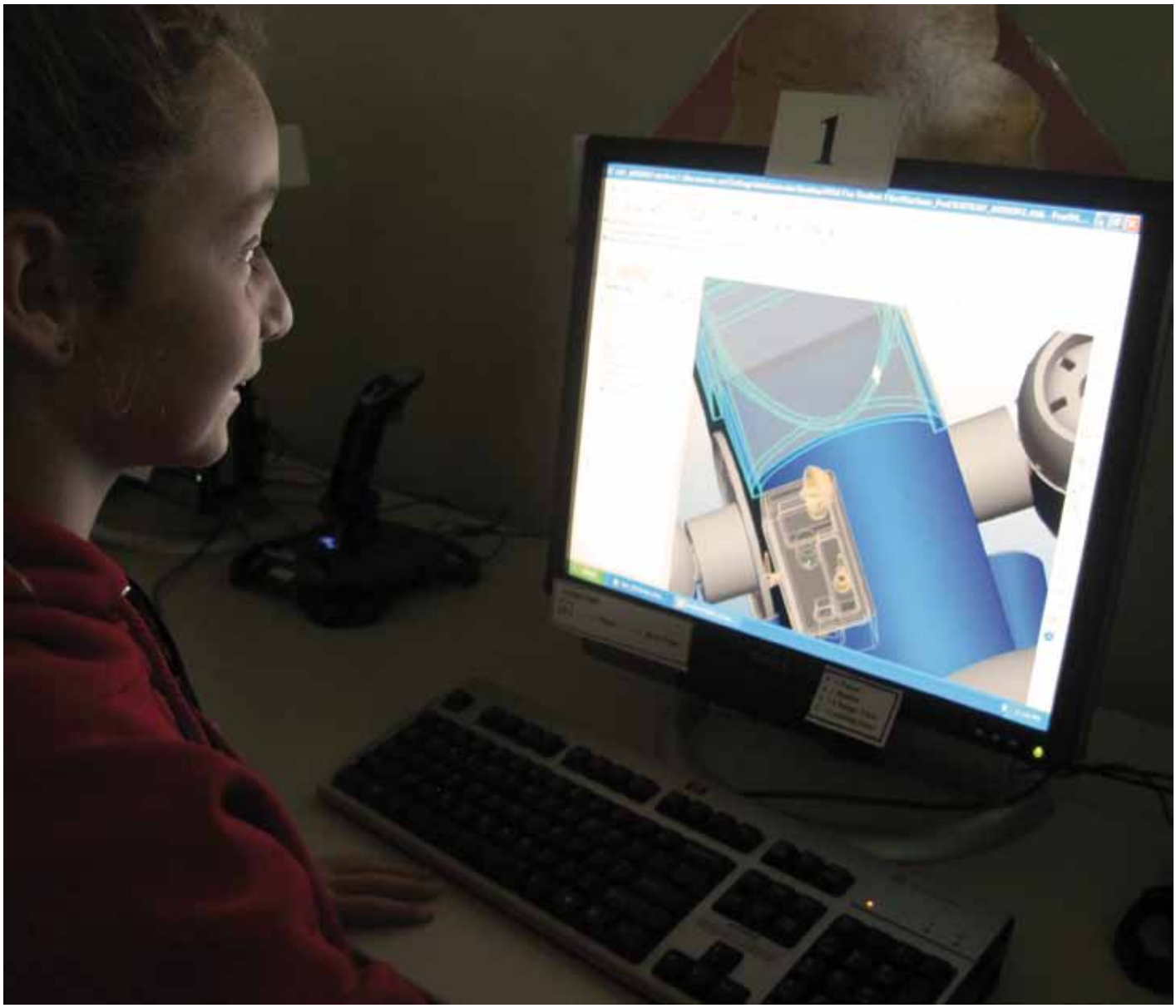
	2009 N=1,497		2010 N=1,637		2011 N=1,510		2012 N=1,760		2013 2,146		2014 1,076	
	Mean	Std Deviation n	Mean	Std Deviation n	Mean	Std Deviation n	Mean	Std Deviation n	Mean	Std Deviation n	Mean	Std Deviation n
Overall Index	6.24	.69	6.26	.70	6.22	.72	6.26	.70	6.13	.75		
STEM-Science, Technology, Engineering, Math	**6.10**	**.82**	**6.17**	**.82**	**6.16**	**.86**	**6.21**	**.81**	**6.17**	**.83**	**6.17**	**.83**
STARBASE has helped improve the students' understanding of science	**6.61**	**.74**	**6.60**	**.74**	**6.54**	**.81**	**6.59**	**.77**	**6.57**	**.77**	**6.53**	**.82**
More interested in learning about science	6.54	.82	6.54	.79	6.51	.84	6.56	.78	6.54	.81	6.54	.81
STARBASE has helped to improve appreciation of how math can be applied to a variety of situations	**6.12**	**1.10**	**6.23**	**1.03**	**6.26**	**1.02**	**6.32**	**.95**	**6.30**	**.97**	**6.26**	**1.02**
The students ask more questions about technology	5.90	1.16	5.90	1.18	5.91	1.24	5.95	1.17	5.93	1.19	5.92	1.18
More interested in learning about math	**5.67**	**1.32**	**5.77**	**1.29**	**5.79**	**1.27**	**5.87**	**1.19**	**5.84**	**1.26**	**5.79**	**1.25**
After STARBASE attendance, there is increased participation in the Science Fair	**5.53**	**1.52**	**5.78**	**1.52**	**5.66**	**1.53**	**5.74**	**1.57**	**5.79**	**1.46**	**5.72**	**1.50**
Military/Military Personnel	6.36	.78	6.37	.76	6.36	.79	6.39	.77	6.29	.84	6.22	0.88
The STARBASE instructors are good role models for the students	6.84	.60	6.84	.59	6.80	.68	6.85	.57	6.85	.55	6.84	0.59
The students enjoyed being on a military base	**6.61**	**.85**	**6.63**	**.78**	**6.66**	**.75**	**6.67**	**.78**	**6.71**	**.73**	**6.72**	**0.73**
Because of my participation in STARBASE, I am more comfortable with military personnel	5.91	1.50	5.95	1.49	5.92	1.48	5.93	1.49	5.87	1.53	5.76	1.57
More comfortable with Military personnel	5.92	1.28	5.96	1.23	5.93	1.25	5.96	1.24	5.86	1.34	5.70	1.42
The students admire their STARBASE instructors	6.63	.83	6.61	.83	6.62	.85	6.68	.76	NA	NA	NA	NA
Citizenship	6.06	.90	6.07	.89	5.98	.95	6.03	.91	6.01	.92	5.97	0.93
STARBASE reinforces many positive behaviors I try to teach my students	6.71	.69	6.69	.74	6.65	.83	6.67	.77	6.64	.79	6.63	0.80
More willing to try new things	6.22	1.01	6.24	.97	6.20	.99	6.23	.99	6.23	1.01	6.24	0.96
More excited about learning	6.18	1.02	6.18	1.02	6.17	1.02	6.22	.99	6.21	1.01	6.18	1.01
More confident about what they can accomplish	6.10	1.03	6.13	1.01	6.05	1.09	6.09	1.04	6.10	1.06	6.05	1.04
More excited about their futures	6.06	1.07	6.06	1.06	6.01	1.12	6.07	1.05	6.03	1.07	5.99	1.11
More willing to cooperate with each other	**6.05**	**1.09**	**6.05**	**1.06**	**5.92**	**1.14**	**6.00**	**1.09**	**5.98**	**1.09**	**5.92**	**1.11**
More likely to encourage each other	**6.02**	**1.10**	**6.01**	**1.09**	**5.88**	**1.17**	**5.98**	**1.10**	**5.94**	**1.04**	**5.87**	**1.13**
Better at working in groups	**5.95**	**1.12**	**6.04**	**1.09**	**5.89**	**1.20**	**5.93**	**1.15**	**5.92**	**1.18**	**5.87**	**1.17**
More comfortable making decisions	5.83	1.11	5.84	1.10	5.75	1.16	5.80	1.11	5.77	1.13	5.67	1.17
More goal oriented	**5.86**	**1.11**	**5.82**	**1.16**	**5.71**	**1.22**	**5.76**	**1.19**	**5.71**	**1.22**	**5.68**	**1.22**
Better at following directions	5.66	1.29	5.67	1.26	5.57	1.35	5.58	1.27	5.57	1.33	5.54	1.31
Effectiveness	**6.41**	**.64**	**6.42**	**.65**	**6.39**	**.67**	**6.44**	**.66**	**6.35**	**.70**	**6.33**	**0.71**
I look forward to my classes' continued participation in the STARBASE program	6.85	.58	6.83	.59	6.81	.71	6.86	.61	6.83	.65	6.87	0.50
The STARBASE experience has been a positive influence on me personally	**6.76**	**.69**	**6.73**	**.70**	**6.71**	**.80**	**6.75**	**.73**	**6.72**	**.79**	**6.75**	**0.69**
Parents are delighted that their children are participating in STARBASE	**6.63**	**.80**	**6.62**	**.77**	**6.59**	**.82**	**6.67**	**.77**	**6.65**	**.79**	**6.65**	**0.77**
The students talk about STARBASE long after the program has ended	6.61	.84	6.59	.85	6.58	.86	6.60	.87	6.52	.93	6.45	1.02
I would like more STARBASE resources to take back to my classroom	**6.30**	**1.24**	**6.32**	**1.20**	**6.36**	**1.19**	**6.33**	**1.26**	**6.42**	**1.04**	**6.41**	**1.06**
My principal is a strong advocate of STARBASE	6.41	1.08	6.42	1.07	6.40	1.04	6.39	1.09	6.37	1.13	6.31	1.15
STARBASE has helped improve the climate for participative learning in the classroom	6.18	1.05	6.18	1.06	6.09	1.13	6.19	1.05	6.16	1.08	6.08	1.09
Students that attend STARBASE perform better on standardized state assessments	**5.94**	**1.28**	**6.05**	**1.21**	**6.02**	**1.23**	**6.06**	**1.23**	**6.01**	**1.27**	**5.98**	**1.25**
My school board is very involved in supporting STARBASE	**5.73**	**1.66**	**5.88**	**1.52**	**5.74**	**1.60**	**5.87**	**1.58**	**5.80**	**1.57**	**5.83**	**1.51**
I use the resources STARBASE provides to teachers	6.10	1.42	6.06	1.42	6.06	1.41	6.02	1.46	NA	NA	NA	NA
I have included many STARBASE resources in my curriculum	5.82	1.51	5.75	1.52	5.72	1.48	5.75	1.51	NA	NA	NA	NA
The STARBASE experience will be a positive influence on students in coming years	6.84	.51	6.83	.51	6.82	.56	6.85	.53	NA	NA	NA	NA
The children enjoy sharing their STARBASE experiences with others	6.83	.56	6.83	.51	6.83	.59	6.84	.56	NA	NA	NA	NA
The STARBASE curriculum supports our state standards	**6.70**	**.76**	**6.71**	**.75**	**6.72**	**.77**	**6.78**	**.66**	**NA**	**NA**	**NA**	**NA**

Bolded items represent statistically significant differences in sample group means across years.

HISTORICAL COMPARISONS ACROSS YEARS (2009 - 2014) (Continued)

	2009 N=1,497		2010 N=1,637		2011 N=1,510		2012 N=1,760		2013 2,146		2014 1,076	
	Mean	Std Deviation n	Mean	Std Deviation n	Mean	Std Deviation n	Mean	Std Deviation n	Mean	Std Deviation n	Mean	Std Deviation n
Career	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**5.97**	**.94**	**5.97**	**0.95**
More interested in learning about military careers	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5.61	1.34	5.53	1.42
To have more questions about STEM career opportunities	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5.74	1.30	5.85	1.24
To focus more on their future potential	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5.86	1.16	5.81	1.16
More ready to set future educational and career goals	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5.83	1.18	5.78	1.20
After attending DoD STARBASE, students understand better that developing their current skills/abilities is necessary to have good future career choices	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.44	.89	6.43	0.88
After attending DoD STARBASE, students understand better how STEM skills/abilities fit job requirements for certain career fields	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.36	.99	6.43	0.87
After attending DoD STARBASE , students are able to link their experience to STEM careers in the military	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.02	1.18	6.04	1.22

Bolded items represent statistically significant differences (p<.05)in sample group means across years.



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

   Xbar = ∑X/N

   xbar = the sample mean; xbar is generally represented by a capital 'X' with a bar or line over the top

   ∑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 = [∑xi-xbar2/n-1]1/2

   n = the sample size.

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

   t = Xbar1 – Xbar2/sx1bar-x2bar

   sx1bar-x2bar = the standard deviation of the difference between the two variables

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

   r12 = [[∑Y1*Y2 – ∑Y1*∑Y2/N]/N-1]/sy1sy2

   r = the statistical relationship of two variables

   Y = the values of the variables

   s = the standard deviation of the variables

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

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

   Y = a + b1*X1 + b2*X2 + ... + bp*Xp

   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

GLOSSARY

Academy: See DoD STARBASE academy.

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

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

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

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

At-Risk/At-Risk Youth: Being "at-risk" means having one or more family backgrounds, or other factors, that have been found to predict a high rate of school failure at some time in the future. This "failure" generally refers to dropping out of high school before graduation, but also can mean being retained within a grade from one year to the next. The risk factors include having a mother whose education is less than high school, living in a single-parent family, having an older sibling who dropped out of high school, changing schools two or more times other than for the normal progression (e.g. from elementary to middle school), having "C" or lower grades, repeating an earlier grade, receiving welfare assistance, being from a low socio-economic status family, and living in a household where the primary language spoken is other than English.

Black or African American: A person having origins in any of the black racial groups of Africa.
Class: Within the context of a DoD STARBASE Academy, a class is a grouping of students. This group may not necessarily have been a homogenous entity prior to DoD STARBASE instruction; it may be a temporary grouping only for the purposes of assembling for the 20-hour minimum period of DoD STARBASE instruction.

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

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

Computer-Aided Design (CAD): 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. Pro E (Pro/ENGINEER) is used in STARBASE programs.

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

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

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

DoD: Department of Defense.

DoD Instruction 1025.7 (DoDI): Document that implements policies, responsibilities, and procedures for executing the DoD STARBASE program.

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

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

- Physics
  - A. Newton's Three Laws of Motion
  - B. Fluid Mechanics and Aerodynamics
- Chemistry Sciences
  - A. Building Blocks of Matter
  - B. Physical and Chemical Changes
  - C. Atmospheric Properties
- Technology
  - A. Innovations
  - B. Navigation and Mapping
- Engineering
  - A. Engineering Design Process (EDP)
  - B. 3-D Computer-Aided Design (3.0 hours as mandated by OASD/RA)
- Mathematics Operations & Applications
  - A. Numbers and Number Relationships
  - B. Measurement
  - C. Geometry
  - D. Data Analysis
- STEM Careers
  - A. STEM Careers on Military Facilities
  - B. Personal Investigations

DoD STARBASE Program: The DoD STARBASE Program is authorized by title 10, United State Code section 2193b as a DoD science, math, and technology education improvement program. The OASD/RA administers policy and oversight; the DoD components execute the program at DoD STARBASE Academies. DoD STARBASE is funded by Congress as a Civil Military Program.

DoD STARBASE Site/Location: The location of a DoD STARBASE Academy where the program is taught.

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

GLOSSARY

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

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

Expenditures: Charges incurred, whether paid or unpaid.

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

Fiscal Year or FY: The yearly accounting period for the Federal Government, which begins on October 1 and ends on the following September 30. The fiscal year is designated by the calendar year in which it ends; for example, fiscal year 2015 begins on October 1, 2014, and ends on September 30, 2015.

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

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

High School: A secondary school offering the final years of high school study necessary for graduation, in which the lowest grade is not lower than grade 9. Usually includes grades 10, 11, and 12 or grades 9, 10, 11, and 12. They may also be defined as a school with no grade lower than 7 and at least one grade higher than 8. This includes regular schools (i.e. schools that are part of state and local school systems and private secondary schools, both religiously affiliated and nonsectarian), alternative schools, vocational education schools, and special education.

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

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

Instructor: DoD STARBASE educator.

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

Location: See DoD STARBASE Site/Location.

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

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

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

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

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

National School Lunch Program: Established by President Truman in 1946, the program is a Federally assisted meal program operated in public and private nonprofit schools and residential child care centers. To be eligible for free lunch, a student must be from a household with an income at or below 130 percent of the Federal poverty guideline; to be eligible for reduced-price lunch, a student must be from a household with an income between 130 percent and 185 percent of the Federal poverty guideline.

Native American: See American Indian or Alaska Native.

Native Hawaiian or Other Pacific Islander: A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.

Navigation: The theory, practice, and technology of charting a course for a ship, aircraft, or a spaceship.

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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/RA: Office of the Assistant Secretary of Defense/Reserve Affairs.

Operational Academies: An academy that is processing students.

Participant: A DoD STARBASE student. Participant also refers to military command support units, the local sponsoring base command, community leaders, local community sponsoring committees, school systems, schools, teachers, military service volunteers, DoD STARBASE Board members, staff, and parents.

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

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

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

Race/Ethnicity: Categories developed in 1997 by the Office of Management and Budget (OMB) that are used to describe groups to which individuals belong, identify with, or belong in the eyes of the community. The categories do not denote scientific definitions of anthropological origins. The designations are used to categorize U.S. citizens, resident aliens, and other eligible non-citizens. Individuals are asked to first designate ethnicity as: Hispanic or Latino or Not Hispanic or Latino.

GLOSSARY

Second, individuals are asked to indicate one or more races that apply among the following: American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian or Other Pacific Islander, White.

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

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

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

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

Science: The body of related courses concerned with knowledge of the physical and biological world and with the processes of discovering and validating this knowledge.

Secondary School: A school with one or more of grades 7–12 that does not have any grade lower than grade 7. For example, schools with grades 9–12, 7–9, 10–12, or 7–8 are classified as secondary.

Site: See DoD STARBASE Site/Location.

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

Supplemental Programs: These are programs that for one reason or another (e.g. below minimum hours, do not cover the core curriculum areas, etc.) do not meet DoDI standards. They are more diverse than traditional DoD STARBASE programs, are often conducted during the summer months, and may be designed to reach students who do not fall under the targeted "participant" schools or are in response to requests by members of the community to serve other groups of children. Supplemental programs are not required and are beyond the normal operation and obligations of the academy. In many cases, supplemental programs are established in response to the demand created by the popularity and success of the DoD STARBASE program within the community.

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

Title 1 or Title 1 Eligible: The Federal Government provides grants to local education agencies to supplement state and local education funding based primarily on the number of children from low-income families in each local education agency. The program provides extra academic support and learning opportunities to help disadvantaged students catch up with their classmates or make significant academic progress.

Urban Area (UA): Consists of 50,000 or more people.

Urban Cluster (UC): Consists of at least 2,500 and less than 50,000 people.

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

DoD STARBASE DIRECTORY

ALABAMA

MONTGOMERY

STARBASE Maxwell
Service Component: Air Force
Military Location: Maxwell Air Force Base
Address:
60 West Maxwell Boulevard, Building 835
Montgomery, Alabama 36112
Director: Ruth Scott (interim director)
Email: ruth@montgomeryed.org
Website: N/A

Autauga County Public Schools
Prattville Intermediate

Montgomery County Public Schools
Highland Avenue Elementary

ARIZONA

TUCSON

STARBASE Arizona
Service Component: Air Force
Military Location: Davis-Monthan Air Force Base
Address:
5355 E. Granite Street
Davis-Monthan Air Force Base, Arizona 85707
Tel: (520) 228-7827
Fax: N/A
Director: Mikelle Cronk
Email: cronkm@vail.k12.az.us
Website: class.vail.k12.az.us/starbaseaz

Amphitheater Unified School District
Keeling Elementary School
Rio Vista Elementary School
Walker Elementary School

Benson Unified School District
Benson Middle School

Bureau of Indian Education
Santa Rosa Ranch School

Presidio Independent School District
Presidio Elementary School

Sunnyside Unified School District
Mission Manor Elementary School

Tucson Unified School Disrict
Wright Elementary School

Vail Unified School District
Acacia Elementary School
Desert Willow Elementary School
Sycamore Elementary School

CALIFORNIA

LOS ALAMITOS

STARBASE Los Alamitos
Service Component: Army National Guard
Military Location: Los Alamitos Joint Forces Training Base
Address:
PO Box 857
Los Alamitos, California 90720
Tel: (562)795-1473
Fax: N/A
Director: Stacey Hendrickson
Email: stacey.hendrickson.nfg@mail.mil
Website: starbaselosalamitos.com

Compton Unified School District
Compton Unified School District
Jefferson Elementary
McKinley Elementary

Fullerton School District
Richman Elementary

Long Beach Unified School District
Prisk Elementary

Los Angeles Unified School District
112th Street Elementary
92nd Street Elementary
96th Street Elementary
Christopher Dena Elementary
Compton Elementary
Sepulveda Elementary
Sunrise Elementary

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

Santa Ana Unified School District

Diamond Elementary
Flournoy Elementary
Grape Street Elementary
John Adams Elementary
John F. Kennedy Elementary
Abraham Lincoln Elementary
Lowell Elementary
Monte Vista Elementary
Remington Elementary School
Wallace R. Davis Elementary

Private

St. Michaels Catholic School

SACRAMENTO

STARBASE of Sacramento
Service Component: Army National Guard
Military Location: Okinawa Armory
Address:
8400 Okinawa Street, Suite 1
Sacramento, California 95828
Tel: (916) 387-7405
Fax: (916) 387-8309
Director: Capt Kel Thede
Email: kel.thede.1@ang.af.mil
Website: under construction

Elk Grove Unified School District

Barbara Comstock Morse Elementary School
Florence Markofer Elementary School
Prairie Elementary School
Roy Herburger Elementary School

Elverta Joint School District

Elverta Elementary School

Robla School District

Bell Avenue Elementary School
Glenwood Elementary School
Main Avenue Elementary School
Robla Elementary School

Sac-City Unified School District

Martin Luther King, Jr. K-8 School

CONNECTICUT

WINDSOR LOCKS

STARBASE Hartford*
Service Component: Air National Guard
Military Location: Windsor Locks Readiness Center
Address:
85-152 Light Lane
Windsor Locks, Connecticut 6096
Tel: (860) 2924678
Fax: N/A
Director: Melissa Vanek
Email: mvanek@starbase-ct.com
Website: http://www.starbase-ct.com

Agawam

Roberta G. Doering School

East Hartford

Silver Lane School
Sunset Ridge Elementary School
Woodland School

East Hartford Public Schools

Anna E. Norris School
Franklin H. Mayberry School
Gov. William Pitkin School
Hockanum Elementary School
John A Langford School
Joseph O Goodwin School
Robert J. O'Brien STEM Academy
Thomas S. O'Connell School

Hartford

Alfred E. Burr School
Jumoke Academy
RJ Kinsella School of Performing Arts

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

WATERBURY

STARBASE Waterbury
Service Component: Air National Guard
Location: Naugatuck Community College
Address:
750 Chase Parkway
Waterbury, Connecticut 06708
Tel: (203) 575-8271
Fax: N/A
Director: Melissa Vanek
Email: mvanek@starbase-ct.com
Website: http://www.starbase-ct.com

Waterbury Public Schools

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

FLORIDA

JACKSONVILLE

STARBASE Florida
Service Component: Air National Guard
Military Location: 125th Fighter Wing, FLANG
Address:
14300 Fang Drive
Jacksonville, Florida 32218
Tel: (904) 714-7320
Fax: (904) 741-7324
Director: Greg Stritch
Email: gregory.stritch@ang.af.mil
Website: N/A

Duval County

Center Academy

Duval County Public Schools

Andrew Robinson Elementary School
Brentwood Elementary School
Hendricks Avenue Elementary School
John Ford Elementary School
Long Branch Elementary School
Ramona Blvd Elementary School
Seacoast Academy Elementary School
Susie Tolbert Elementary School
Tiger Academy Elementary School
West Riverside Elementary School

GEORGIA

MARIETTA

Peach State STARBASE
Service Component: Army National Guard
Military Location: Clay National Guard Center
Address:
1484 Patrol Road
Dobbins ARB, Georgia 30069
Tel: (678) 569-3565
Fax: N/A
Director: John McKay
Email: john.e.mckay8.nfg@mail.mil
Website: https://www.facebook.com/PeachStateStarbase

Cobb County School District

Harmony-Leland Elementary School
Mableton Elementary School
Russell Elementary School

Home School Group

Forsyth County Christian HSG
Great Oak Academy HSG

Marietta City Schools

Hickory Hills Elementary School
Sawyer Road Elementary School

Private School

Cumberland Christian Academy

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

SAVANNAH

STARBASE Savannah
Service Component: Army
Military Location: Hunter Army Airfield
Address:
134 MacArthur Circle, Bldg 617
Savannah, Georgia 31409
Tel: (912) 315-3749
Fax: (912) 315-3748
Director: Betty L G Morgan
Email: bmormicmou@aol.com
Website:http://savannahstarbase.weebly.com/index.html

Chatham
Calvary Day
Charles Ellis
East Broad
Georgetown
Hubert Middle
Jacob G Smith
Ramah Jr Academy
Savannah Christian Preparatory
St Francis Cabrini
Thunderbolt Elementary
West Chatham
Garrison

Evans
Metter Intermediate

Liberty
Diamond Elementary

WARNER ROBINS

STARBASE Robins*
Service Component: Air Force Reserve
Military Location: Robins Air Force Base
Address:
Museum of Aviation
Warner Robins, Georgia 31098
Tel: (478) 926-1769
Fax: N/A
Director: Wesley Fondal
Email: wesley@starbaserobins.org
Website: www.starbaserobins.org

Bibb
Miller Magnet Middle School

Bibb County
Alexander II Elementary
Bernd Elementary
Twiggs County Elementary
Vineville Elementary

Bleckley County
Bleckley County Elementary

Houston
Faegin Mill Middle School
Mossy Creek Middle School
Northside Middle School

Houston County
Eagle Springs Elementary
Hilltop Elementary
Huntington Middle School
Lindsey Elementary
Linwood Elementary
Miller Elementary
Northside Elementary
Parkwood Elementary
Pearl Stephens Elementary
Shirley Hills Elementary
Thomson Middle School
Tucker Elementary

Peach County
Ft. Valley Middle School

HAWAII

KEANUU

STARBASE - Hawaii, Big Island
Service Component: Air National Guard
Military Location: National Guard Armory
Address:
16-512 Volcano Highway
Keaau, Hawaii 96749
Tel: (808) 982-4298
Fax: (808) 982-4241
Director: Todd Friel
Email: starbasehi@aol.com
Website: N/A

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

Hilo Private School
Haili Christian School
St. Joseph School

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

Puna Charter School
Hawaii Academy of Arts and Science
Ke Kula o Nawahiokalaniopu'u
Na Wai Ola Public Charter School

INDIANA

FORT WAYNE

STARBASE Indiana
Service Component: Air National Guard
Military Location: Fort Wayne ANGB
Address:
3005 West Ferguson Road
Fort Wayne, Indiana 46809
Tel: (260) 478-3712
Fax: (260) 478-3473
Director: Scott Liebhauser
Email: scott@starbasein.org
Website: www.starbasein.org

East Allen County School
Heritage Elementary
New Haven Intermediate

Fort Wayne Community
Glenwood Park Elementary
Indian Village Elementary
Levan Scott Academy
Maplewood Elementary
South Wayne Elementary
Study Elementary
Thurgood Marshall Academy
Washington Elementary

Fort Wayne Lutheran Schools
St. Paul's Lutheran

SB-FW Catholic Dio Schools
Most Precious Blood School
St Joe Hessen Cassel
St. Aloysius
St. Elizabeth Ann Seton
St. Joseph

KANSAS

KANSAS CITY

STARBASE Kansas City
Service Component: Army National Guard
Military Location: 2-137th Combined Arms Battalion
Address:
100 S 20th Street
Kansas City, Kansas
Tel: (913) 279-7858
Fax: (913) 279-7859
Director: Jason Johnston
Email: jason@kansasstarbase.org
Website: www.kansasstarbase.org

Basehor-Linwood USD458
Basehor Intermediate
Glenwood Ridge Elementary School
Linwood Elementary

Easton USD 449
Pleasant Ridge Elementary

Hope Lutheran School
Hope Lutheran School

Kansas City USD 500
New Chelsea Elementary
Parker Elementary
Stoney Point North Elementary
Stoney Point South
T.A. Edison Elemntary

Lansing Schools USD 469
Lansing Elementary

Lawrence Public Schools USD 497
Pinckney Elementary School

Leavenworth Regional Catholic Schools
Xavier Elementary

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

Leavenworth USD 453
David Brewer Elementary School
Henry Leavenworth Elementary School

Shawnee Mission USD 512
Christa McAuliffe Elementary School
Pawnee Elementary School
Santa Fe Trail Elementary School

St. Agnes Catholic Parish
St. Agnes Catholic School

MANHATTAN

STARBASE Manhattan
Service Component: Army National Guard
Military Location: 778th Transportation Company
Address:
721 Levee Drive
Manhattan, Kansas 66502
Tel: (785) 560-3525
Fax: (785) 539-7810
Director: Karen Whitacre
Email: karen@kansasstarbase.org
Website: www.kansasstarbase.org

Kaw Valley USD #321
St. Marys Grade School

Geary County USD#475
Seitz Elementary School

Manhattan USD #383
Amanda Arnold Elementary School
Bluemont Elementary School
Frank V. Bergman Elementary School
Lee Elementary School
Northview Elementary School
Ogden Elementary School
Theodore Roosevelt Elementary School
Woodrow Wilson Elementary School

Rock Creek USD #323
St. George Elementary School

Salina Diocese
Manhattan Catholic Schools

SALINA

STARBASE Salina
Service Component: Army National Guard
Military Location: Great Plains Joint Training Center
Address:
3010 Arnold Street
Salina, Kansas 67401
Tel: (785) 822-6602
Fax: N/A
Director: Dixie Tipling
Email: dixie@kansasstarbase.org
Website: www.kansasstarbase.org

Central Plains USD #112
Wilson Schools

Concordia USD #333
Concordia Middle School

Ell-Saline USD #307
Ell-Saline Elementary School

Lincoln Unified USD#298
Lincoln Elementary School

Lucas-Sylvan Unified USD #299
Lucas-Sylvan Unified Elementary School

North Ottawa County USD #239
Minneapolis Grade School

Salina Diocese
St. Mary's Grade School

Salina USD #305
Meadowlark Ridge Elementary School

Solomon USD #393
Solomon Elementary School

Twin Valley USD #240
Bennington Grade School
Tescott Grade School

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

TOPEKA

STARBASE Topeka
Service Component: Air National Guard
Military Location: Forbes Field ANG
Address:
5920 SE Coyote Drive
Topeka, Kansas 66619
Tel: (785) 861-4709
Fax: (785) 861-4127
Director: Jeff Gabriel
Email: director@kansasstarbase.org
Website: www.kansasstarbase.org

Archdioceses of Kansas City, Kansas
Christ the King Elementary School
St. Matthew's Elementary School

Atchinson County Community Unified Schools
Atchison County Community School

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

Baldwin City Unified School District
Baldwin City Intermediate School

Central Heights Unified School District
Central Heights Elementary School

Jefferson West Unified School District
Jefferson West Middle School

Lyndon Unified School District
Lyndon Elementary School

Mill Creek Valley Unified School District
Alma Grade School
Maple Hill Elementary School

Santa Fe Trail Unified School Distict
Carbondale Attendance Center

Seaman Unified School District
Logan Elementary School
North Fairview Elementary School
Rochester Elementary School
West Indianola Elementary School

Topeka Public Schools
Lowman Hill Elementary School

Wamego Public Schools
West Elementary School

WICHITA

STARBASE Wichita
Service Component: Air National Guard
Military Location: McConnell Air Force Base
Address:
52870 Jayhawk Drive
McConnell AFB, Kansas 67221
Tel: (316) 759-8911
Fax: (316) 759-8915
Director: Aaron Santry
Email: Aaron@kansasstarbase.org
Website: www.kansasstarbase.org

Andover Unified School District
Sunflower Elementary School

LOUISIANA

PINEVILLE

Pelican State STARBASE
Service Component: Army National Guard
Military Location: Camp Beauregard
Address:
609 F Street
Pineville, Louisiana 71360
Tel: (318) 290-5252
Fax: (318) 290-5937
Director: Nancy L. Brinkerhoff Force
Email: nancy.l.brinkerhoffforce.nfg@mail.mil
Website: N/A

Accelerated Christian Education
Alpine Christian Academy

American Montessori Association
Cenla Montessori Education Program

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

Association of Chrisian Schools
Hope Baptist School

Diocese
Our Lady of Prompt Succor
Sacred Heart School

Grant Parish
South Grant Elementary

Home School Association
Cenla Christian Home School Association

Rapides Parish
Alma Redwine Elementary New Vision Academy
Carter C. Raymond
Forest Hill Elementary
Hadnot-Hayes STEM Elementary
J. I. Barron Elementary
L. S. Rugg Elementary
Lessie Moore Elementary
Mabel Brasher Elementary
Martin Park Elementary
Northwood High School
Pineville Elementary
Plainview High School
Poland Junior High
Tioga Elementary
W. O. Hall

Seventh Day Adventist
Alfred Booker Junior Academy

NEW ORLEANS

STARBASE Jackson Barracks
Service Component: Army National Guard
Military Location: Jackson Barracks, Army National Guard
Address:
6400 Saint Claude Avenue
New Orleans, Louisiana 70117
Tel: (504) 278-8440
Fax: (504) 278-8537
Director: Lisa Calabresi
Email: lisa.m.calabresi.nfg@mail.mil
Website: NA

St. Bernard Parish
Chalmette Elementary
Gauthier Elementary
Lacoste Elementary
Our Lady of Prompt Succor

Orleans
Esperanza Charter School
Upper Room Bible Church Academy

Orleans Parish
Benjamin Franklin Elementary
Dr. Martin Luther KIng Charter School
Edgar P. Harney Elementary
Fannie C. Williams Charter School
Hynes Charter School
St. Paul Lutheran School
Success Preparatory Academy

Plaquemines
Belle Chasse Academy

BOSSIER CITY

STARBASE Louisiana*
Service Component: Air Force Reserve
Military Location: Barksdale Air Force Base
Address:
827 Twining Drive
Barksdale AFB, Louisiana 71110
Tel: (318) 529-3521
Fax: (318) 529-3631
Director: Kathy Brandon
Email: kathy.brandon.2.ctr@us.af.mil
Website: http://www.facebook.com/StarbaseLA and www.307bw.afrc.af.mil/units/starbaselouisiana/index.asp

Bossier Parish Schools
Apollo Elementary
Benton Elementary
Bossier Elementary
Carrie Martin Elementary
Central Park Elementary
Curtis Elementary
Elm Grove Elementary
Kerr Elementary
Legacy Elementary
Meadowview Elementary
Plantation Park Elementary
Princeton Elementary
Stockell Place Elementary
W.T. Lewis Elementary
Waller Elementary School

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

Caddo Parish Schools
Claiborne Fundamental Elementary Magnet
Creswell Elementary
Judson Fundamental Elementary Magnet
Keithville Elementary
North Highlands Elementary
Oil City Environmental Science Elementary Magnet
Shreve Island Elementary
Southern Hills Elementary
Summer Grove Elementary

Catholic Diocese of Shreveport
St. John Berchmans Catholic School
St. Joseph Catholic School

MASSACHUSETTS

BEDFORD

STARBASE Hanscom
Service Component: Air Force
Military Location: Hanscom Air Force Base
Address:
98 Barksdale Street
Hanscom AFB, Massachusetts 1731
Tel: (781) 862-4015
Fax: (781) 862-4016
Director: Peter Holden PhD
Email: pholden@mass-starbase.org
Website: http://mass-starbase.org

Boston Public Schools
The Nathan Hale School

Fitchburg Public Schools
The Arthur M. Longsjo Middle School

Haverhill Public Schools
Dr. Paul Nettle Middle School

Leominster Public Schools
Fall Brook Elementary
Johnny Appleseed Elementary
Northwest Elementary
Southeast Elementary

Lincoln Public Schools
Hanscom Middle School

Littleton Public Schools
Russell Street Elementary

Malden Public Schools
Linden STEAM Academy

MICHIGAN

ALPENA

STARBASE Alpena
Service Component: Air National Guard
Military Location: Compact Readiness Training Center
Address:
5884 A Street
Alpena, Michigan 49707
Tel: (989) 654-6332 (989) 354-6329
Fax: (989) 354-6353
Director: Steven Tezak
Email: stezak@starbasealpena.org
Website: www.starbasealpena.org

Alcona Community Schools
Alcona Elementary School
All Saints Catholic School

Alpena Public Schools
Besser Elementary School
Ella M. White School
Hinks School
Immanuel Lutheran School
Lincoln Community School
Sanborn School
St Ignatius Catholic School
Wilson Community School

Bingham Arts Academy
Bingham Arts Academy
Cooperative of Alpena-Area Christian Homeschoolers

Hillman Community Schools
Hillman Elementary School

Posen Consolidated School District No. 9
Posen Elementary School

Rogers City Area Schools
Rogers City Elementary School

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

BATTLE CREEK

STARBASE Battle Creek*
Service Component: Air National Guard
Military Location: Battle Creek ANG Base
Address:
3595 Mustang Avenue
Battle Creek ANG Base, Michigan 06909
Tel: (269) 969-3219
Fax: (269) 969-3251
Director: Bruce Medaugh
Email: BMedaugh@STARBASEBattleCreek.org
Website: N/A

Albion Public Schools
Altec

Battle Creek Public Schools
Dudley Elementary
Franklin Elementary
Fremont Elementary
Urbandale Elementary
Valley View Elementary
Verona Elementary

Bellevue Public Schools
Bellevue Elementary

Colon Public Schools
Colon Elementary

Delton Kellogg Public Schools
Delton Kellogg Middle School

Hastings Community Schools
Central Elementary
Northeastern Elementary
Southeastern Elementary
STAR Elementary

Lakewood Public Schools
Clarksville Elementary
Sunfield Elementary
West Elementary
Woodland Elementary

Mar Lee School
Mar Lee

Parchment School District
Northwood Elementary

Pennfield Schools
Dunlap Elementary

Thornapple Kellogg Public Schools
Page Elementary

Three Rivers Community Schools
Park Elementary

MOUNT CLEMENS

STARBASE One*
Service Component: Air National Guard
Military Location: Selfridge ANGB
Address:
27310 D Street
Selfridge ANGB, Michigan 48045
Tel: (586) 239-4884
Fax: (586) 239-5751
Director: Rick Simms
Email: rsimms@starbaseone.org
Website: http://www.starbaseone.org

Anchor Bay School District
Ashley Elementary
Francois Maconce Elementary School
Great Oaks Elementary
Lottie M. Schmidt Elementary School
Naldrett Elementary
Sugarbush Elementary

Charter
Merritt Academy

Charter-Centerline
Michigan Mathematics and Science Academy

Charter- Detroit
Carver STEM Academy
Clippert Academy
Plymouth Educational Center Charter School

Detroit City School District
Bennett Elementary School
Chrysler Elementary School
Davison Elementary-Middle School

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

Emerson Elementary-Middle School
Mann Learning Community
Pasteur Elementary School

L'Anse Creuse Public Schools
Donald J. Yacks Elementary
Emma V. Lobbestael Elementary
Francis A. Higgins Elementary
Joseph M. Carkenord Elementary
South River Elementary

Lamphere Public Schools
Hiller Elementary School

Mount Clemens Community School District
Mount Clemens Middle School

New Haven Community Schools
Endeavour Elementary School
New Haven Elementary School

Richmond Community Schools
Richmond Middle School

South Lake Schools
Elmwood Elementary

Private
Our Lady Star of the Sea
St. Germaine Catholic School
Trinity Lutheran

MINNESOTA

ST. PAUL

STARBASE Minnesota*
Service Component: Air National Guard
Military Location: 133rd Airlift Wing
Address:
659 Mustang Avenue
St. Paul, Minnesota 55111
Tel: (612) 713-2530
Fax: (612) 713-2549
Director: Kim Van Wie
Email: kvanwie@starbasemn.org
Website: www.starbasemn.org

Anoka Hennepin School District
University Avenue School

Eagan Apple Valley Rosemount Schools
Cedar Park STEM School
Westview Elementary

Hopkins Public Schools
Meadowbrook

Minneapolis Public Schools
Anishinabe Academy
Bryn Mawr Community School
Emerson SILC (Spanish Immersion Learning Center)
Jefferson Community School
Keewaydin Community School
Loring Community School
Pillsbury Community School
Risen Christ Catholic School

North St. Paul, Maplewood, Oakdale School District
Castle Elementary
Richardson Elementary
Skyview Elementary
Webster Elementary

St. Paul Public Schools
Battle Creek Elementary

St. Paul Charter School
Achieve Language Academy
Community of Peace Academy

St. Paul Parochial
Community of Saints
St Jerome School
St. Agnes School
St. Mary of the Lake School
St. Rose of Lima Catholic School

Saint Paul Public Schools
Como Park Elementary School
Farnsworth Aerospace Elementary Magnet School 5-8
Farnsworth Aerospace Elementary Magnet School PreK-4
Frost Lake Magnet School of Technology
and Global Studies
Galtier Science and Mathematics Technology Magnet
Maternity of Mary - St. Andrew
Phalen Lake Hmong Studies Magnet

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

MONTANA

GREAT FALLS

STARBASE Great Falls
Service Component: Air National Guard
Military Location: Montana Air National Guard, 120 FW
Address:
2800 Airport Avenue B
Great Falls, Montana 59404
Tel: (406) 791-0806
Fax: (406) 791-0339
Director: Wendy Fechter
Email: wfechter@mt.net
Website: N/A

Augusta School District
Augusta

Cascade School District
Cascade

Centerville School District
Centerville
Foothills Christian School

Great Falls Public School District
Chief Joseph
Lewis and Clark
Lincoln
Longfellow
Loy
Meadow Lark
Morningside
Mountain View
Riverview
Roosevelt
Sacajawea
Sunnyside
West
Whittier

Highwood Public School District
Highwood
Holy Spirit
Homeschoolers
Our Lady of Lourdes

Great Falls School District
Valley View

HELENA

STARBASE Fort Harrison
Service Component: Army National Guard
Military Location: Fort Harrison
Address:
1956 Mt. Majo Street
Fort Harrison, Montana 59636
Tel: (406) 324-3727
Fax: (406) 324-3735
Director: Wendy Fechter
Email: wfechter@mt.net
Website: N/A

East Helena
RH Radley

Helena
Broadwater Elementary
Bryant Elementary
Central Elementary
Four Gs Elementary
Hawthorne Elementary
Jefferson Elementary
Jim Darcy Elementary
Kessler Elementary
Rossiter Elementary
Smith Elementary
Warren Elementary

Kalispell
Cornelius Hedges

Montana City
Montana City

West Glacier
West Glacier

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

NEVADA

LAS VEGAS

STARBASE Nellis
Service Component: Air Force Reserve
Military Location: Nellis Air Force Base
Address:
2841 Kinley Drive
Las Vegas, Nevada 89191
Tel: (702) 575-3837
Fax: (702) 575-3837
Director: Myles Judd
Email: mjudd@starbasenellis.com
Website: starbasenellis.com

Clark County
Betsy Rhoades
Braken
Crestwood
Lomie Heard
Lowman
Ute V Perkins
Wilhelm

NEW MEXICO

ALBUQUERQUE

New Mexico STARBASE La Luz*
Service Component: Air Force
Military Location: Kirkland Air Force Base
Address:
1401 Maxwell Street SE, Bldg 1900
Albuquerque, New Mexico 87117
Tel: (505) 846-8042
Fax: (505) 846-8932
Director: Ronda Cole
Email: ronda.cole.ctr@us.af.mil
Website: http://prs.afrl.kirtland.af.mil/LaLuz

Albuquerque Public Schools
Dolores Gonzales Elementary School
East San Jose Elementary School
Emerson Elementary School
Lowell Elementary School
North Star Elementary School
Petroglyph Elementary School
Sandia Base Elementary School
Seven Bar Elementary School
Wherry Elementary School

Archdiocese of Santa Fe
Holy Child Catholic School

Grants-Cibola County Schools
Mesa View Elementary School

Los Lunas Public Schools
Bosque Farms Elementary School
Peralta Elementary School

Magdalena Municipal Schools
Magdalena Elementary School

NORTH CAROLINA

CHARLOTTE

STARBASE Charlotte
Service Component: Air National Guard
Military Location: 145th Airlift Wing, ANG
Address:
STARBASE, 145 AW, 4930 Minuteman Way
Charlotte, North Carolina 28208
Tel: (704) 398-4819
Fax: (704) 398-4822
Director: Barbara Miller
Email: barbara.miller.ctr@ang.af.mil
Website: N/A

Brunswick County Public School System
Jessie Mae Monroe Elementary School

Charlotte-Mecklenburg Public Schools
Barringer Academic Center
Devonshire Elementary School
Long Creek Elementry School
Pineville Elementary School

Lincoln County Public Schools
Lincoln Charter School
Rock Springs Elementary School
St. James Elementary School

Thomasville School System
Liberty Drive Elementary

Wake County Public Schools
York Elementary School

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

KURE BEACH

STARBASE Ft. Fisher
Service Component: Army National Guard
Military Location: NCNG Training Center, Fort Fisher
Address:
116 Air Force Way
Kure Beach, North Carolina 28449
Tel: (910) 251-7333
Fax: N/A
Director: Barbara Miller
Email: barbara.miller.ctr@ang.af.mil
Website: N/A

New Hanover County Schools
Bradley Creek Elementary
Dr. Hubert Eaton, Jr. Elementary
Dr. John Codington Elementary
John J. Blair Elementary

OHIO

DAYTON

STARBASE Wright-Patt*
Service Component: Air Force
Military Location: Wright-Patterson Air Force Base
Address:
2261 Monahan Way
WPAFB, Ohio 45433
Tel: (937) 938-4859
Fax: (937) 904-8033
Director: Daniel J Andrews II
Email: daniel.andrews.1@us.af.mil
Website: http://edoutreach.wpafb.af.mil/starbase/index.html

Beavercreek City Schools
Parkwood Elementary School

Dayton Public Schools
Kemp PreK-6 School

Fairborn City Schools
Fairborn Intermediate School

Huber Heights City Schools
Charles Huber Elementary School
Monticello Elementary School
Rushmore Elementary School
Valley Forge Elementary School
Wright Brothers Elementary School

Jefferson Township Local Schools
Blairwood Elementary School

Mad River Township Schools
Spinning Hills Middle School

Yellow Springs Exempted Village Schools
Mills Lawn Elementary School

Xenia Community Schools
Arrowood Elementary School
Cox Elementary School
McKinley Elementary School
Shawnee Elementary School
Tecumseh Elementary School

OKLAHOMA

OKLAHOMA CITY

STARBASE Oklahoma - Oklahoma City*
Service Component: Air Force
Military Location: Tinker Air Force Base
Address:
3001 S. Douglas Boulevard
Oklahoma City, Oklahoma 73145
Tel: (918) 833-7757
Fax: N/A
Director: Pamela Kirk
Email: pamela@starbaseok.org
Website: www.starbaseok.org

Arapaho/Butler Public Schools
Arapaho/Butler Elementary

Bishop Public Schools
Bishop Elementary

BF-DC Public Schools
BF-DC Elementary

Canute Public Schools
Canute Elementary

Duncan Public Schools
Horrace Mann Elementary

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

Empire Public Schools
Empire Elementary

Erick Public Schools
Erick Elementary

Flower Mound Public Schools
Flower Mound Elementary

Lawton Public Schools
Pat Henry Elementary
Hugh Bish Elementary
Geronimo Road Elementary
Ridgecrest Elementary

Leedey Public Schools
Leedey Elementary

Hammon Public Schools
Hammon Elementary

Mid-Del Public Schools
Del City Elementary
Schwartz Elementary

Mountain View-Gotebo Public Schools
Mountain View-Gotebo Elementary

OKC Public Schools
Sequoyah Elementary
Cleveland Elementary
Millwood Elementary

Private School
St. Charles Borromeo Catholic School
St. Phillip Neri Catholic School
Bishop John Carroll Catholic School
Tinker Home School Group
Lawton Academy of Arts and Sciences
Lawton Christian School
St. Mary's Catholic School
Trinity Christian Academy

Sentinel Public Schools
Sentinel McMurray Elementary

Sweetwater Public Schools
Sweetwater Elementary

Thomas Fay Custer Public Schools
Thomas Fay Custer Elementary

TULSA

STARBASE Oklahoma - Tulsa*
Service Component: Air National Guard
Military Location: Tulsa Air National Guard
Address:
9131 E. Viper Street
Tulsa, Oklahoma 74115
Tel: 918-833-7757
Fax: 918-833-7769
Director: Pamela Kirk
Email: pamela@starbaseok.org
Website: www.starbaseok.org

Cherokee Nation
Cherokee Nation Summer Camp

Private
Sts. Peter and Paul Catholic School
All Saints Catholic School
Rejoice Chrisitan Academy

Owasso Public Schools
Northeast Elementary
Pamela Hodson Elementary

Tulsa Public Schools
Lindbergh Elementary
Peary Elementary

Varied
TANG Summer Camp

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

OREGON

KLAMATH FALLS

STARBASE Kingsley*
Service Component: Air National Guard
Military Location: Kingsley Field, 173rd Fighter Wing
Address:
302 Bong Street
Klamath Falls, Oregon 97603
Tel: (541) 885-6472
Fax: N/A
Director: Denise Kortes
Email: denisekortes@yahoo.com
Website: N/A

Klamath County School District
Chiloquin Elementary
Henley Elementary
Keno Elementary
Peterson Elementary
Stearns Elementary

Klamath Falls City Schools
Conger Elementary School
Mills Elementary
Pelican Elementary
Ponderosa Middle School
Roosevelt Elementary

Independent Institution
Hosanna Christian Academy
Triad School

PORTLAND

STARBASE Portland
Service Component: Air National Guard
Military Location: Portland Air National Guard Base
Address:
6801 NE Cornfoot Road
Portland, Oregon 97218
Tel: (503) 335-5364
Fax: N/A
Director: Denise Kortes
Email: denisekortes@yahoo.com
Website: N/A

Canby School District
Philander Lee Elementary

Portland Public Schools
Cesar Chavez
Creston Elementary
Faubion Elementary
Harrison Park Elementary
James John Elementary
Jason Lee Elementary
Ockley Green/Chief Joe
Peninsula Elementary
Rigler Elementary
Rosa Parks Elementary
Sitton Elementary
Vernon Elementary
Vestal Elementary

Reynolds School District
Alder Elementary
Wilkes Elementary

PUERTO RICO

CAROLINA

STARBASE Puerto Rico
Service Component: Air National Guard
Military Location: Muñiz ANG Base
Address:
200 Jose A. Santana Avenue
Carolina, Puerto Rico 00983
Tel: (787) 253-2513
Fax: (787) 253-2513
Director: Efrain Soto Santiago
Email: efrain.sotosantiago.mil@mail.mil
Website: N/A

Aguadilla
Liceo Aguadillano

Barranquitas
Ines M.Mendoza
Nicolas Rodriguez Garcia
Segunda Unidad

Bayamon
Jose Fernandez Rubial

Caguas
Concepcion Mendez Cano
Santa Clara

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

Guaynabo
Rafael Martinez Nadal

Humacao
Andres Soto Quinones
Felix Sanchez Cruz
Jose R. Agosto
Maria M. Simmons

Ponce
Segunda Unidad Manuel Candanedo Ortiz

San Juan
Cruz Salguero Torres
El Conquistador
Luis Munoz Rivera
NG Dependants
Villa Granada Elemental

SOUTH CAROLINA

BEAUFORT

STARBASE MCAS Beaufort
Service Component: Marine Corps
Military Location: Marine Corps Air Station
Address:
MCAS Beaufort
Beaufort, South Carolina 29904
Tel: (843) 524-1320
Fax: (843) 524-1322
Director: Robert W. Semmler
Email: semmlerrw@gmail.com
Website: N/A

Beaufort County School District
Beaufort Elementary School

Beaufort County
Beaufort Elmentary School Academy of Math, Engineering and Science
Hilton Head Island Elementary School
Lady's Island Middle School
Mossy OaksElementary School
Okatie Elementary School
Port Royal Elementary School
Robert Smalls Middle School
St. Helena Elementary School
Whale Branch Middle School

Catholic
St. Peter Catholic School
St. Gregory the Great Catholic School

Colleton County School District
Bells Elementary School
Cottageville Elementary School
Forest Hills Elementary School
Hendersonville Elementary School
Northside Elementary School

DoDEA
Bolden Elementary School

NA
AGAPE Christian Academy
Beaufort Academy
Bridges Preparatory School
Holy Trinity Classical Christian School
Riverview Charter School
Thomas Heyward Academy

EASTOVER

STARBASE Swamp Fox
Service Component: Air National Guard
Military Location: McEntire Joint National Guard Base
Address:
1325 South Carolina Road
Eastover, South Carolina 29044
Tel: (803) 647-8126
Fax: (803) 647-8195
Director: John Motley
Email: john.motley.1@ang.af.mil
Website: http://www.scstarbase.org

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

Calhoun County School District
Sandy Run K-8 School

Lee County School District
West Lee Elementary

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

Lexington-Richland School District Five
B.C. Grammar School # 1
H.E. Corley
Irmo Elementary
Nursery Road Elementary

Richland County School District One
A.C. Moore Elementary
Burnside Elementary
Catawba Trail Elementary
Forest Heights Elementary
Gadsden Elementary
Hopkins Elementary
Horrell Hill Elementary
Mill Creek Elementary
Webber Elementary

SC/Fort Jackson School District
C.C. Pinckney School

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

SOUTH DAKOTA

RAPID CITY

STARBASE NOVA Honor
Service Component: Army National Guard
Military Location: South Dakota National Guard Camp Rapid
Address:
2823 West Main Avenue
Rapid City, South Dakota 57702
Tel: 605-737-6083
Fax: 605-737-6082
Director: Julie Mathiesen
Email: jmathiesen@tie.net
Website: www.sdstarbase.org

Custer School District
Custer Elementary School
Hermosa School
Hot Springs Elementary School

Eagle Butte School District
Eagle Butte Upper Elementary School

Faith School District
Faith School

Kadoka Area School
Kadoka School

Lyman School District
Lyman County School

Meade School District
Piedmont Elementary School
Whitewood Elementary School
Sturgis Elementary School

New Underwood School District
New Underwoood Elementary School

Pierre Indian Learning Center
Pierre Indian Learning Center

Red Cloud Indian School
Our Lady of Lourdes Elementary School

Shannon County School District
Wolf Creek Elementary School
Batesland Elementary School
Red Shirt Indian School

Stanley County School District
Stanley County School

St. Joseph Indian School
St. Joseph Indian School

STARBASE Rapid City*
Service Component: Army National Guard
Military Location: South Dakota National Guard Camp Rapid
Address:
2823 West Main
Rapid City, South Dakota 57702
Tel: (605) 737-6083
Fax: (605) 737-6082
Director: Julie Mathiesen
Email: jmathiesen@tie.net
Website: www.sdstarbase.org

Douglas
Vandenberg Elementary School

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

Rapid City
Black Hills Elementary School
Canyon Lake Elementary School
General Beadle Elementary School
Hoarce Mann Elementary School
Knollwodd Heights Elementary School
Rapid Valley Elementary School

Private
Zion Lutheran School *SIOUX FALLS*

SIOUX FALLS

STARBASE NOVA Courage
Service Component: Army National Guard
Military Location: National Guard, Sioux Falls
Address:
801 W National Guard Drive
Sioux Falls, South Dakota 57104
Tel: (605) 367-4930
Fax: (605) 367-4926
Director: Vonny Revell
Email: vonny@sdstarbase.org
Website: www.sdstarbase.org

Andes Central School District
Andes Central Elementary School

Armour School District
Armour Elementary School

Avon School District
Avon Elementary School

Browns Valley School District
Browns Valley Elementary School

Big Stone City School District
Big Stone City Elementary School

Enemy Swim School District
Enemy Swim Day School

Garretson School District
Garretson Elementary School

Rosholt School District
Roshold Elementary School

Sisseton School District
Sisseton Elementary School
New Effinton Elementary

Summit School District
Summit Elementary School

Todd County School District
Klein Elementary School
Lakeview Elementary School
Littleburgh Elementary School
Okreek Elementary School
Rosebud Elementary School
South Elementary School

Wagner School District
Wagner Elementary Community School

Waubay School District
Waubay Elementary School

Webster School District
Webster Elementary School

Wilmot School District
Wilmot Elementary School

STARBASE Sioux Falls
Service Component: Army National Guard
Military Location: South Dakota Air and Army National Guard
Address:
801 West National Guard Drive
Sioux Falls, South Dakota 57104
Tel: (605)367-4930
Fax: (605) 367-4926
Director: Vonny Revell
Email: vonny@sdstarbase.org
Website: www.sdstarbase.org

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

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

TEXAS

AUSTIN

Texas STARBASE Austin
Service Component: Army National Guard
Military Location: Camp Mabry
Address:
2200 W. 35th Street
Austin, Texas 78703
Tel: (512) 782-3469
Fax: N/A
Director: Patrick M Yonnone
Email: Pyonnone@utexas.edu
Website: N/A

Austin ISD
Reilly Elementary

Del Valle
Del Valle Elementary
Hornsby-Dunlap Elementary

Diocese of Austin
Cathedral School of Saint Mary
St Ignatius Martyr Catholic School
St. Theresa Catholic School

Del Valle ISD
Creedmoor Elementary
Gilbert Elementary
Hillcrest Elementary
Smith Elementary
St. Austin Catholic School

Our Savior Lutheran School
Our Savior Lutheran School

St. Francis School
St. Francis School

Redeemer Lutheran
Redeemer Lutheran

St. Paul Lutheran
St. Paul Lutheran

HOUSTON

Texas STARBASE Houston
Service Component: Air National Guard
Military Location: Ellington Field
Address:
14657 Sneider Street, Bldg. # 1055
Houston, Texas 77034
Tel: (281) 929-2034
Fax: (281) 929-2036
Director: Gail Whittemore-Smith
Email: gail.whittemore@ang.af.mil
Website: N/A

Galena Park Independent School District
Cimarron Elementary School
Cloverleaf Elementary School
Galena Park Elementary School
Green Valley Elementary School
Havard Elementary School
Jacinto City Elementary School
MacArthur Elementary School
Normandy Crossing Elementary School
North Shore Elementary School
Purple Sage Elementary School
Pyburn Elementary School
Sam Houston Elementary School
Shirley J. Williamson Elementary School
Tice Elementary School
Woodland Acres Elementary School

Galveston-Houston Diocese
St. Mary's of the Purification Catholic School
St. Rose of Lima Catholic School

Home School
Faith Home School
Gulf Coast Christian Home School Scholars

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

Humble Independent School District
Whispering Pines Elementary School

Houston Independent School District
Cornelius Elementary School
George I. Sanchez Elementary School
James H. Law Elementary School
Leeona Leroy Pugh Elementary School

Pasadena Independent School District
Bailey Elementary School
Carter Lomax Middle School
Fisher Elementary School
Jensen Elementary School\
Morris Middle School
Rick Schneider Middle School

Sheldon Independent School District
Garrett Elementary School

SAN ANTONIO

STARBASE Kelly
Service Component: Air Force Reserve
Military Location: Joint Base San Antonio - Lackland
Address:
203 Galaxy Road, Suite 112
JBSA - Lackland, Texas 78236
Tel: (210) 925-3708
Fax: (210) 925-3702
Director: Ron Jackson
Email: starbase@clear.net
Website: N/A

Archdiocese of San Antonio
Little Flower School
St. Mary Magdalen Catholic School

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

South San Antonio Independent School District
Athens Elementary School
Frank Madla Elementary School
Kindred Elementary School

UTAH

OGDEN

STARBASE Hill Screaming Eagles*
Service Component: Air Force
Military Location: Hill Air Force Base
Address:
5731 E Avenue
Hill AFB, Utah 84056
Tel: (801) 586-7494
Fax: N/A
Director: Frances EP Bradshaw
Email: frances.bradshaw@starbasehill.com
Website: www.starbasehill.com

Davis School District
Adelaide Elementary School
Antelope Elementary School
Bluff Ridge Elementary School
Crestview Elementary School
Doxey Elementary School
Eagle Bay Elementary School
Endeavour Elementary School
Foxboro Elementary School
Heritage Elementary School
Hill Field Elementary School
King Elementary School
Layton Elementary School
Lincoln Elementary School
Meadowbrook Elementary School
Sand Springs Elementary School
South Clearfield Elementary School
Sunset Elementary School
Tolman Elementary School
Vae View Elementary School
Washington Elementary School
West Point Elementary School

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

VERMONT

RUTLAND

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

Addison Central Supervisory Union
Salisbury Community School
Shoreham Elementary School

Addison-Rutland Supervisory Union
Orwell Village School
Benson Village School
Castleton Elementary School

Rutland Central Supervisory Union
West Rutland Central School

Rutland City School District
Rutland Intermediate School

Rutland County
Homeschool

Rutland Diocese
Christ The King School

Rutland Northeast Supervisory Union
Barstow Elementary School
Sudbury Central School
Whiting School
Leicester Central School
Lothrop School
Poultny Elementary School
Neshobe School

Rutland South Supervisory Union
Clarendon Elementary
Shrewsbury Elementary
Wallingford Elementary School

Rutland-Windsor Supervisory Union
Mount Holly Elementary

Southwest Vermont Supervisory Union
Shaftsbury Elementary

Windsor Central Supervisory Union
Killington Elementary School
Wardsboro Elementary
Jamaica Village School

Windsor Southwest Supervisory Union
Rochester School
Cavendish Town Elementary School

SOUTH BURLINGTON

STARBASE Vermont - South Burlington
Service Component: Air National Guard
Military Location: Vermont Air National Guard
Address:
62 NCO Drive
South Burlington, Vermont 05403
Tel: (802) 660-5201
Fax: (802) 660-5940
Director: Dan Myers
Email: dan@starbasevt.org
Website: N/A

Addison Northwest Supervisory Union
Bristol Elementary School
Vergennes Elementary School

Burlington School District
Cp Smith School
Integrated Arts Academy
John J Flynn School

Burlington Dioces
Christ The King School
Saint Francis Xavior School

Chittenden County
Guard Summer Program
Homeschool Group

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

Chittenden East Supervisory Union
Browns River Middle School

Franklin West Supervisory Union
Bellows Free Academy/Fairfax

Grand Isle Supervisory Union
Grand Isle School
Isle Lamotte School
North Hero Elementary School

Lamoille North Supervisory Union
Cambridge Elementary School

South Burlington School District
Orchard Elementary School

Winooski School District
John F. Kennedy School

Washington Central Supervisory Union
East Montpelier Elementary School

VIRGINIA

WINCHESTER

Winchester STARBASE Academy
Service Component: Army National Guard
Military Location: Army Guard Readiness Center
Address:
181 Pendleton Road
Winchester, Virginia 22602
Tel: (540) 686-4964
Fax: N/A
Director: Susan Corrigan
Email: susan.corrigan@hotmail.com
Website: http://starbasewinchester.webs.com

Clarke County Public Schools
DG Cooley Elementary
Boyce Elementary

Frederick County Public Schools
Bass-Hoover Elementary
Middletown Elementary

Independent
Randolph-Macon Academy
Sacred Heart Academy
Shenanhoah Christian Home Educators Group
Winchester Academy

Shenandoah County Public Schools
Signal Knob Middle School

Winchester Public Schools
Frederick Douglass Elementary
John Kerr Elementary
Quarles Elementary
Virginia Avenue Charlotte DeHart Elementary

WEST VIRGINIA

CHARLESTON

West Virginia STARBASE Academy
Service Component: Air National Guard
Military Location: 130th Airlift Wing
Address:
1679 Coonskin Drive
Charleston, West Virginia 25311
Tel: (304) 341-6440
Fax: (304) 341-6445
Director: Chris Treadway
Email: christopher.treadway@ang.af.mil
Website: www.wvstarbase.org

Kanawha County Schools
Alum Creek Elementary
Chesapeake Elementary
Holz Elementary
Montrose Elementary
Pinch Elementary
Saint Francis of Assisi School
Sharon Dawes Elementary
Shoals Elementary
Weimer Elementary

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

MARTINSBURG

STARBASE Martinsburg*
Service Component: Air National Guard
Military Location: 167th Airlift Wing
Address:
222 Sabre Jet Blvd
Martinsburg, West Virginia 25405
Tel: (304) 616-5501
Fax: (304) 616-5478
Director: Sherra Triggs
Email: sherra.triggs@ang.af.mil
Website: http://www.starbasemartinsburg.webs.com/

Berkeley County Schools
Eagle School Intermediate
Faith Christian Academy
Mill Creek Intermediate
Mountain Ridge Intermediate
Orchard View Intermediate
Potomack Intermediate
St. Joseph School
Tomahawk Intermediate

Jefferson County Schools
C.W. Shipley Elementary
Ranson Elementary
T.A. Lowery Elementary
Wright Denny Intermediate

WISCONSIN

MILWAUKEE

STARBASE Wisconsin
Service Component: Air National Guard
Military Location: U.S. Army Reserve Center
Address:
5130 W Silver Spring Drive
Milwaukee, Wisconsin 53218
Tel: (414) 535-5786
Fax: N/A
Director: Dr. Charisse Sekyi
Email: csekyi@starbasewi.org
Website: www.starbasewi.org

Milwaukee Public Schools
Browning School
Byron Kilbourn School
Clarke St. Summer School
Congress School
Goodrich School
Grantosa Drive School
Hawthorne School
Hopkins/Lloyd Summer School
Jeremiah Curtain Leadership Academy
Maple Tree Summer School
Parkside Summer School
Ralph H. Metcalfe School
Silver Spring School
Townsend Street School
Walt Whitman School
Westside Academy

Milwaukee Nonpublic
Downtown Montessori Academy
Early View Academy

WYOMING

CHEYENNE

Wyoming STARBASE Academy*
Service Component: Air National Guard
Military Location: Raper Armory
Address:
5410 Bishop Boulevard
Cheyenne, Wyoming 82009
Tel: (307) 777-8191
Fax: N/A
Director: Barbara Marquer
Email: barbm@starbasewy.org
Website: http://starbase.wyo.gov/

Laramie County School District #1
Afflerbach Elementary
Alta Vista
Anderson Elementary
Bain Elementary
Buffalo Ridge Elementary
Cole Elementary
Davis Elementary
Dildine Elementary
Fairview Elementary
Freedom Elementary
Gilchrist Elementary
Goins Elementary
Hebard Elementary

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Henderson Elementary
Hobbs Elementary
Jessup Elementary
Milller Elementary
Pioneer Park Elemntary
Rossman Elementary
Saddle Ridge Elementary
St. Mary's Academy
Sunrise Elementary

Laramie County School District #2

Albin Elementary
Burns Elementary
Pine Bluffs Elementary

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DoD STARBASE
A Department of Defense Youth Program

For more information contact:

Office of the Assistant Secretary of Defense/Reserve Affairs (OASD/RA)
1500 Defense Pentagon
Washington, DC 20301-1500
Phone: 703.693.8630

www.DoDSTARBASE.org