

# DoD STARBASE ANNUAL REPORT 2003



*"After STARBASE, I decided I liked science more than I thought I did! I didn't know it would be so much fun and I would learn so much! It was worth waking up early and eating peanut butter sandwiches for five days straight! I really like the way you made us think instead of just making us memorize a bunch of facts!"*

*Lauren "Bookworm" V.*



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# **DoD STARBASE ANNUAL REPORT 2003**

This report addresses the design, conduct, and effectiveness of the Department of Defense STARBASE Program as required by Title 10, United States Code Section 2193b(g).

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## **EXECUTIVE SUMMARY**

### **PROGRAM OVERVIEW**

Numerous reports over the past 15 years have identified deficiencies in math and science between U.S. students and those of other industrial countries. There are concerns regarding the effects of these shortfalls on our economy, workforce, and national security. The STARBASE program was designed in response to these concerns. The mission and goal of the DoD STARBASE program is to raise the interest and improve the knowledge, skills, and attitudes of at-risk youth in math, science, and technology by exposing them to the technological environments, training, and positive role models found on military bases and installations. Personal goal setting and substance abuse reduction are also incorporated into the educational curriculum. Any school district, public or private school, alternative educational provider, individual or group of home schooling families may apply to participate in the DoD STARBASE program under the willing sponsorship of a nearby military installation.

The DoD STARBASE program originated from its predecessor, Project STARS, a 1-week summer program in partnership with local schools and the military that contained many of the basic concepts and curriculum approaches that presently operate in today's program. In 1993, DoD funds were made available for the National Guard to start a school-year program, and DoD STARBASE was formally launched. Within a few years, the program grew in national prominence and acceptance, prompting other military service components such as the Navy, the Marine Corps, and the Air Force to become sponsors. Then in FY 2000, the National Defense Authorization Act (NDAA) provided the legislative authority, under Section 2193b of Title 10, United States Code, which further expanded the program nationwide and provided a more permanent source for funding. Subsequently, demand from other communities and military commanders prompted the expansion of the program to additional sites.

This is the twelfth year of the DoD STARBASE program. During this period, the program has served almost 300,000 students and has grown to 46 military base operated Academies in 28 states, the District of Columbia, and Puerto Rico. In addition, it now provides programs to American Indians in South Dakota, Mississippi, and Oklahoma as part of DoD's outreach initiative. New Mexico and Connecticut's second site in Waterbury were new Academies installed this year. DoD focuses the program on those students who are most in need of the program's ability to upgrade their skills in math and science. Particular emphasis is placed on those classes that have students who are:

- Historically under-represented in math, science, and technology
- Living in inner cities or rural locations
- Disabled
- Socio-economically disadvantaged
- Low in academic performance

There are two schedules used in the program: a 5-day 25 classroom hours or 4-day 20 classroom hours schedule. The 5-day program is the most popular. The entire class attends the program from the participant schools and children are transported to the military base for STARBASE instruction for each program day. Legislation allows the program to serve grade levels K through

12. However, DoD encourages the program to focus on grades four through six, since they are the critical trigger grades when student-testing scores on a national level start to diminish in performance. Under Department of Defense Instruction (DODI) guidelines, the minimum number of classroom hours per Academy is 700 per year. Even with the events over the past 2 years, most Academies meet those requirements.

The DoD STARBASE sponsoring agency, the Office of the Assistant Secretary of Defense for Reserve Affairs (OASD/RA), has the oversight responsibility within the DoD. This office assesses the DODI component plans for installing and implementing each Academy's program. The STARBASE Academy is responsible for all instruction, the presentation of the core curriculum and basic concepts, scheduling, testing, office management, and program operational activities. Each Academy has a manning model budget to cover one Director, two instructors, and an administrative assistant. Their titles and managerial responsibilities vary to some degree.

The employment relationships vary from Academy to Academy: 13 Academies have staff that are State employees; 10 Academies have federal staff positions; 12 Academies are contracted by State, school district or another source; and 7 Academies have employees of non-profit organizations. Each of these affiliations has different salary administration systems, benefit privileges, and reporting relationships. While the DoD provides recommendations of equivalencies for these positions, local administration varies and differences in salary administration and benefits emerge. These differences influence budget management decisions and organizational structure.

The STARBASE program methodology promotes the experiential and "hands-on" classroom environment where students are actively involved in simulations, lab applications, and demonstrations. This approach requires a very intensive instructor-based capability. This often requires volunteers to assist the STARBASE instructors; classroom teachers to serve as monitors; and military volunteers to serve as expert topic presenters, tour guides, or as mentors.

Each Academy is allowed an advisory board; 27 Academies use this option. The function of the board is to assist the Academy in community relations, supplemental funding initiatives, grant submissions, public affairs, program and budget planning, reviewing subcontractor relationships, and review of DODI compliance. As boards become established as an integral part of the program, they are very active in enhanced-value activities of the program. Boards do not, nor are they encouraged to, get involved in operational oversight. Their primary function is advisory, marketing, and public relations.

## **PROGRAM GROWTH**

DoD STARBASE has grown from seven Academies in its initial year of operation to 46 Academies, and now operates on a year-round schedule. Summer sessions are the norm and outreach efforts are on the increase as are specially designed activities to reach those students outside the targeted areas. Many of the Academies use the summers for special STARBASE sessions for the children of military personnel and for children with disabilities. Other sites focus on Girl Scout/Boy Scout sessions. DoD has responded by adding specialized outreach programs to serve American Indians. At the local level, teachers who are trained in the STARBASE curriculum reach students outside of the targeted area by bringing STARBASE materials and follow-through applications back to the classroom for implementation.

Over 42,000 students attended the STARBASE program this past year. There were some minor shifts in the program service areas, which was probably due to the recent inclusion of the new Academies and program sites. More than 75 percent of the STARBASE programs operate within a 50-mile radius of a military base. The importance of proximity to the program site is that it affects class time logistics due to transportation duration. At present, the program concentrates on grades four through six, with particular emphasis on the fifth grade. All but three Academies currently have a fifth grade program and eighteen Academies serve three or more grades. The desired standard class size is 20 to 35 students per class, with the average class size at 24.21.

As Academies are installed in new locations with different population mixes, there will be minor shifts in the ethnic composition of the program. This year the Caucasian group was 46.2 percent; the African-American student population remained stable at close to 27 percent, and the Hispanic student population was 14.7 percent. Asians, American Indians, and multiracial students now comprise more than 11 percent. The gender distribution of male and female students mirrored last year's composition with 51 percent male and 49 percent female.

### **SUPPORT SERVICES**

Traditionally, the educational system provides transportation services, teachers as monitors, and student lunches. At the military base, the military components help to install and implement the programs by providing classroom facilities, personnel support, access to military volunteers as tour guides and teacher aides, administrative support, some oversight responsibilities as outlined in the DODI, and often some minor operational support. Some of the military bases provide utilities, janitorial service, networking capability, and minor construction services. Often, the public relations area of the base promotes the program to the community through publications and the media.

### **PROGRAM ASSESSMENT**

The study demonstrates the strengths of the STARBASE program from the perspective of several participants of the program: the military personnel, the students, the classroom teachers, staff, and community leaders. Each has a unique experience and perspective of the program. As the study demonstrates, the students respond positively to the content and delivery of the course materials, while their attitudes towards math, science, and of their ability to personally manage their environment shifts to the favorable. The classroom teachers of the students have become some of the strongest advocates of the program as they report on the positive results of the students' performance back in the school system. STARBASE staff perceives themselves as part of a unique program that is a closely-knit community of educators dedicated to making a difference with the students under their care.

### **Commanders Survey**

The Commanders are strong advocates as well as sponsors of the program and they note the gains in community relationships, public relations, and the enthusiasm of their volunteer personnel with the program. Several noted that the DoD STARBASE program "is my #1 community outreach program" and "it provides the students an opportunity to see military personnel as positive and productive role models."

The Commanders indicate that the program provides:

- Equal returns to the military base in positive community relations
- An increased public awareness of the role of the military in community services and affairs
- The building of valuable relationships between the military and community leaders, teachers and parents
- Military personnel access to community volunteer activities that enhance their personal skills and self-worth

### **Military Volunteers Survey**

While the military volunteers are active supporters and advocates of STARBASE, they are also critical observers of the full range of the program's activities. They observe student responsiveness and they can assess their own contribution's value to the effort. They are able to demonstrate how math and science apply to their jobs and how those skills are applied to everyday tasks. Volunteers indicate that the program influences the student's perception of the military in a positive way.

### **Student Assessment**

Over the past 4 years, DoD designed, developed, and applied a single DoD STARBASE standardized student assessment instrument to measure changes in knowledge, skills, and attitudes of the student populations after participation in the STARBASE program. This assessment is administered across all Academies with a sample population of students in pre/post application. The instruments cover:

- Knowledge, skill, and problem-solving items as presented in core curriculum content and concepts
- Student attitudes towards math, science, and technology
- Student attitudes towards the military, military personnel, military command, and military locations
- Community awareness, citizenship, and specific social attitudes
- DoD STARBASE effectiveness
- DoD STARBASE impact

### **Knowledge Test Results**

This year the STARBASE students displayed a significant increase in knowledge and application of key concepts across all areas of the curriculum. All items demonstrated a significant increase in the percentages of students answering items correctly from the pre-to-post tests. The Pre-test had a mean score of 19.12 and a post-test mean score of 24.42. This is a difference in the mean average score of 5.30. While the scores indicate that many of the tested students who came into the program had a basic understanding of some of the concepts presented in the STARBASE curriculum, there were also a significant number of concepts that were completely new and

unfamiliar to the students. Concepts previously unknown displayed significant increases when the post-test was completed at the close of the program.

### **Attitude Questionnaire Results**

As in prior years, the student attitude and perception survey was designed to measure shifts in attitudes as a consequence of participation in DoD STARBASE. The following attitudinal areas were covered:

- Attitudes towards math, science, and technology
- Attitudes towards the military, military personnel, military careers, and the military environment
- Community awareness, citizenship, and social attitudes
- Effectiveness of STARBASE
- Impact of STARBASE

The students' responses at the close of the program strongly indicated that the STARBASE program provided them with "a lot of things I can use". Their responses to social attitudes were particularly high in rating as they were in prior years. The last day ratings demonstrated excitement about the program and a positive view about their personal futures. Positive expressions were noted on innovation and "trying new things". These factors were not unexpected since the STARBASE approach emphasizes self-realization and making their own dreams come true.

### **Teacher Survey Results**

The teacher survey focused on collecting information regarding the impact of the program in the classroom and teacher attitudes toward STARBASE. The teachers indicated that the usefulness of the STARBASE experience carried over to their own classrooms in a positive manner. They reported noticeable improvements in their student's attitudes about school, themselves, and science. In addition, they used the supplemental materials that STARBASE provided and indicated a strong desire for more resources to take back to their classroom.

### **Academy Administered Testing**

Forty-three Academies independently administer performance tests to their site-based students on a pre-post basis. These tests are locally designed by the specific Academies. The average scores show an increase of 31.1 percent between the pre- and the post-assessment tests. These test are not to be confused with the DoD standardized tests that are administered to all the Academies on an annual basis with a common test instrument which focuses exclusively on the core curriculum content as presented in the DODI.

### **COMPLIANCE**

On September 14, 2000, OASD/RA published a set of instructions and guidelines regulating the STARBASE program. This instruction, DODI 1025.7, is designed to obtain consistency of program objectives, policy, and procedures in realizing DoD goals and objectives as it pertains to DoD STARBASE. OASD/RA implemented a compliance audit program where the DoD

assessment team visited each of the Academies on a rotating basis and applied the DODI requirements through on-site desk audits, review of documents and materials, interviews, and observation of program activities and operations.

The compliance visitations, as of this reporting period, indicate that most of the Academies are in full compliance with the DODI. Minor technical violations were noted with corrective action outlined for compliance within the program year. Additional anomalies, such as not reporting deviations in class size and conducting sessions outside of the military base, although temporary, were noted. Most violations were lack of written notification to OASD/RA even though verbal communication was obtained.

## **FISCAL**

DoD is the primary funding agency for the Academies and, for most, the only funding source. The funding allocation for DoD STARBASE this year was slightly over \$12 million, with supplemental funding by outside agencies down by close to 6 percent below last year's revenue. The majority of Academies operate their budgets with more than 80 percent of costs dedicated to salary and benefits. The remainder of the budget covers costs of supplies, equipment, travel, furnishings, communication, and other expendables. While the program demonstrates efficiencies in average cost per student, the cost of operation tends to increase because of cost-of-living, salary increases, and inflation. Cost modalities provide a rough measure of the efficiencies in operation, return on investment and differences by region, site, and service command. The analysis of the costs of 42 operating Academies this year demonstrates a slight increase in the average cost of an Academy over last year, but also a slight decrease in the average cost per student. The average cost of an Academy was \$269,706 with an average of 1,003 students at a cost of \$262.83 per student.

## **CONSIDERATIONS**

As the program grows in number, scope, and in the expansion of services, the issues of quality control, support systems, budget management, staff development, and the upgrading of program content becomes more manifest. Many of these issues are focused on inward development and upgrading the quality of the program and its delivery. These considerations are an amalgam of expressions obtained from the key participants and the analysis of the program's development, i.e., Academy Directors and STARBASE staff, military personnel, survey responses, and the imperatives of the report's analysis.

- Revisit and review the installation process of new Academies to identify materials, procedures, technical aides, and the orientation program to assist new Academies in a more rapid start-up for positioning to a full operational mode.
- Consider the development of a centralized staff-development program that introduces new techniques in curriculum delivery, best practices, efficiencies in experiential applications, and new training methodologies.
- Develop a review committee composed of STARBASE Academy Directors/staff in reviewing and enhancing the core curriculum for higher level learning applications and problem-solving techniques and making recommendations for their implementation and use by all Academies.

- Encourage each Academy to develop a plan of action or an alternative delivery system option in case of a critical event such as 9/11 or the Iraqi war interventions.
- Review the most effective mechanism for sharing information and technological transfer such as Web sites, visitations, Web meetings, Academy staff review and recommendations, staff training and conferences to maximize best practices, acceptability at the local level, and timely installation.
- Schedule a rotation system for compliance visitations so that all Academies are visited in a 3-year period and all newly established Academies are visited and given support within the installation year.
- Develop a review committee on third-party relationships composed of Academy personnel and staff representatives for assessing program services and product consideration in Academy-wide utility, fit of service, cost efficiency, and acceptability at the local Academy level.
- Topics such as “managing community demand for the expansion of program services” and “maximizing the role and function of the board of directors,” should be given consideration for this year’s DoD Director’s Conference.
- Review the possibility and reasonableness of a downstream analysis of former STARBASE graduates at the eighth and ninth grade levels with a sample of selected Academies. Suggestions of cost-effective methodology to accomplish this assessment should be considered.
- Provide each Academy with individualized feedback on their standardized test results for their use when reviewing content coverage.

## **CONCLUSIONS**

One of the most dramatic characteristics of the program over the last decade has been the program’s growth in the number of site locations and in the breadth of student populations served. However, closer examination of the program’s impact reveals the change in the attitudes, behaviors and the enthusiasm in all the participants involved. Not only have students demonstrated greater skill and knowledge abilities and improved attitudes about themselves and their competence to manage their environment, but educators, military personnel, and community leaders also have had positive experiences.

Housing the program within the military environment is an essential component to the program’s success. Commitment, personnel, and physical resources that are provided in the military environment have few equals in the wider community and there are few similar situations that apply the program’s content to real-life applications. A latent consequence of these events are the students’ heightened interest in the role of the military mission in defense of our nation and in the military’s role in times of crisis.

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## INTRODUCTION

After a decade of DoD support, DoD STARBASE is now operating in more than half the nation's States and on nearly 50 military installations. This growth was in response to a pervasive recognition that our nation's youth were demonstrating serious shortfalls in math and science<sup>1</sup> when compared to other industrialized countries. While a recent report by the National Assessment of Educational Progress (NAEP)<sup>2</sup> indicated that math proficiencies for fourth and eighth graders were improving, their relative position remains the same. U.S. students are generally competitive until they reach the fourth grade. It is at this point that they start to fall precipitously behind and increasingly so in subsequent grades. The effect on the economy<sup>3</sup>, manpower requirements, the access to quality education at higher levels, and the implications for future national security requirements<sup>4</sup> are being examined with concern when our student population is not competitive in these areas. Access to our graduate schools in math and science is becoming more problematic for our youth in competition with foreign students which, in turn, raises concerns on exporting our capabilities and expertise to other countries.

This report is in response to a Congressional requirement for an annual report to Congress on the program's progress and an assessment of the program's impact on the participants. This requirement is part of the legislative authority that provides for the establishment of the STARBASE Academies across the country as part of Title 10, United States Code (USC) Section 2193b. The following document covers:

- The program's history, mission and goals, basic program elements, organizational framework, growth and student participant population;
- The assessment and analysis activities and outlines of the research methodology, assessment instruments, analysis, research results, and key findings;
- The study considerations and conclusions with a view towards influencing program planners, decision makers, and practitioners; and,
- Includes all the working documents such as a glossary of terms, statistical table and charts, research instruments, statistical formulas, and other related materials.

The report also addresses the cost efficiencies and modalities, and the impact of the program on the students, teachers, military personnel and the communities they serve. Emerging challenges, issues, considerations, and operating concerns are interspersed in the narrative both during the analysis as well as in the considerations and conclusions. Last year, the report presented a number of recommendations for this year's consideration. Most of these recommendations focused on building support systems, quality control, operational efficiencies, and economies of

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<sup>1</sup> *Before It's Too Late: A Report to the Nation from the National Commission on Mathematics and Science Teaching for the 21<sup>st</sup> Century*; U.S. Department of Education, Washington, DC, 2000.

<sup>2</sup> *The Nation's Report Card: Mathematics 2003*; National Center for Education Statistics; Washington, DC, 2002.

<sup>3</sup> *U.S. Competitiveness 2001: Strengths, Vulnerabilities and Long-Term Priorities*; Council on Competitiveness; Washington, DC, 2001.

<sup>4</sup> *Road Map for National Security: Imperative for Change*; The Phase III Report of the U.S. Commission on National Security/21<sup>st</sup> Century; Washington, DC, 2001.

scale across the Academies. This report will review each of these recommendations and their present status.

A successful program of this size and complexity requires the talents and commitment of a large number of interested and contributing parties. This includes the DoD STARBASE sponsoring agency, the Office of the Assistant Secretary of Defense for Reserve Affairs (OASD/RA), the military service command support units, the local sponsoring military service components and their command structure, community leaders, local community sponsoring committees and their school systems, participant schools, teachers, military service volunteers, STARBASE board members, STARBASE staff, and others. This is a broad and active participatory base and most of it is voluntary and involves time, commitment, and active support. Much of the strength of STARBASE is this participatory base which is self-recruiting and very active. As part of the assessment process, the study includes the views, opinions, and candid ratings on the program's impact by these participants on the students, military community relations, community involvement and selected program objectives. Interviews, questionnaires, attitude surveys, testing, and observational techniques were utilized for this study.



## PROGRAM OVERVIEW

### PROGRAM HISTORY

The program started 12 years ago when there were few projects of remedial action in the math/science arena in the existing educational system. The deficiencies and shortfalls in math and science at that time were documented and given wide public awareness in the National Educational Report Card<sup>5</sup> (1991). The program was conceptualized and developed when Barbara Koscak, retired Brigadier General Dave Ahrendt, retired Lieutenant Colonel Richard Racosky, and the Mount Clemens School District, successfully submitted a grant application to the Kellogg Foundation to develop and test the efficacy of the “Project STARS” program.

Project STARS was a 1-week summer program in partnership with local schools and the military that contained many of the basic concepts and curriculum approaches that presently operate in today’s DoD STARBASE. Project STARS focused on fourth, fifth, and sixth grade students. The response to and results of the pilot program were exceptionally positive, and partnership linkage between military and local educational systems migrated to other sites around the country. In 1993, DoD funds were made available for the National Guard to start a school-year program, and DoD STARBASE was formally launched.

The first years were generally considered pilot program years. While demonstrating program efficacy, the Academies were also urged to set-up nonprofit organizations with the view towards being fully funded by the private sector within a 3-year period. During that period, the Academies raised more than \$657,000 but these



funds could only be obligated for special projects as determined by grant or state funding guidelines. In 1996, federal funding for the fourteen Academies, exclusively under National Guard sponsorship, was reduced. The Adjutant Generals (TAGs) of the sponsoring Academies noted the importance of the program to their operations and decided to cut the cost of the programs rather than allowing the closing of any existing Academies. In 1997 through 1999, there was little growth of the program. The focus beyond operational concerns was centered on locating a permanent source of funding. Grants, private and corporate donations, state support, and national nonprofit foundations were all explored but aside from minor acquisitions, none provided the broad base of support necessary for STARBASE to survive and grow.

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<sup>5</sup> *Before It's Too Late: A report to the Nation from the National Commission on Mathematics and Science Teaching for the 21<sup>st</sup> Century*; U.S. Department of Education, Washington, DC, 2000.

Within a few years, the program grew in national prominence and acceptance. Then in FY 2000, the National Defense Authorization Act provided the legislative authority, under Section 2193b of Title 10, United States Code, which further expanded the program nationwide and provided a more permanent source of funding. Subsequently, demand from other communities and military commanders prompted the expansion of the program to additional sites. Thus, by the start of FY2003, the planning and installation of 46 Academies across the Nation and its territories were accomplished.

The mission and goal of the DoD STARBASE program is to raise the interest and improve the knowledge, skills, and attitudes of at-risk youth in math, science, and technology, by exposing them to the technological environments, training, and positive role models found on military bases and installations. Personal goal setting and substance abuse reduction is also incorporated into the educational curriculum. Any school district, public, or private school, alternative educational provider, individual or group of home schooling families may apply to participate in the DoD STARBASE program under the willing sponsorship of a nearby military installation.

### **PARTICIPANT ELIGIBILITY AND GRADE LEVEL EMPHASIS**

The DoD STARBASE program works with local school administrators and alternative educational providers in the selection of participant schools and selected classes. While they encourage participation of all youth, they put particular emphasis on those classes that have students who are:

- Historically under-represented in math, science, and technology
- Living in inner cities or rural locations
- Disabled
- Socio-economically disadvantaged
- Low in academic performance

DoD focuses the program on those students who are most in need of the program's ability to upgrade their skills in math and science. To accomplish this, they discuss the characteristics of the target population with the community decision-makers in the selection of the participant schools that reflect the desired demographics. This often results in identifying students who reflect low socio-economic status, single parent households, and those students who qualify for the free or reduced lunch program. The STARBASE Academies actively seek out and encourage those schools whose classes reflect these and other factors in the selection of participant school systems. This method is very effective in capturing the desired target population. Discussing the desired characteristics in the selection process prior to obtaining a memorandum of understanding with the participant school system results in the desired selection outcome. The process screens in the desired student body and since classes are selected there is a diversified mix of all levels of the school system population as described in the sections of the report dealing with class size and composition.

The entire class from the participant schools attends the program. Children are transported from the school to the military base for STARBASE instruction for each program day. The participating school must commit to one of the two schedules used in the program: a 5-day 25 classroom hours or 4-day 20 classroom hours schedule. The 5-day program is the most popular because it allows more time to cover the basic and discretionary curriculum with the students,

and all but five Academies utilize that schedule. The 4-day format is usually used to increase the number of classes the Academy can schedule during the school year.

Legislation allows the program to serve grade levels K through 12. However, DoD encourages the program to focus on grades four through six since they are the critical trigger grades when student-testing scores on a national level start to diminish in performance. Currently, all but two Academies serve fifth graders and those two have selected the fourth and sixth grades respectively. Twenty-five of the Academies currently serve multiple grade levels that range from the second grade to the tenth grade.

### **ORGANIZATIONAL AND OPERATIONAL CHARACTERISTICS**

OASD/RA has the oversight responsibility within the DoD. This office assesses the DODI component plans for installing and implementing each Academy's program by: managing the funding allocation process; developing and implementing the regulatory guidelines; monitoring each program's compliance with the regulations; assessing the program's performance and effectiveness in achieving program goals; assessing the development and publication of the Annual Report; and providing administrative oversight as deemed necessary.

The Academies are required to conduct their programs on military installations. Each Academy benefits from the sponsorship in that the military provides classrooms, facilities, support services, and access to volunteer personnel. The STARBASE Academy is responsible for all instruction, the presentation of the core curriculum and basic concepts, scheduling, testing, office management, and program operational activities.

As previously noted, the participant schools send their selected classes to the military base for STARBASE instruction. Under DODI guidelines, the minimum number of classroom hours per Academy is 700 per year. Even with the events over the past 2 years, most Academies meet those requirements and as the numbers indicate most operate well above that threshold. For a 5-day program to reach the DODI requirement, an Academy would need only 28 classes with 25 classroom contact hours of instruction. With the average number of classes per Academy at 41.5 this past year, the program is well above the minimum.

### **DoD STARBASE Academy Staffing**

The prototypical manning model proposed by DoD for funding purposes was the employment of four full-time, paid staff members: a Director, Deputy Director/Instructor, Program Instructor, and an Office Manager/Administrative Assistant. Over time, this organizational structure has undergone some changes because of adjustments made by the Academies in focusing on the delivery of instruction and cost of operation. The newly installed Academies generally follow the prototypical model. As programs mature, differences start to emerge. At present, 20 Academies use the DoD manning model. Seven Academies have cut the Administrative Assistant position to increase instructor capability or for additional operational activities. Other staff members then absorb the office managers' functions into their assignments. A few Academies obtain additional funds to increase their delivery capability, add additional classes, and obtain more instructor capability. Local school systems or State grants are the usual source for this capability. There are a few Academies that have chosen to put their staff on part-time status rather than full-time equivalency (FTE) so that they can expand their instructor capability and increase scheduling flexibility.



The STARBASE program methodology promotes the experiential and “hands-on” classroom environment where students are actively involved in simulations, lab applications, and demonstrations. This approach requires a very intensive instructor-based capability. This often requires the instructors to be assisted by volunteers (military or civilian) and/or teacher aides. Directors are often called upon to teach when instructors are ill, when turnover occurs, or special applications require their involvement. Occasionally, an office manager, who has instructor credentials, may fill in, but this is an infrequent utilization of staff.

Most instructors have several years of teaching experience before their STARBASE experience and most are certified teachers. Background checks and fingerprint processing are fairly universal.

The employment relationships vary from Academy to Academy: 13 Academies have staff that are State employees; 10 Academies have federal staff positions; 12 Academies are contracted by State, school district or another source; and 7 Academies have employees of non-profit organizations. Each of these affiliations has different salary administration systems, benefit privileges, and reporting relationships. While the DoD provides recommendations of equivalencies for these positions, local administration varies and differences in salary administration and benefits emerge. Differences on these factors influence budget management decisions and organizational structure.

Almost all of the Academies currently enjoy highly trained, fully credentialed, experienced personnel who universally express their commitment to the program’s concepts, methodologies, and the opportunity of their involvement. A few Directors have expressed their concerns about potential turnover and predict that it will be a future challenge of the program, given the need for quality personnel. Over the past few years, turnover was not a frequent event. This year there was a slight increase. Out of the 168 staff members, ten have left the program this calendar year; three were instructors, two were Deputy Directors/Instructors, three were Administrative Assistants/Office Managers, and two were Directors. This is close to a 6-percent turnover rate. This is high for a program that is characterized as stable and deeply committed. Official reasons for leaving the program were indicated as: military activation, expiration of contract, seeking another position, personal reasons, retirement, and discomfort in being a contract employee.



The major change influencing the program’s organizational structure and function is the trend toward expanding the program’s capability in delivering its instruction. As previously indicated, this is partially obtained through reorganization of the office manager’s role, obtaining supplemental funding, and reducing some staff to part-time status to expand instructor capability. It is anticipated that

the movement toward expanding instructor capability will continue in the future to meet program demand for the expansion of services.

The Navy has a different organizational structure than the other military service components. It organizes itself on a centralized basis. A central operating manager handles budgets, resource allocations, installation selection and start-ups, employee selection, documentation control, and general administrative support. The Navy's Directors and staff concentrate almost exclusively on educational delivery, curriculum reformatting, and scheduling under this arrangement. The Air Force Reserve, Marines, and National Guard Academies have the greatest diversity and differentiation in organizational and operational modalities.

Military and civilian volunteers provide essential support to the program. Military volunteers assist in providing briefings, demonstrations, and general assistance to instructors in experiential set-ups and occasionally in administrative tasks. Most importantly, they provide real-life examples of how they use math, science, technology, and personal skills in their daily work assignments in problem solving and the performance of essential tasks.

### **Board of Directors**

Twenty-seven Academies now have Boards of Directors. Their functions and utilization vary across the program. Most of them are relatively active in marketing, public relations, and fund raising. During site visitation meetings, many of the Directors have expressed the view that having a board is an important but often-underutilized part of their program. The function, activities, and composition of the boards vary from site to site. Often asked questions by directors as to "how do I organize a board", "who should be on it", "what activities should they perform" and "should I have a board?" are typical of their concerns. These inquiries generally focus on a desire for guidance and staff training in the topic.

Most commanders have little issue with the foundations and organization of the advisory boards. Since most boards limit their function to advisory activities, most commanders feel that it provides a positive inroad to another venue of community relations. In the past, when the program was under funding stress, boards were formed to help obtain independent funding but now that the program has some stability, funds acquisition by the boards has primarily focused on supplemental activities such as outreach efforts, enhanced services, and special projects. At present, most of the National Guard Academies have boards, while the Navy, has not fully explored its usefulness given its unique centralized organizational relationship.

### **Public-Private Partnerships**

The Academies and DoD STARBASE in general have had a long history of developing and examining public-private partnerships that can support or enhance-value of the program's curriculum and operation. One of the more recent relations under consideration was with Parametric Technology Corporation (PTC), a world-renowned software company, who was willing to donate its 3D engineering software to the Academies. The software allowed users to apply engineering applications to technological problems and utilization. Other companies have also sought and explored relationships with the Academies. In most cases, these opportunities usually arise at the local Academy level. When considerations and discussions focus on selected curriculum at the local level for installation, the ease of transportability and acceptability to the other Academies becomes problematic. A process of how third parties and their potential utilization are examined for fit and acceptability at an Academy-wide installation of their

products and services needs to be designed. Mentoring, lab applications, and administrative and simulation software programs are more recent considerations.

### **CURRENT PROGRAM INITIATIVES**

DoD STARBASE focused its efforts this past year on installing new Academies at several locations; obtaining more refined cost of Academy operations for future planning and equity in the distribution of funding; refining the assessment and compliance adherence process; and promoting the transportability of “lessons-learned” and materials exchange over all Academies. In addition, attention was paid to identify the differences in Academy operations, and the costs in the delivery of the program to facilitate future planning and support.

While variances in operating procedures among the Academies on key DODI guidelines are relatively minimal and compliance adherence has improved, there are a number of organizational and activity differences at the local level across the Academies. There are differences in curriculum emphasis on key concepts and their application, organizational relations, hiring practices, reporting relationships, support system capabilities, and resource availability. These variations present challenges to elements of standardization in basic key STARBASE concepts, efficiencies in operation, acceptability of new services, and practices at the local level. The desire to promote local flexibility is challenged by the need to standardize basic practices and ease transportability of best practices. Understanding variability and Academy differences is essential in designing new elements and initiatives that can be found acceptable and useful at the local Academy level.

Compliance and orientation visitations continued this program year. All newly installed Academies are on the orientation schedule within the installation year. Compliance visits are scheduled on a rotation basis so that every Academy is audited and covered within a 3-year period. While there was some initial anxiety about compliance visits, most Academies understand and respect the need to protect the core elements and basic methodologies of the STARBASE concepts. Property audits are usually conducted by the local command or by the organizational affiliate. DoD records their completion. If property audits need to be conducted, the visiting DoD team conducts them during the visitation.

All assessment instruments were upgraded this year. Academy staff input was obtained as well as staff and consultant review. Further refinement of data constructs and methodologies will help to build efficiencies in data collection and data reliability. Recent refinements in cost data have proven to be helpful in developing operational cost modalities and identifying the differences in cost of operation at the local level. Comparisons of regional, command, and service area differences also were obtained.

While several new Academies and outreach sites were introduced this past year, further attention to rapidly and efficiently attaining full operational status requires further examination and refinement.



## **PROGRAM GROWTH**

DoD STARBASE is rapidly becoming a nationwide delivery system as the number of Academies has more than doubled over the past 5 years. Close to 300,000 students have completed the program since its inception. By including supplemental programs, the numbers of students reach closer to a half-million students. Five new outreach programs have been added with three sites committed to American Indians in South Dakota, Oklahoma, and Mississippi, and two sites committed to serving children in St. Paul, Minnesota, and Whiting Field, Florida. New Mexico and Connecticut were the two new Academies started this federal fiscal year. Local Academies also complement the outreach effort by designing special programs to reach students in non-participant school districts. Additional programs have been designed for summer, after school, and weekend sessions, to reach non-participant school systems during off-school hours.

Over 42,000 students attended the STARBASE program this past year. As previously noted, the number of classes per fully operating Academy goes above the required quota established by DODI. This year the average across the Academies is 41.5, which is higher than last year's 36 classes per Academy. Considering the events of the past 2 years due to 9/11, the Iraqi war and Homeland Security, the numbers were expected to be down from previous years and yet they still exceeded the DODI requirements. The closing of bases, loss of military volunteers, and limitations on base resources had their impact on reducing class and student numbers. With the assistance of military base commanders, academy staff moved to bring the program back to normalcy. Barring any new critical events, this coming year is expected to produce very dramatic results in above-average numbers in classes, students, and outreach efforts.

The growth of the program is demonstrated on other dimensions. STARBASE now operates on a year-round schedule and no longer mirrors school year calendars. Summer sessions are the norm and outreach efforts are on the increase as are specially designed activities to reach those students outside the targeted areas. Many of the Academies use the summers for special STARBASE sessions for the children of military personnel and for children with disabilities. Other sites focus on Girl Scout/Boy Scout sessions.

The demand for outreach programs has also increased; several Academies perceive the total school systems that they operate in as potential participants. DoD has responded by adding specialized programs to serve American Indians in remote areas; however, at the local level, materials and programs are delivered through teachers who bring follow-through applications back to the classroom for implementation. The teachers are trained in STARBASE curriculum and methodologies. Parents are urged to be ongoing mentors back at the home for special study applications. Oklahoma's pre-packaged "STARBASE-In-A-Box" materials are sent to schools for application by certified or pre-visited teachers as the instructors. Many innovations are starting to emerge in response to the overwhelming demand by the community for the program.

Sixteen states now have more than one Academy. Once a program has been installed within the State and has demonstrated its efficacy, the demand for additional programs and sponsorship becomes a reality. The program, under these circumstances, needs little marketing. The participants, at all levels, become the advocates and promoters. To manage and respond to demand, then becomes the challenge.

As these programs spread in geographic and organizational arrangements across the Nation, the need for support systems to maintain quality control, standardization of core concepts, the transportability of “lessons-learned”, the acceptability and installation of new products and services across all Academies, and economies of scale in application become more imperative. DoD has initiated the beginning of the system with visitations, conferences, material development support, compliance auditing, the examination of plans for staff training, a Web-site exchange system, and review of new service supports.

**PROGRAM SERVICE AREA**

There were some minor shifts in the program service areas this past year. This was probably due to the recent inclusion of the new Academies and program sites. More than 75 percent of the STARBASE programs operate within a fifty-mile radius of the military bases. This is greater than last year’s 71 percent and slightly larger than the previous year of 74 percent. The importance of proximity to the program site is that it affects class time logistics due to transportation duration. Most STARBASE directors indicate that the greater the distance, the more problems they face in obtaining maximum classroom time. This is particularly true in the areas where weather conditions are more severe. This consideration of distance is also reflected in the reduction of Academies servicing students in distances greater than 50 miles (see Exhibit 1). Last year that figure was close to 29 percent while this year the figure was reduced to 24 percent. Distance also affects the cost of transportation for most school districts and this may be a more important factor in participant school involvement in the future as local tax considerations become problematic.

**Exhibit 1. Program Service Area**

<b>Service Area</b>	<b>2002 Percentage</b>	<b>2003 Percentage</b>
20 Miles or Less	40%	31%
20 to 50 Miles	31%	45%
Statewide	20%	17%
Other (More than 100 Miles)	9%	7%

Rural programs have some unique problems with distance to the military base. Students generally have to travel greater distances to the programs at these Academies and it is not surprising that the school systems pressure these Academies for greater outreach efforts with statewide operations in mind. Some of these programs operate multiple sites to reduce the problems of transportation, costs, and time in transit. Academies that are currently statewide in outreach are: South Dakota, Vermont, Puerto Rico, North Carolina, and Kansas. As previously noted, greater transportation distances place hardships of the cost of operation most often on the school system. In addition, rural areas often have small classes and when this factor is combined with distance, there is pressure to “double-up” classes to justify costs and also to meet minimum class size under the DODI guidelines. In most cases, the school and the Academy develop a strategy to fit class size, class hours, and equipment availability to meet cost/distance/standards requirements. While this issue is not a problem for most Academies, the rural environment presents some unique challenges.

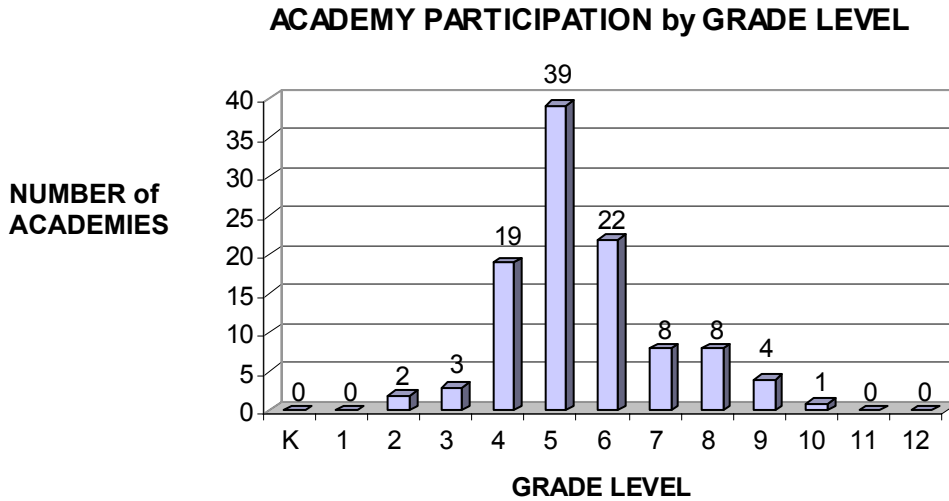
## **CLASS SIZE AND GRADE LEVELS**

The DODI provides guidelines in class size. In general, school system policies are reflective and consistent with maintaining a limit on the size of classes. However, over the past few years, states and local jurisdictions have had shortages in taxable resources resulting in some of the school systems increasing class size as a way to reduce costs. The rationale to place a limit on class size relates to the STARBASE design and delivery of the curriculum and its methodology, which is heavily focused on experiential, “hands-on” applications and applying experiments and problem solving to real-life applications. These methodologies defy the use of large class size. In addition, they require close teacher supervision and monitoring for proper application and student understanding. Class size is considered to be critical to that objective. This requirement is an essential element of the Academies in the selection of classes from the school system as in the criterion of “children-at-risk”. The desired standard range is 20 to 35 students per class. The Academies have accomplished that goal as reflected in the average size, which is currently 24.21. Last year’s average was 24. One Academy currently averages above the range at around 36 students per class and seven Academies average at just below the 20-student range. The latter is largely dictated by a State limitation on size of classes where they try to continually lower the class size ratio. Overall, the Academies stress keeping the numbers within range by combining two smaller classes into one session and dividing larger classes when it is feasible. The Academies are required to report the lack of adherence and note a corrective action to OASD/RA in written form. Since the average class size is so close to the required range it usually only affects a few classes and is often not a systematic pattern.

In most cases, the schools understand the limitation since the class size requirement is presented to the participant schools at the time of the program installation through a memorandum of understanding. Stretching the class size beyond the desired class size range is considered dysfunctional and unproductive to the methodologies used and the experiences to the students. The memorandum of understanding helps to preclude any misunderstanding.

Grade level is guided by legislation, which states that grades K through 12 are eligible for entry into the program. At present, the program concentrates on grades four through six, with particular emphasis on the fifth grade. All but three Academies currently have a fifth grade program. Sixteen Academies exclusively concentrate on the fifth grade, while eighteen serve three or more grades in their program. The majority of Academies focus on two grades or less. Two Academies, at this time, service grades two through nine and one Academy services grades four through ten. Exhibit 2 shows the site participation by grade level.

The greater the range of grades, the greater the need to expand the curriculum and approaches to the material. The pressure from the schools and the community is to expand both the number of classes and the number of grade levels. Some Academies accommodate that demand with supplementary delivery options and summer sessions when resources are available beyond their primary obligations.



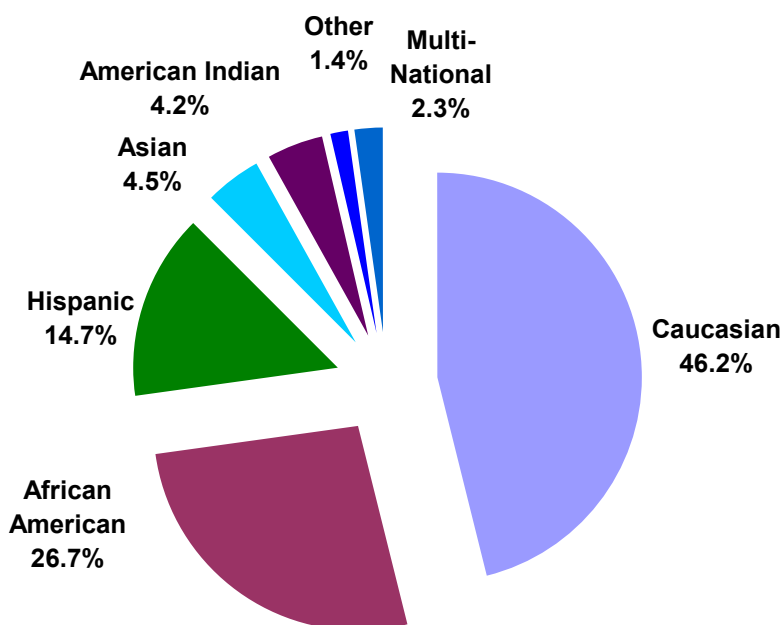
**Exhibit 2. Site Participation by Grade Level**

**ETHNICITY**

The ethnic composition of the STARBASE program displayed some minor shift in its composition over the past year. The shifts have gone in the same direction over the past 3 years (see Exhibit 3). For example, in 2001 the Caucasian group was 54 percent of the total; then in 2002 it went down to 47 percent and this year showed a slight dip to 46.2 percent; however, it remains the dominant ethnic student group. During that same time period, the Hispanic student population went from 11 percent in 2001, to 14 percent in 2002 and now is 14.7 percent. The African-American student population remains relatively stable over the 3-year period at close to 27 percent of the student participants. Asians, American Indians, and multiracial students now comprise more than 11 percent. Exhibit 4 illustrates the ethnic composition. As Academies are installed in new locations with different population mixes, there will be minor shifts in the ethnic composition of the program. With three American Indian outreach programs, there will be a slight increase in American Indian student representation.

**Exhibit 3. Ethnic Composition in 2001–2003**

Program Ethnicity (Percentage)	2001	2002	2003
African American	25%	27%	27%
Asian	4%	5%	5%
Caucasian	54%	47%	46%
Hispanic	11%	14%	15%
Multi-National	0%	1%	2%
American Indian	3%	4%	4%
Other	3%	2%	1%



**Exhibit 4. Program Ethnicity**

**GENDER**

The distribution of male and female students mirrored last year’s composition with 51 percent male and 49 percent female as shown in Exhibit 5. The male-to-female student representation in the 42 reporting Academies is relatively equal except in a few isolated locales.

**Exhibit 5. Gender Participation**

Gender (Percentage)	2001	2002	2003
Female	49%	49%	49%
Male	51%	51%	51%

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## SUPPORT SERVICES

### MILITARY AND EDUCATIONAL SYSTEM SUPPORT

The primary contributors to the Academies, other than OASD/RA, are the local military installations and the school systems. Each Academy is provided direct support services on an ongoing basis, and much of this support is established and formalized prior to the installation of the program sites. Occasionally, other outside private agencies and governmental units provide grants, funds, and other services but these are generally periodic and after the programs have been made operational. While there are core support services by both the military and the local educational systems, there is some variability and differentiation of the breadth and depth of support at the local level. These differences have an effect on the quality and diversity of each of the Academies' programs.

Traditionally, the educational system provides transportation services, teachers as monitors, and student lunches. Occasionally, additional support involves minor reproduction services, supplies, and media applications, but the latter are periodic and nonsystematic. The local military installation on the other hand, is the key facilities provider with classrooms, utilities, custodial/maintenance services, security, computer integration, and occasional reproduction/printing capability. The military commanders encourage volunteer involvement of their personnel as mentors, teacher aides, tour guides, speakers on real-life applications and job-related activities, computer facilitators, audio-visual technicians, and administrative support. Several installations have provided remodeling and construction services for the Academies. The range of military services and support is often a function of the size, complexity, and command interest in the program. On most Academy installations, the latter is positive and direct.



The following tables (Exhibits 6 and 7) demonstrate the type, scope, and breadth of support services provided by the two major service providers to the Academies. The data was obtained from survey responses of the Commanders and STARBASE directors on these activities. It should be noted that a few schools are still dependent upon DoD funding for local transportation costs, usually a temporary condition, until annual budget allocations are made available by the local school system. Where the response rate on providing classroom facilities was less than 100 percent by the military, this indicates that a military unit outside of that Commander's responsibility area provided classroom space but the program was still sponsored by the command.

As indicated in the tables, the range and intensity of the military support of the program is extensive and consistent. In many cases, if the program has a glaring need and the Commander has the resources, the service is provided. This is particularly true at start-up and installation where existing facilities require upgrading and minor construction to meet usability standards. Academy directors make particular notice of the Commanders' personal interest and support of the program on an ongoing basis and also the contributions of the program to the operation of their base.

DoD STARBASE is characterized as a military outreach program that requires community and educational system support in a partnership with the military. This partnership requires mutual responsibilities for it to succeed.

**Exhibit 6. DoD STARBASE Program Site Support by Military**

<b>Support Services Provided by Military Unit</b>	<b>Number Providing Service</b>	<b>Total % Providing Service</b>
Facilities	34	99%
All or some utilities	27	75%
Custodial/maintenance services	21	58%
Printing/reproduction	7	19%
LAN and computer support	23	64%
Administrative support	9	25%
Transportation	12	33%
Security	31	86%
Other	12	33%

**Exhibit 7. DoD STARBASE Program Site Support by School District**

<b>Support Services Provided by School District</b>	<b>Number Providing Service</b>	<b>Total % Providing Service</b>
Transportation	33	79%
Teachers as monitors	37	88%
Lunches	39	93%
Printing/reproduction	8	19%
Supplies	3	7%
Graphics	0	0%
Audio/visual	5	12%
Communications	5	12%
Computers	2	5%
Other	11	26%



## **PROGRAM ASSESSMENT**



There are several participant groups and individuals who contribute their time, resources, and skills to put the DoD STARBASE programs into operation. In most cases, their involvement is ongoing and essential to the program's success. However, the program not only has organizational contributors but also acquires advocates, sponsors, and promoters in the communities that the Academies operate. This eventuates into the creation of a large participation base in support of STARBASE. Looking beyond the STARBASE sponsoring agency at OASD/RA, the program requires the local military service components and their command structure, the local sponsoring communities and their school systems, the participant schools, teachers, military service volunteers, STARBASE Board members, and the STARBASE staff.

The assessment process focused on a few of these critical agents. Data was obtained on the views, opinions, and candid ratings of the program's impact on the students, community, the military, and the relationships between them and upon their own activities. This process involved structured interviews, questionnaires, attitude surveys, and observational techniques. The participant groups that were involved in this assessment included:

- Commanders
- Military Service Volunteers
- Teachers
- Students
- STARBASE Directors/Staff

### **COMMANDERS SURVEY**

Thirty-six commanders responded to this year's survey. They, as a group, are key sponsors of the Academies that operate under their command systems. Commanders not only provide access to the military base but also provide classroom space, a wide array of support services, the availability and time of their personnel or volunteers and a variety of other discretionary services. Without exception, the Commanders are strong advocates as well as sponsors of the program. Several noted that "the STARBASE program is my #1 community outreach program" and "it provides the students an opportunity to see military personnel as positive and productive role models." They indicate that the program provides equal returns to the military base in positive community relations; an increased public awareness of the role of the military in community services and affairs; the building of valuable relationships between the military and community leaders, teachers and parents; and provides its military personnel access to community volunteer activities that enhance their personal skills and self-worth.

"The STARBASE program is my #1 community outreach program."

Exhibit 8 provides an overview of these factors that the Commanders felt impacted positive public relations. Last year's ranking was similarly rated but not quite as high as this year's assessment.

**Exhibit 8. Impact on Public/Community Relations**

<b>Impact on Public/Community Relations</b>	<b>Number</b>	<b>Percentage Selected</b>
Promoted a positive view of the military to the community.	34	94%
Increased public awareness of the role of the military in community services/affairs.	31	86%
Provided a foundation for involving parents, teachers, and community leaders with the military.	29	80%
Increased the number of articles, public affairs promotions and media attention to the military's contribution to the students/community.	25	69%
No impact	0	0%

When ranking the most important factor contributing to military-community relations, the Commanders indicated, almost universally, that the STARBASE program promoted a positive view of the military to the community. In their view, this factor supported one of the more important mission goals of the base. When asked if they received feedback from community members about STARBASE, almost 90 percent responded affirmatively. Principals, teachers, parents, and community leaders are cited as formally indicating their positive views towards the military support of STARBASE. Commander comments as: "Parents, teachers, and counselors are amazed at how much theory in the hard sciences is retained by these children. They are amazed at how motivated the children are to learn these difficult subjects." "Parents appreciate the opportunity for their children to participate in an otherwise inaccessible activity. The professional instruction is outstanding." Last year's ranking was similarly rated but not quite as high as this year's assessment. Commanders also indicated that their military personnel benefited from their involvement in STARBASE as shown in Exhibit 9.

**Exhibit 9. Benefits to Military Personnel**

<b>Military Personnel Benefits</b>	<b>Number</b>	<b>Percentage Selected</b>
Outlet for community service.	29	80%
Opportunity to support a worthy cause.	28	78%
Opportunity for dependents to attend the program.	25	69%
Additional experience in teaching and instruction.	15	42%
Little or no benefit.	1	0.03%

The volunteers, as indicated in the following section, demonstrated agreement with their Commanders although their statements were characterized in more personal terms.

Commanders are often very personally involved in the program's success and its importance to their base activities. A few comments by Commander's illustrated their understanding and commitment to the program. One Commander stated, "This is simply a great program that stimulates the minds of young kids while opening older minds to the expertise, professionalism, dedication and warmth of the typical soldier, sailor, or airman. I am thrilled that my command gets to sponsor them", and "The STARBASE program is succeeding beyond my highest expectations! I believe the money spent on the program will be recovered many times over when recruiting STARBASE graduates in years hence." And finally, another Commander links the impact on the community and the military "Great program for the community and the military. We are reaching people that would not otherwise be exposed to the military and displaying a positive image."

### **MILITARY VOLUNTEERS SURVEY**

Military Volunteers were somewhat diminished in numbers these past few years due to the events of 9/11, the Iraqi war, and Homeland Security. However, without exception, the military volunteers responded favorably and positively on the experience for themselves, the students, the military, and the community.

"Seeing the light in children's eyes get brighter is very heartening and supports my hope for future generations."

While the military volunteers are active supporters and advocates of STARBASE, they are also critical observers of the full range of the program's activities. They have direct contact with the students, teachers, and with the core content of the curriculum. They observe student responsiveness and

they can assess their own contribution's value to the effort. A sample of 128 volunteers from a full cross-section of Academies was provided to this assessment. Volunteers were asked questions on the amount of time committed to the program year; the perceived value of the program to them personally and to the community's perception of the military; the impact of STARBASE on the community; feedback received from the community, students, and other military personnel; their willingness to continue their volunteer work; and any extemporaneous comment they wished to make.

The extent of volunteerism is noted in one Commander's log on volunteer time over the past program years: "There were 2,100 hours in FY03 spent in STARBASE classroom time by our military volunteers." Since this is only a sample of the total population, only estimates can be made on averages which was 25 hours per volunteer last year with approximately 37 hours per volunteer this program year. Half of the volunteer population responding to the survey put in more than 20 hours.

Volunteers are comprised of officers as well as enlisted personnel. Their duties involve the full breadth of the program such as guest speakers, tour guides, mentors, multimedia specialist, instructor aides, computer technologists,



handymen, graduation speakers, administrative aides, and rocket launch facilitators.

Volunteers indicate that the program influences the student's perception of the military in a number of ways: by students taking the positive experiences back to the home and their parents; the student's see real-life experiences of the military on-the-job, and they talk about how they might want to be part of the military experience; the experience overcomes the TV perception of the military in a more sophisticated down-to-earth manner; the uninformed student becomes exposed to a wider array of options in life; and it presents the student with a positive and real outlook on the role of the military and its personnel.

Volunteers also see the program interacting directly with the community and link the military to the best interests of their children. On a personal level, the military volunteer serves others beyond themselves and beyond the scope of their more immediate duties. They are able to demonstrate how math and science apply to their jobs and how those skills are applied to everyday tasks. In this context, STARBASE provides a platform and linkage with the community and displays how the military contributes to its betterment.

The volunteers' responses indicate that they personalize the value of the program to them and to their relationships with the students. They attach the program's benefits to themselves. Students demonstrate their appreciation and excitement directly during the program sessions and to them personally.

Volunteers obtain feedback from the community in a number of ways, but it is frequently obtained in personal and direct ways from the parents and teachers who not only indicate their appreciation but also express a desire for more of the same in subsequent years. Teachers tell volunteers that the students are more positive and more interested in school and their studies as a consequence of the STARBASE experience. But most important in the feedback is the perception that what the military does in the community is positive and that the members of the community have a better-grounded experience of military personnel and their importance. Some teachers and parents indicated to the volunteers how surprised they were at how much math and science was involved in their daily duties, problem-solving, and simple tasks.

"I have met many family members of STARBASE students who were very thankful for the program and the difference it developed in their child's life."

Almost all volunteers indicated that they would volunteer their time to STARBASE in the future if they have the opportunity.

## **STUDENT ASSESSMENT**

Over the past 4 years, DoD designed, developed, and applied a single DoD STARBASE standardized student assessment instrument to measure changes in knowledge, skills, and attitudes of the student populations after participation in the STARBASE program. This assessment is administered across all Academies with a sample population of students in pre/post application, i.e., at the start of the program and at the completion of the program. This year, given our present abbreviated schedule, the tests were gathered in the spring of 2003. In the future, our schedule will start in the fall and then again in the spring. Questionnaires were sent to 29 STARBASE locations for test administration. STARBASE instructors administered the questionnaires on the first and last day of the program. Completed questionnaires were returned for processing and analysis.

Students are tested on core curriculum topics covered by all Academies in their presentations and on social attitudinal items. As in the past, Academies were assigned a specific number of students to test. As such, it is only a sample of the total number of students. This is partly due to reducing the intrusiveness of testing across the total population but also a response to school year schedules that do not coincide with annual reporting of the program. In addition, the test is still under refinement and analysis of its effectiveness in measurement of student performance. A highly qualified independent testing firm was commissioned to review and refine the assessment instruments following acceptable and defensible standards of assessment experts. Initial results of the assessment indicate positive gains in knowledge, attitudes, and overall DoD STARBASE effectiveness. This year's scores were, once again, higher than the previous year's scores. Part of this increase may be reflective of the attention given by the Academies to coverage of the core curriculum as required in the DODI, which is the content area of the test.

The instruments were designed to obtain measurement in knowledge, skills, and attitude reflective of student participation in DoD STARBASE. The instruments cover:

- Knowledge, skill, and problem-solving items as presented in core curriculum content and concepts
- Student attitudes towards math, science, and technology
- Student attitudes towards the military, military personnel, military command, and military locations
- Community awareness, citizenship, and specific social attitudes
- DoD STARBASE effectiveness
- DoD STARBASE impact

The standardized student test was reviewed and revised this year for use in the FY2004 assessment. Several of the knowledge and skill items were revised after review and input by Academy staff, consultant testing firm analysis, and assessment input. Item analysis results identified areas of power and reliability. This process is standard and will continue into next year's program. By testing students on the first and last days of participation with the same class and the same core material provides the best conditions and probability of assessing attitudinal and knowledge shifts.

### **Instrument Design**

Two versions of the knowledge and skills test were developed and piloted in the first year. Over the past 3 years after several revisions and reductions in items, there is now one test in current operation. The knowledge test is formatted in true/false and multiple choice questions, and matching terms to graphic images. The attitudinal assessment utilizes a seven-point scale from positive to negative.

The core curriculum was used as the basic guide for the development of the knowledge/skills portion of the questionnaire. Items were based on the sponsor's interest as outlined above and obtained from several sources including a review of the program's core curriculum, past survey responses, program testimonials and items gleaned from local assessment tests used at various Academies and newly created items by the testing firm. All of the items were reviewed for style, content, and readability.

Administrator instructions were developed for use by the test administrator/coordinator and STARBASE instructors. Scan-form sheets were applied for data collection processing. The instruments were designed to be easy-to-read for students with limited English reading ability. A Spanish version was developed for the significantly large Hispanic population.

### **Challenges in Instrument Design**

The development of a single, standardized test for a wide range of abilities for fourth through sixth grades across the United States, and Puerto Rico presents a number of challenges to the test designer. First, we know that students enter the program with different fundamental knowledge and skills, e.g., some have a working knowledge of gravity while others need to learn the concept at STARBASE. Second, school systems have different resources, curriculum, special needs, and student expectations. In addition, the selection of class assignment and distribution of “at-risk” children may vary from community to community. The test assessment process used in the pilot and subsequent revised tests focuses on estimating the middle ability level of the student population under study. It is the objective of this assessment process to develop additional student assessment instruments for testing various ability levels in the future.

Another key change to the test design relates to the presentation of the core curricula at the STARBASE Academies. The development of knowledge and skill items for the current test is based on standard core concepts embedded in the STARBASE curriculum. While there may be agreement by the Academies on the key common concepts used by the instructors across the program, there are differences in emphasis of the concepts, presentations, and different lab applications and sciences in verbal applications of the presentations. Attention to the commonality in basic curriculum concepts and definitions is essential in the development and validity of knowledge testing at various ability levels. The DODI states this as a key objective in support of standardized curriculum applications in each program year.

### **Test Logistics**

This spring, student questionnaires were sent to 29 STARBASE Academies with instructions for administration. A Spanish version was available for use by Hispanic students. Instructors administered the tests on the first and last days of the program for both knowledge and attitude instrument. Completed questionnaires were returned for processing and analysis. A total of 2,555 questionnaires were returned which resulted in obtaining 933 students with pre/post program data for this report. Sample data in future assessments will be appreciably higher since test administration phases will be obtained for a full range of student experiences. It is generally expected that attitudinal scores would be higher at the beginning of the school year as the program is initially introduced into the schools. The methodology applied to a full program year will incorporate the impact on score shifts for each phase of the program and thus test for potential inflation of attitudinal responses.

There were some omissions by the students in response to test items; however, the analysis indicated that there was a wide range of abilities demonstrated in the pre-test which confirmed a view that for some students, the STARBASE concepts were not new to the students upon entry to the program.



## **Analytical Approach**

The report focuses on the composite results of the total Academy population. Individual site analysis will be provided to each Academy for diagnostic and review purposes on the strengths and program need requirements. Only students with both pre-and post-program assessment data were included in the analysis. As previously indicated, there are wide differences in the depth, intensity, and emphasis in the way the core curriculum is presented to the students across site locations. This following analysis reflects those differences. These variances across Academies were present in previous reports. STARBASE students come into the program with different expectations and knowledge, and then experience different perceptions and applications at the various sites and beyond the core curriculum. This following analysis is designed to proffer some insights about the strengths, needs, and opportunities from the perspective of the STARBASE students. The responses presented in this analysis deal with the impact on the total student population.

## **Test Construction and Core Curriculum**

As indicated, the core curriculum was the basis for the development of the test items. Eleven curriculum areas were included in the student test instrument as follows:

- Teamwork
- Properties and States of Matter
- Properties of Air
- Bernoulli's Principle
- Aircraft Control Surfaces and Components
- Four Forces of Flight
- Newton's Laws of Motion
- Space Exploration
- Development, Innovation, and Uses of Technology
- Avoiding Substance Abuse
- Goal Setting

In most cases, there is more than one item for each curriculum area. Some items combine applications of more than one concept. See Appendix A for the relationship between the curriculum concepts and the item question. A copy of the complete test is found in Appendix B.

## **STUDENT KNOWLEDGE TEST RESULTS**

The knowledge analysis is organized as follows:

- Pre/post assessment program comparisons
- Gender comparisons
- Comparisons over years of operation

This year the STARBASE students displayed a significant increase in knowledge and application of key concepts across all areas of the curriculum. All items demonstrated a significant increase in the percentages of students answering items correctly from the pre-to-post tests. The Pre-test had a mean score of 19.12 and a post-test mean score of 24.42. This is a difference in the mean average score of 5.30. Last year's scores, which were also demonstrably high, had a mean of

18.44 in the pre-test and a post-test score of 22.67, an increase of slightly more than 4 points. Exhibit 10 presents the pre-post average scores in the knowledge test.

**Exhibit 10. Comparison Pre-Post Test Mean Average Scores FY 2002 and FY 2003**

	2002 Mean	2003 Mean	Gap Score 2002 & 2003
<b>Pre-Test Score</b>	18.44	19.12	+0.68
<b>Post-Test Score</b>	22.67	24.42	+1.75
<b>Mean Increase</b>	+4.23	+5.30	+1.07

While the scores indicate that many of the tested students who came into the program had a basic understanding of some of the concepts presented in the STARBASE curriculum, there were also a significant number of concepts that were completely new and unfamiliar to the students. Previously unknown concepts displayed significant increases when the post-test was completed at the close of the program (see Exhibit 11). The data also indicates that there was significant variation of test scores across site locations.

**Exhibit 11. Test Item Pre-Post Average Scores**

Test Item Stem	Pre-Test Correct	Post-Test Correct	Improvement
A team works together to achieve a common goal	98%	99%	1%
Using teamwork results in?	96%	98%	2%
Which planet is the smallest of all planets and the farthest away from the sun?	92%	97%	5%
Which of the following is NOT a team?	91%	96%	5%
Negative actions may make it harder for you to reach your goals	91%	94%	3%
Which of the following can destroy an individual's dreams?	91%	95%	4%
If you have something you want to do, or something you want to be in life, you should?	89%	96%	7%
Wing	87%	94%	7%
Drinking alcohol may decrease our bodies ability to do simple tasks	86%	89%	3%
Cockpit	80%	97%	17%
The Earth is the closest planet to the sun	78%	90%	12%
Our Solar System consists of how many planets?	76%	91%	15%
Matter does not take up space	73%	85%	12%
Force that pulls an aircraft down	73%	84%	11%
Elevator	68%	87%	19%
Produced by air flow over the wings and the angle of the wing into the wind	64%	84%	20%



Test Item Stem	Pre-Test Correct	Post-Test Correct	Improvement
Rudder	64%	86%	22%
Forward movement produced by a propeller, jet, or rocket engine	63%	84%	21%
The development of something new, or improvement of something already existing is?	61%	80%	19%
Slows the forward movement of an aircraft	58%	80%	22%
If you threw two balls of different weight using the same amount of force	57%	84%	27%
Technology usually decreases in cost after many units are sold	52%	70%	18%
To move an airplanes nose to the left, you would move the?	41%	58%	17%
If you are landing an airplane in a city that is 5,000 feet above sea level what will your altimeter read when you are on the ground?	39%	58%	19%
Which of the following is NOT one of the three states of matter?	39%	68%	29%
How thick is the earth's air?	32%	60%	28%
The air is composed mostly of what element?	26%	56%	30%
One reason an airplane is able to gain lift is because the air moving across the top of the wing	23%	51%	28%
What is Sir Isaac Newton's Law of Inertia?	22%	70%	48%
Air presses down 15 pounds on every inch of our bodies. The reason we don't feel this is?	22%	70%	48%

Gender differences were similar to last year's results. Girls demonstrated a slightly greater increase in their knowledge test scores from the pre- to the post-program exposure. The gap score difference was +5.57 for girls and +5.07 for boys. Last year's gap scores were +4.40 for girls and +4.06 for boys. Not only were mean scores higher for both genders but also the gap scores were significantly higher.

The post-program percent correct in the knowledge items over the last 3 years demonstrate relative stability. (See Appendix A, Post-Program Knowledge Test Item Average Scores) The 2003 percentages are slightly higher than in previous years as demonstrated by the post-test mean scores of 24.42 for 2003 and 22.78 for 2002 and 2001 respectively.

**STUDENT ATTITUDES: ANALYTIC APPROACH AND RESULTS**

As in prior years, the student attitude and perception survey was designed to measure shifts in attitudes as a consequence of participation in DoD STARBASE. The following attitudinal areas were covered:

- Attitudes towards math, science, and technology
- Attitudes towards the military, military personnel, military careers, and the military environment
- Community awareness, citizenship, and social attitudes
- Effectiveness of STARBASE
- Impact of STARBASE

The attitudinal analysis is organized as follows:

- Comparisons of pre- and post-program experience
- Gender comparisons
- Comparisons between prior experiences with the military
- Age and grade level comparisons
- Comparisons by location
- Attitudinal clusters

933 students responded to both the pre-and post-program attitude questionnaire. The program response rate on the 22 items upon entry to the program indicates that the students enter the program with high expectations; an eagerness on the prospects for program participation; and an openness to new experiences. The ratings on “military people do lots of different things”, “I am enjoying coming to a military base”, and “Military bases are cool” suggests that they look forward to an adventure of a new experience at a military compound with military personnel. The ratings on each of these items upon program entry are 6.14, 6.15, and 5.98 respectively on a 7-point scale (see Exhibit 12). Given these high ratings upon entry the expectations of a significant shift were minimal but the scores again moved upward to 6.31, 6.37, and 6.22 respectively at the close of the STARBASE program.

**Exhibit 12. Pre- and Post-Program Attitudes on Military Related Items  
Based on a 7-Point Scale**

	<b>Pre-Program Mean</b>	<b>Post-Program Mean</b>	<b>Improvement</b>
I am enjoying coming to a military base	6.15	6.37	.22
Military people do lots of different things	6.14	6.31	.17
Military bases are cool	5.98	6.22	.24

The students’ responses at the close of the program strongly indicated that the STARBASE program provided them with “a lot of things I can use”. Their responses to social attitudes were particularly high in rating as they were in prior years. The last day ratings demonstrated excitement about the program and a positive view about their personal futures. Positive expressions were noted on innovation and “trying new things”. These factors were not

unexpected since the STARBASE approach emphasizes self-realization and making their own dreams come true.

There were three post-program only items in the survey. These items are indicated in the Exhibit 13 chart as “post only”. All but four of the items raw scores were significantly different from the pre-test mean scores.

**Exhibit 13. Ranking and Mean Scores of Student Attitudinal Responses**

Pre Rank	Post Rank	Item Stem	Pre Mean	Post Mean
	1	At STARBASE, I learned a lot of things that I can use.	Post only	6.53
1	2	You can learn a lot by trying things out.	6.38	6.48
2	3	I think I can graduate from High School.	6.30	6.43
4	4	I think about what I want to be when I grow up.	6.24	6.40
7	5	I am enjoying coming to a military base.	6.15	6.37
3	6	You can have fun working in a group.	6.28	6.35
6	7	You can accomplish a lot in a group.	6.18	6.34
8	8	Military people do lots of different things.	6.14	6.31
5	9	I like to make new things.	6.23	6.29
10	10	Military bases are cool.	5.98	6.22
11	11	Learning can be fun.	5.96	6.16
13	12	I can make my dreams come true.	5.81	6.16
	13	I would tell my friends to come to STARBASE.	Post only	6.15
9	14	I like to think of new ways to use things.	6.13	6.13
12	15	I set goals for myself.	5.83	6.02
14	16	I am good at following directions.	5.72	5.77
15	17	I make good decisions.	5.45	5.62
16	18	I like science.	5.39	5.56
17	19	Learning is easy for me.	5.35	5.51
18	20	I am good at science.	5.15	5.39
20	21	I am good at math.	5.07	5.27
19	22	I like math.	5.14	5.24
21	23	I want to be like my STARBASE Instructor.	4.39	4.52
22	24	I think I could grow up to be a STARBASE Instructor.	4.25	4.49
	25	STARBASE is boring.	Post only	1.64

There are several differences from last year’s ranking and this year’s results. “I think I can graduate from High school” was ranked first last year and slipped to third this year and was replaced by “At STARBASE, I learned a lot of things I can use”. There were a few minor shifts in rank orders, but the overall scores remained very high. Overall, the post-program means for the attitude items over the past 4 years have remained relatively stable and positive. In 2001, the

ratings were a bit down compared to other years. Shifts in ratings have occurred, as have differences by Academy. (See Appendix A, Mean Scores of Student Post-Program Attitudinal Responses)

### **Gender Comparisons**

This presentation focuses on differences in perception by boys and girls from the time they started the program and upon completion of STARBASE. Throughout the program experience, girls express more positive responses to interpersonal and social items. These results are similar to last year's results and are expected on gender grounds. The STARBASE girls are not atypical with their brethren in the larger population where girls respond to social desirability pressures and respond to those items that reflect these concerns. Boys, on the other hand, demonstrate more positive attitudes regarding the military, math, and science.

The largest gains were found in both boys' and girls' responses to "I can make my dreams come true"—a major theme and concept of the STARBASE program. The girls demonstrated a significant gain in the "military bases are cool" statement; while the boys indicated "I am good at math" was rated highly from pre-to-post.

Areas of agreement on items between girls and boys both before and after their STARBASE experience are listed in Exhibit 14. On all other items, the responses between boys and girls were significantly different in both testing episodes.

**Exhibit 14. Areas of Agreement for Boys and Girls**

<b>Areas of Agreement for Boys and Girls Before and After STARBASE</b>
I like math.
I am good at science.
Learning is easy for me.
I think I can graduate from High School.
I set goals for myself.
I think I could grow up to be a STARBASE Instructor.
I can make my dreams come true.
You can have fun working in a group.
I like to make new things.
I like to think of new ways to use things.

Of this year's list of agreement between girls and boys four of the items were in last year's listing:

- I like math.
- I am good at science.
- I like to make new things.
- I like to think of new ways to use things.

Those items that slipped out of the areas of agreement are:

- I like science.
- Military people do lots of different things.
- You can accomplish a lot in a group.

### **Prior Experience with Military Personnel**

Students with prior military contact almost doubled that of students that had no contact prior to the STARBASE experience. Prior contact has an impact on the student responses on several items. While pre-program responses had 12 items that were significantly different based on prior military experience, only four items in the post program references were significantly different. This suggests that the STARBASE experience brings student's attitudes, of both parties, closer together at the close of the program.

### **Age and Grade Comparisons**

Age and grade differences were similar to last year's results. Correlation's between age and grade and other items in the survey were small and indicated slight differences by the older students who demonstrated a slightly positive attitude on a few items. This is probably positioned by the higher, more enthusiastic ratings by the younger students on their first day at STARBASE. Older students had slightly higher scores in the knowledge test, which was also consistent with last year's results.

### **Location and Military Branch Variations**

All of the survey items and test scores had statistically significant variation across locations (sites). There is more variation across STARBASE programs than common experience. While the ratings remain positive across the Academies for both students and teachers, the Academies seem to place different emphasis on various aspects of the curriculum, resulting in differing attitudinal values. While there were some effects on base availability and drawdown in instructor capability during this period, last year's results reinforce the differences among the various sites in many of the same factors. Each site appears to present the material, concepts, and emphasis on selected values in a differential manner.

When locations were aggregated into five regions, the differences cancel each other out, which suggest that differences are location-specific rather than regionally sensitive. Regions were organized into five categories for the analysis: East, Southeast, Midwest, South, and West.

Academies were then organized into military service components to assess variations and differences in test scores and attitudes. The mean knowledge test scores across military branches did not vary across military service components. The differences across attitudinal dimensions had some variances but were minor in scope. The differences in scores appear to be pushed by location specific factors rather than military branch affiliation or region.

### **Suggestions Derived from Attitudinal Clusters**

Examining attitudinal clusters grouped according to a targeted attitude is useful to instructors, curriculum designers, and program directors in future program design and program revision. Clusters are a grouping of attitudes that are present when the targeted attitude is also present.

There are several drivers, or clusters of attitudinal responses tied to a targeted response in this year's analysis. Drivers tend to trigger the related attitudinal position of the individual respondent. The following driver triggers a set of attitudes that are a key theme of STARBASE philosophy and the associated attitudinal responses are supportive of the basic concept above several of the alternative response patterns:

The Drivers of the Concept (Trigger) of **"I can make my dreams come true"**

- I set goals for myself.
- You can learn a lot by trying things out.
- I think about what I want to be when I grow up.
- I think I can graduate from High School.
- I think I could grow up to be STARBASE instructor.
- I am good at science.
- You can accomplish a lot in a group.

Last year the drivers of the concept held these same attitudinal values and four additional responses. Most of the items are related to building self-confidence and self-actualization. Additional drivers that created clusters included:

- At STARBASE, I learned a lot of things I can use.
- I would tell my friends to come to STARBASE.
- Military bases are cool.
- Learning can be fun.

Drivers were also identified for the teacher surveys. A more detailed analysis will be forwarded to Academy staff for their consideration and review. The visitation process would be the best mechanism for presentation since explanation of application and usage could be explored.

In summary, students are enthusiastic participants of STARBASE. Their attitudes toward the curriculum content and their applications to personal management in problem solving, skill development, and a "can do" orientation are a positive consequence of their STARBASE experience. Their assessment of their involvement in the program results in their sponsorship to fellow students and their peers. The full range of positive scores in the basic concepts of STARBASE promotes a strong view that they can succeed in several areas of life experience and school performance.

### **TEACHER SURVEY**

The views of the participant teachers whose classes are involved in the STARBASE program are especially important in the assessment process. When the participant students from the school systems arrive on the military base to attend the STARBASE program, their classroom teacher is also in attendance. They primarily play a monitoring role and attend the classes. They generally are not involved in the presentations since that function is the responsibility of the designated STARBASE instructor; however, they occasionally involve themselves in test administration and assist in lab experiments.

Most of the teachers surveyed have been involved in STARBASE for several years and are very protective of participation of their students in future programs. Their involvement over the years has provided them with a "hands-on" understanding of the program's objectives, student

responsiveness, and the impact of the program on their student's performance upon return to their normal school routines. Many of the teachers use the supplemental STARBASE curriculum in follow-through activities when they return to their respective school systems. Some teachers even become certified STARBASE instructors by taking courses at the local university for credit under the instruction of STARBASE personnel. In addition, several are involved in outreach efforts in communities that are not covered by the Academy's partnership agreements with the school systems. If there is no sponsoring military units or available resources, many teachers have developed a commitment to find ways to reach students outside these parameters to deliver the STARBASE program in non-traditional methods. To fit the requirements of the DODI we do not include these numbers into the mixture of this report: however, the initiatives taken by the Academy reflect the commitment on the part of STARBASE and the teachers to reach the target population with the program.



From the perspective of the assessment process, the teachers serve as an expert panel of critical observers. They are professional educators, knowledgeable about the methods and practices of the STARBASE program and are follow-on observers of the behaviors, attitudes, and skills of the student participants upon return to their regular classroom routines. They observe downstream results in testing and in the performances of the students in the regular classroom. The following observations of the results of the teacher survey have particular merit because of their unique position in the STARBASE experience.

In this year's survey, 47 classroom teachers completed the questionnaire from 29 participating school systems. The teacher survey focused on collecting information regarding the impact of the program in the classroom and teacher attitudes toward STARBASE. As in prior years, teachers rate the STARBASE experience in very positive terms: students, student families, school administrators, and the STARBASE instructors themselves are rated very highly across the board. The teachers indicated that the usefulness of the STARBASE experience carried over to their own classrooms in a positive manner. They reported noticeable improvements in their student's attitudes about school, themselves, and science. In addition, they used the supplemental STARBASE resources provided to them and indicated a desire for more resources to take back to their classroom.

Teacher ratings remained quite high as they have in prior years. When considering that the ratings are based on a 7-point scale, more than half of the 31 items were above the 6.00 rating while the lowest rating was measured at 5.31. The stability of the ratings on each of the items have remained relatively constant over the years. The range of scores runs from 5.31 to 6.82 which are all very high on the rating scale. (See Appendix A, Rank Order Attitudes)

Teachers with more teaching experience reported that their students were more interested in learning about science as a result of the STARBASE intervention. In general, student interest in learning more about science was higher than learning about math over the 3-year survey period. Teachers in the lower grades appear to be more likely to report positive attitudes and behaviors of students on several scales but the smaller number of respondents in the lower grades may not present a true reflection between the variables.



Teacher perceptions tend to mirror student perceptions on several dimensions. For example, STARBASE program objectives stress positive social characteristics that promote positive role models, the maintenance of self-esteem, and a “can do” attitude. The ratings between teachers and students along those factors are very supportive of each other.

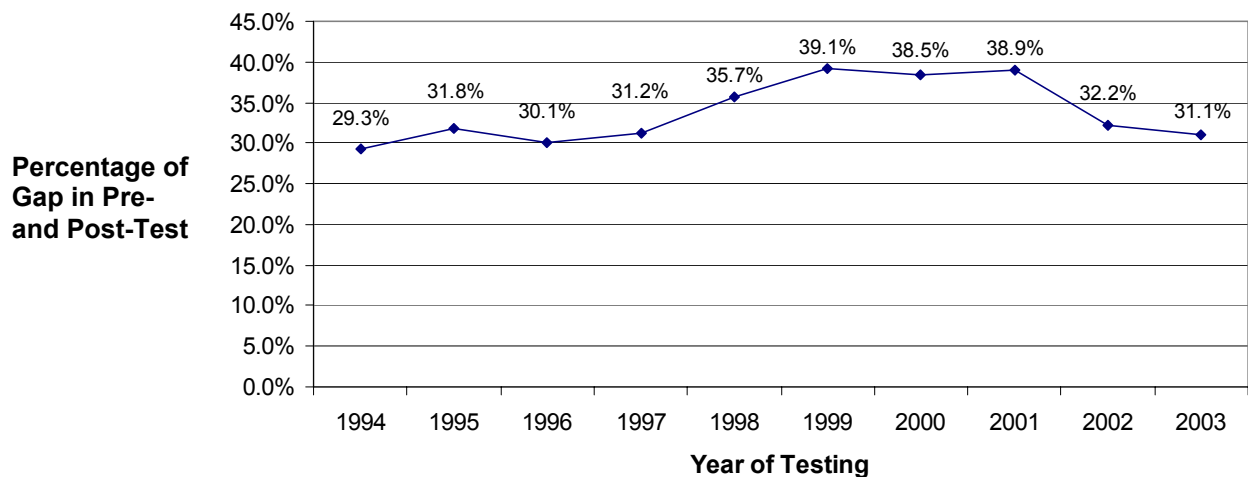
Military base exposure, instructor administration, and military personnel involvement consistently obtained very high ratings from the survey. The teachers indicated that the students’ experience on the military base was both enlightening and positive. The effectiveness of the program on student attitudes, self-confidence, and knowledge skills are all rated in the high 6 level. On all of these factors, the ratings were consistently in the 6 level or above.

**LOCAL ACADEMY TESTING**

Forty-three Academies independently administer performance tests to their site-based students on a pre-post basis. These tests are locally designed by the specific Academies and are not to be confused with the DoD standardized tests that are administered to all the Academies on an annual basis with a common test instrument.

Prior to DoD’s development of the standardized test for STARBASE-wide assessment, most of the Academies designed, developed, and administered their own local knowledge tests. Most of these tests were designed to evaluate the effectiveness of their specific programs and the material reflected in their individualized curriculum; while the DoD tests focuses exclusively on the DoD STARBASE core curriculum for Academy-wide administration. When DoD introduced its standardized test 4 years ago, a few Academies dumped their individualized testing program and used only the DoD assessment. The majority of the Academies continue to use their own program tests as well as the DoD test. The newer sites tend not to develop duplicate tests as they enter the program. Given the large number of Academies using their own tests, the following chart describes the percentage gap in student performance from the pre-to-post testing.

Exhibit 15 displays the gap difference from 1994 through 2003. The scores consistently display an increase of more than 30 percent between the pre- and post-assessment tests.



**Exhibit 15. Rate of Increase for Academy-Administered Pre- and Post-Assessment Tests**



This year's gap increase between pre- and post-tests was also above the 30-percent mark. While the local tests are not the same across Academies, they do demonstrate positive movement in student performance.

While the DoD and the Academy-based tests demonstrate positive results, the national test is comparable across all Academies while the local test focuses on describing the specific Academy results. Both tests have utility for the Academies in program design, effectiveness, and planning program delivery and curriculum application. As we have indicated in the past, the local tests may reflect the diversity in curriculum applications at the specific Academy, as well as State and local testing systems. The national DoD test is indifferent to the diversity and focuses exclusively on the core curriculum content as presented in the DODI.

Only the local Academies can answer the question of supporting two test systems when Academy staff and instructors consider student time availability as critical in covering program content and the core curriculum. Recommendations have been made and responded to in building efficiencies in test construction and administration of the DoD test to attain time effectiveness. Further examination will continue. The fact that 42 Academies still administer their own tests appears to support the view that they value testing for their programs.

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## **COMPLIANCE**

### **DODI REQUIREMENTS**

On September 14, 2000, OASD/RA published a set of instructions and guidelines regulating the STARBASE program. This instruction is DODI 1025.7, and it is designed to obtain consistency of program objectives, policy, and procedures in realizing DoD goals and objectives as it pertains to DoD STARBASE.

When the STARBASE Academies started their operations over a decade ago, they were primarily focused on a basic mission, curriculum, methodology, and basic concepts as they related to math, science, and technology utilization along with personal skills and personal responsibility. In these earliest days there was little attention to policy and procedures across the Academies except in shared educational concepts and methodological approaches. As each Academy operated in relative independence, diversity and differences in program emphasis, operational procedures, and program delivery started to emerge. Variances in program activity crept into each of the Academies especially as local resources exploited diverse experiences. At that time, each Academy was encouraged to take advantage of local capabilities and resources that were available within the community and on the military base. Some very unique and innovative curricula and methodologies emerged. While there continued to be sharing of educational materials across Academies, it was neither systematically nor collectively approved by the Academies as a whole. Thus, differences in program design and operational procedures emerged in such areas as classroom hours, class size, core curriculum emphasis, and the application of experiential methodologies. These differences had an effect on the ability of Academies in transporting and accepting best practices and new approaches in curriculum development and methodologies from Academy to Academy. Considerations on fitting these techniques or procedures to their locally developed practices were not always an easy accommodation. It was upon these and several other factors that OASD/RA decided to protect the core curriculum, key practices, and methodological procedures of what most considered the successful elements of the program. At the same time, OASD/RA understood the strengths and advantages that the diversity of resources at the local level brought to each Academy's program and those factors were taken into consideration in the development of the DODI. The DODI reflects the balance of supporting local diversity at the same time standardizing key practices and core curriculum that characterizes what is now called DoD STARBASE.

Factors introduced into the DODI focused on class size, number of classroom hours, participant eligibility, core curriculum, military base location of the program, and several other administrative and operational procedures. The Academies were given maximum flexibility to enhance their programs as long as they meet these minimum standard requirements. Initially, these instructions went to each Academy for review and for self-compliance. Academies were also instructed to document any exceptions or deviations to the regulations, note whether they were temporary or permanent, and identify any corrective actions or exceptions, if any, and forward these to OASD/RA for consideration or further guidance. The expectation, if no exceptions were given, was that compliance would be accomplished through a scheduled plan of action by the Academy to bring the program back to standard, approved by OASD/RA, and then implemented.

## **COMPLIANCE PROCEDURES**

It was shortly after the distribution of the DODI that OASD/RA implemented a compliance audit program where the DoD assessment team visited each of the Academies on a rotating basis and applied the DODI requirements through on-site desk audits, review of documents and materials, interviews and observation of program activities and operations. The visitations were generally scheduled with the older operating Academies first and then the remaining Academies according to years of operation. Newly operational Academies were provided a visitation orientation program that provided an overview of best practices, materials, and DODI requirements. At a later date, they would then be given a compliance visitation upon attaining full operational status. Compliance visitations also included property audits if the military base, the state-sponsoring agency or the private consulting firm had not conducted one within a 3 year period. All but five Academies had a property audit within the past 3 years and most have a property audit each year. In addition, all but five Academies have had a fiscal audit during that same period. Only three Academies lack a property listing on file. Copies of local property audits are reviewed and filed. With the exception of the aforementioned, most of the Academies had rigorous property audits which usually included the tagging of equipment, annual visits, filed property lists, and operational definitions of what is included in the audit in dollar values or if they were considered a non-expendable item.

The compliance visitations, as of this reporting period, indicate that most of the Academies are in full compliance with the DODI. Minor technical violations were noted such as the above audit and property listings with corrective action outlined for compliance within the program year. Additional anomalies, such as not reporting deviations in class size and conducting sessions outside of the military base, although temporary, were noted. Most violations were lack of written notification to OASD/RA although verbal communication was made. Proper written documentation is important in that it provides a mechanism for exceptions and changes in requirements if all Academies are similarly affected after review.

While differences in operation across the Academies were noted during the visitations, none at this time encroached on compliance requirements. Several Academies have noted their desire to upgrade the core curriculum to more advanced applications of problem solving and higher level learning. At present, they are applying these methodologies within the scope of the core curriculum; however, they are requesting a mechanism for reviewing these advances for acceptance and the transferring to other Academies within the program. At present, most Academies find it reasonable and manageable to deliver the current program under the DODI requirements. They understand that it is a protective device for core curriculum, best practices, and proven methodologies, but they also recognize that changes in these areas are essential for the program's growth and vitality. A mechanism for Academy-wide review and effective transportability is considered essential for future development.

Over the past 2 years, the visitations and survey instruments have paid greater attention to cost and budget considerations. While adherence to core curriculum, classroom hours, military base delivery, class size, participant eligibility, and target population considerations were highlighted, cost of operation modalities were also obtained. A separate section of this report discusses costs. As with prior years, most of the programs indicated the constant struggle to cover all core content areas with local emphasis within the allotted classroom hours. The differences in testing scores at the local Academy level reflect these differences although the performance scores across all the Academies are very positive. All Academies are aware of building efficiencies in

laboratory experiments, presentation, simulations, testing, and other methodologies. A key challenge to all Academies is effective utilization of time while maintaining the experiential methodology of STARBASE.

Compliance with the DODI on the core content areas and the methodologies utilized in STARBASE are important for several reasons beyond maintaining the core body of knowledge and basic concepts imbedded into the program. One factor is that it supports the ability to establish a standardized testing instrument across all Academies on a common body of knowledge and conceptual applications. It is an important element in the overall assessment of the program's ability to effect student performance and changes in personal skills. In addition, standardization in selected areas provides a platform for ease of acceptability and transportability of materials and lessons-learned across the total program. Differentiation and variability in these areas make it more difficult for ease of acceptance and entry of new applications to other Academies.

Class size is becoming more problematic for several Academies because of the effects of reduced tax revenues at the local level, which hinders teacher hiring, school construction, and resources. While class size has a significant effect on experiential learning applications, the participants' schools are slowly testing the compliance boundaries. A few rural Academies have trouble in the reverse fashion with smaller than desired numbers but this situation is much smaller in number while combining classes is often a solution under those circumstances. Class size continues to emerge as a potential problem area that will test compliance requirements, class resources, and STARBASE methodologies.

OASD/RA continues to focus on those compliance issues that support quality control, protection of basic educational concepts, and selective standardization that maintains the transportability of materials and lessons-learned, testing reliability, and protecting the basic integrity of the concepts and methodologies of the DoD STARBASE program.

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## **FISCAL**

### **PROGRAM COST ANALYSIS**

Over the past few years the assessment process increased its efforts in obtaining additional and more definitive information on the cost of program operations. The original objective was to examine costs across Academies, military service commands, and establish modalities in selected budget areas. Several data collection methods were utilized but the Director's survey was the primary instrument, along with budget planning documents, to obtain broad operational cost data on salaries and benefits, communication, expendable supplies, transportation, equipment, facilities, and furnishings. In addition, information on supplemental non-DoD funding was examined to obtain a broader picture of Academy-wide budgets and expenditures. During visitations, documents on budgets and expenditures were reviewed as well as clarification on expenditures and downstream budget requirements. Almost all of the Academies had detailed financial reports on their operations. However, there is a great deal of difference among the Academies on the standards of financial reporting, which makes comparability across Academies a challenge. All of the Academies now operate on a fiscal rather than a calendar year financial schedule, which will help in future assessments of changes over time.

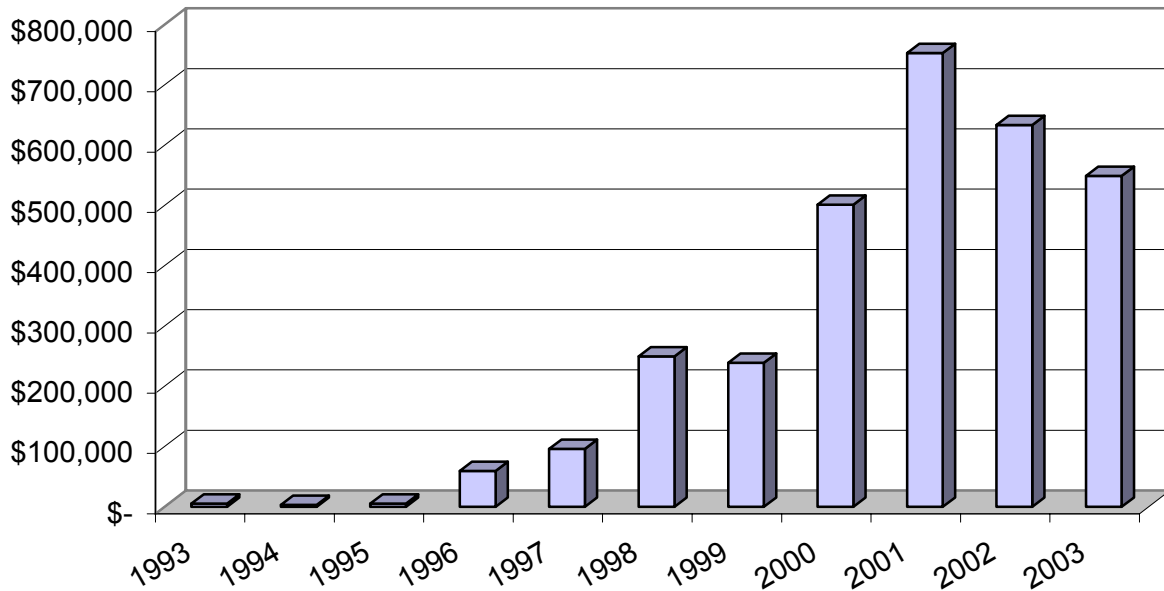
The data demonstrates that there are a number of differences and variability in both budget and expenditure allocations across the Academies. These differences are partially accounted for by the organizational umbrella that each program operates under. The primary agencies involve State, Federal, non-profit, local school district or contractor organizations. Each of these agencies has different benefits, salary administration, administrative overhead costs and union relationships. Variances also come into play with regional and urban cost of living differences, job market considerations in competitive hiring and labor pools. All of these and other factors account for the different Academy costs at the local level. Overall, the modalities are generally descriptive across the Academies on proportional grounds.

Since one of the major objectives of this analysis was to obtain basic modalities in the cost of operation, an understanding of how the original budgeting process operates helps to clarify the emergence of differentiation. The process starts when the DoD develops a basic operational funding plan after each Academy presents a planning budget through their command system prior to budget allocation. At this point, variations in funding among the Academies occur based on multi-site responsibilities, location, and breadth of operation. These are usually reflected in the planning budgets and are designed to cover basic operating costs that are mentioned in the above paragraph. For newly installed Academies, there are additional funds for installation to upgrade the facilities, purchase computers, and equipment. Once the Academy is established, the annual budget process applies.

Overall, DoD is the primary funding agency for the Academies and, for most, the only funding source. The funding allocation for DoD STARBASE this year was slightly over \$12 million. With supplemental funding by outside agencies down by close to 6 percent below last year's revenue, the dependence on DoD is even greater than the DoD's 90 percent of the total budgets for all the Academies last year.

While most Academies indicate that they can operate within existing DoD funding, their ability to respond to increased community demand to develop and continue to support outreach efforts,

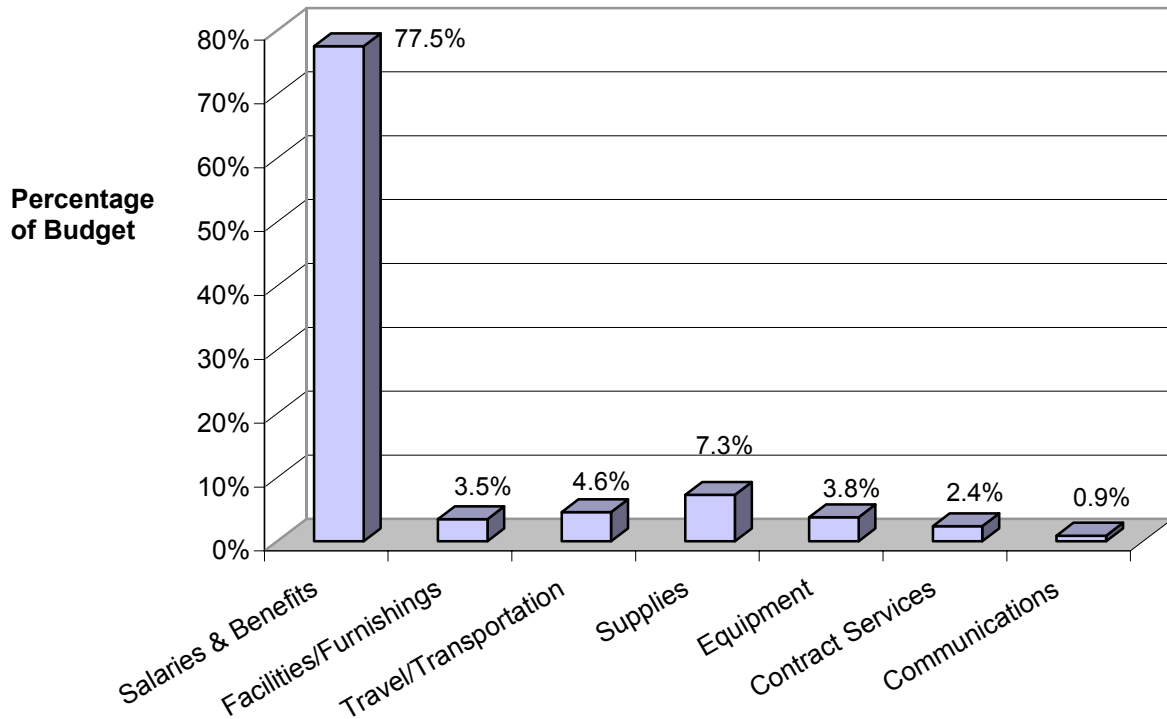
additional classes, and specialized programs is severely limited. The dependence on supplemental funds to cover these additional activities is seriously strained now that Academies are faced with reductions in their availability. The total supplemental funding of \$548,760 for those Academies that utilized that source is less than half the amounts obtained in 2001 and 2002. See Exhibit 16.



**Exhibit 16. Total Supplemental Funding Per Year**

These reductions also affect replacement of computers, audio/visual equipment, and salary administration increases. Some of the Academies have responded by reorganizing themselves by eliminating or reducing the office manager's position or reducing some of the staff positions on a part-time basis. Administrative duties are then shared by remaining staff. While this is not widespread, the margins in managing operational costs are very small in the total budget. Almost all of the DoD funds go toward basic operating costs as shown in Exhibit 17. The majority of Academies operate their budgets with more than 77 percent of costs dedicated to salary and benefits, the remainder of the budget covers costs of supplies, equipment, travel, furnishings, communication, and other expendables. While the program demonstrates efficiencies in average cost per student, the cost of operation tends to increase due to cost-of-living, salary increases, and inflation. To date, only a few Academies have experienced stress in managing the program within budget allocations but many note the limitations in their ability to enhance elements of their program. Local conditions, organizational arrangements, and regions create the differences in budget management and costs.





**Exhibit 17. DoD Academy Expenditures by Categories**

Cost modalities provide a rough measure of the efficiencies in operation, return on investment and differences by region, site, and service command. The analysis of the costs of 42 of the operating Academies this year demonstrates a slight increase in the average cost of an Academy over last year but also a slight decrease in the average cost per student.

**Exhibit 18. DoD STARBASE Academy Average Annual Cost**

Average Annual Cost	Average # Students per Academy	Average Cost per Student
\$269,706	1,003	\$262.83

The cost per student varies with each Academy and the range among Academies demonstrates those differences. Currently, the lowest is slightly above \$100 per student and the highest is \$530 per student. This disparity in range is partly explained by such factors as: the age of Academy, location, number of classes, and the size of classes. As Academies mature, costs normally go down as efficiencies in operation are gained. Since the growth in the number of Academies has been so dramatic over these past few years, we anticipate cost efficiencies, as actualized in cost per student, to decrease. This should be spurred by an increase in the number of classes and students barring that no critical events are introduced in this coming program year.

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## **CONSIDERATIONS**

The program year of 2003 mirrored much of what happened the previous year in that the events of the Iraqi war and Homeland Security activities produced some temporary trials in the operation of the program. Staffs were reduced because of activation; there were fewer volunteers; ease of base accessibility was reduced; and the focus of military personnel was upon primary military mission responsibilities. As in the previous year, the Academies made adjustments, with the assistance of commanders and other military personnel, to bring the program back to normalcy in operation. While the numbers of classes and students were somewhat reduced, they were better than the previous year.

As the program grows in number, scope, and in the expansion of services, the issues of quality control, support systems, budget management, staff development, and the upgrading of program content become more manifest. Many of these issues are focused on the inward development and upgrading the quality of the program and its delivery. These considerations are an amalgam of expressions obtained from the key participants and the analysis of the program's development, i.e., Academy Directors and STARBASE staff, military personnel, survey responses, and the imperatives of the report's analysis.

- Revisit and review the installation process of new academies to identify materials, procedures, technical aides, and the orientation program to assist new Academies in a more rapid start-up for positioning to a full operational mode.
- Consider the development of a centralized staff-development program that introduces new techniques in curriculum delivery, best practices, efficiencies in experiential applications, and new training methodologies.
- Develop a review committee composed of STARBASE Academy Directors/staff in reviewing and enhancing the core curriculum for higher level learning applications and problem-solving techniques and making recommendations for their implementation and use by all Academies.
- Encourage each Academy to develop a plan of action or an alternative delivery system option in case of a critical event such as 9/11 or the Iraqi war interventions.
- Review the most effective mechanism for sharing information and technological transfer such as web sites, visitations, web meetings, Academy staff review and recommendations, staff training, and conferences to maximize best practices, acceptability at the local level, and timely installation.
- Schedule a rotation system for compliance visitations so that all Academies are visited in a 3-year period and all newly established Academies are visited and given support within the installation year.
- Develop a review committee on third-party relationships composed of Academy personnel and staff representatives for assessing program services and product consideration in Academy-wide utility, fit of service, cost efficiency, and acceptability at the local Academy level.

- Topics such as “managing community demand for the expansion of program services” and “maximizing the role and function of the board of directors” should be given consideration for this year’s DoD Director’s Conference.
- Review the possibility and reasonableness of a downstream analysis of former STARBASE graduates at the eighth and ninth grades with a sample of selected Academies. Suggestions of cost-effective methodology to accomplish this assessment should be considered.
- Provide each Academy with individualized feedback on their standardized test results for their use when reviewing content coverage.

## **CONCLUSIONS**

One of the most dramatic characteristics of the program over the last decade has been the program's growth in the number of site locations and in the breadth of student populations served. However, closer examination of the program's impact reveals the change in the attitudes, behaviors, and enthusiasm of all the participants involved. Not only have students demonstrated greater skill and knowledge abilities, and improved their attitudes about themselves and their competence to manage their environment, but educators, military personnel, and community leaders also have had positive experiences. Teachers, Commanders, Military Volunteers, and STARBASE personnel have similarly been affected in their views and attitudes about the contributions they have made and also in what they have gained through this experience.



While progress has been demonstrated, a number of challenges remain. This includes a measured response to the overwhelming demand by community leaders to expand the program to other venues and to other areas within the boundaries of available resources to respond. While creative applications have been developed by the STARBASE staff, the basic mission, and the quality of the programs cannot be compromised in response to raw demand. Issues, such as building efficiencies in operations, program delivery, and upgrading the curriculum, are a more essential set of activities that require Academy-wide commitment.

Housing the program within the military environment is an essential component of the program's success. The commitment, personnel, and physical resources that are provided in the military environment have few equals in the wider community and there are few similar situations that apply the program's content to real-life applications. The discipline and commitment that military personnel apply to their working conditions and assignments demonstrate quite vividly the lessons presented in the STARBASE methodology. Even under the conditions of recent days, those lessons have transferability to the students' understanding.

### **CRITICAL EVENTS**

More than two-thirds of the Academies were affected by the events of Iraq and Homeland Security initiatives. These events affect student numbers, scheduling of classes, frequency of tours, reduced class time, instructor/volunteer availability, and access to base resources. However, in almost all cases, the base leadership has worked with STARBASE staff to bring the program routines back to normal operation and most of the restrictions are invisible to the students. Each effected Academy site has had some adjustments to their program operation and the majority have regained normal routine; a few, however, are working with a reduced staff capability and alternative tour visitations.

Latent consequences of these events are the students' heightened interest in the military's mission and role in times of crisis, and the depth of the Commanders' commitment to the program by their decisions to work the program's operation within the tightened security measures and base availability.

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## GLOSSARY

**Academy:** See DoD STARBASE Academy.

**Adjusted Data:** Data derived from the same Academies that were operating last year so that comparisons can be made concerning the internal growth of the program.

**Alternative Education Provider:** A public or private school designed for children who do not function well in the traditional school setting. This may include continuation high schools or schools that fall outside the categories of regular, special education, or vocational education.

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

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

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

**Disability:** Physical, mental, or sensory impairments that render major life activities more difficult.

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

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

**DoD STARBASE Academy:** A DoD educational entity that seeks to improve the knowledge and skills of students in kindergarten through twelfth grade in mathematics, science, and technology, and follows the academy model described in DODI 1025.7. A DoD STARBASE Academy is not defined in terms of a geographic location.

**DoD STARBASE Core Curriculum:** The fixed course of study referenced in the DODI that must be taught by all DoD STARBASE Academies.

**DoD STARBASE Program:** The DoD STARBASE Program is authorized by Title 10 United States Code Section 2193b as a DoD science, math, and technology education improvement program. The Office of the Assistant Secretary of Defense for Reserve Affairs 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:** The component of a DoD STARBASE Academy that performs instruction. Sites can be co-located at a DoD STARBASE Academy or geographically separated from the Academy.

**Inner City Location:** Central section of a city, which is usually older and more densely populated.

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

**Non-Profit Organization:** A legal entity recognized or chartered by competent state authority and to which the Internal Revenue Service has given status as a 501c(3) tax-exempt educational organization.

**Operational Academies:** An academy that is processing students.

**Program Year:** Period of time defined by local school year.

**Rural Location (as defined by the U.S. Census Bureau):** The population and territory outside any urbanized area and the urban part of any place with a decennial census population of 2,500 or more.

**Site:** See DoD STARBASE Site.

**Socio-Economic Disadvantage:** Used for economically deprived, poor, poverty stricken, or disadvantaged individuals or groups.

**State:** The 50 states of the United States of America, District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, and Guam.

**USP&FO:** United States Property and Fiscal Officer acts as on-site liaison between National Guard Bureau and the State National Guard for all contracted services and required budgetary authority.



## **Appendix A**

### **SELECTED DoD STARBASE PROGRAM DATA**

<b>KNOWLEDGE BY CURRICULUM AREAS .....</b>	<b>A-3</b>
<b>POST-PROGRAM KNOWLEDGE TEST ITEM AVERAGE SCORES.....</b>	<b>A-4</b>
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<b>ATTITUDE MEANS FOR PRE-POST STUDENT SURVEY: ITEMS 1–25.....</b>	<b>A-8</b>
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**KNOWLEDGE BY CURRICULUM AREAS**

This table breaks down each knowledge item into the curriculum area it addresses. Only the item stems are presented here. For the complete items see the student instrument in Appendix B.

<b>Curriculum Area</b>	<b>Item Stem</b>
Teamwork	A team works together to achieve a common goal Using teamwork results in Which of the following is not a team?
Properties and States of Matter	Matter does not take up space. Which of the following is NOT one of the three states of matter?
Properties of Air	How thick is the Earth's air? The air is composed mostly of what element? Air presses down 15 pounds on every inch of our bodies. The reason we don't feel this pressure is
Bernoulli's Principle	One reason an airplane is able to gain lift is because the air moving across the top of the wing
Aircraft Control Surfaces and Components	Wing Rudder Elevator Cockpit To move an airplane's nose to the left, you would move the? If you are landing an airplane in a city that is 5,000 feet above sea level what will your altimeter read when you are on the ground?
Four Forces of Flight	Force that pulls an aircraft down Forward movement produced by a propeller, jet, or rocket engine Produced by air flow over the wings and the angle of the wing into the wind Slows the forward movement of an aircraft
Newton's Laws of Motion	If you threw two balls of different weight using the same amount of force What is Sir Isaac Newton's Law of Inertia?
Space Exploration	Our solar system consists of how many planets? The Earth is the closest planet to the sun. Which planet is the smallest of all planets and the farthest away from the sun?
Development, Innovation, and Use of Technology	Technology usually decreases in cost after many units are sold. The development of something new, or improvement of something already existing is
Avoiding Substance Abuse	Which of the following can destroy an individual's dream? Drinking alcohol may decrease our bodies' ability to do simple tasks.
Goal Setting	If you have something you want to do, or something you want to be in life, you should Negative actions may make it hard for you to reach your goals.

**POST-PROGRAM KNOWLEDGE TEST ITEM AVERAGE SCORES**

The number of items in 2002 and 2003 numbered 30 knowledge questions while the 2001 test had 33 items; italicized items have been modified or deleted.

Post-Program Knowledge	2003 Correct	2002 Correct	2001 Correct
A team works together to achieve a common goal	99%	98%	97%
<i>Alcohol impairment is the affect alcohol has on our body as it decreases its ability to function properly.</i>			79%
Drinking alcohol may decrease our bodies ability to do simple tasks	89%	85%	
<i>Matter can change between liquid, solid, and gas states.</i>			74%
<i>Matter can exist in a vacuum.</i>			51%
<i>An atom is joining of two or more molecules.</i>			25%
Matter does not take up space	85%	82%	
The Earth is the closest planet to the sun	90%	85%	80%
<i>Negative actions take you further from your goal.</i>			81%
Negative actions may make it harder for you to reach your goals	94%	91%	
<i>Technology usually increases the size of something.</i>			57%
Technology usually decreases in cost after many units are sold	70%	63%	
Using teamwork results in	98%	97%	93%
Which of the following in NOT a team	96%	93%	89%
Which of the following is NOT one of the three states of matter?	68%	59%	60%
How thick is the earth's air?	60%	58%	48%
Air presses down 15 pounds on every inch of our bodies. The reason we don't feel this is	70%	64%	51%
The air is composed mostly of what element?	56%	53%	46%
Cockpit	97%	94%	91%
Wing	94%	93%	91%
Elevator	87%	81%	73%
Rudder	86%	78%	72%
If you are landing an airplane in a city that is 5,000 feet above sea level what will your altimeter read when you are on the ground?	58%	52%	48%
<i>If you want to move an airplane's nose to the left what would you do?</i>			45%
To move an airplanes nose to the left, you would move the	58%	53%	
<i>When you increase speed of the air moving over a wing, the air pressure on that wing</i>			44%
One reason an airplane is able to gain lift is because the air moving across the top of the wing	51%	44%	

*\*Italicized items have been modified or deleted.*

## POST-PROGRAM KNOWLEDGE TEST ITEM AVERAGE SCORES (CONTINUED)

Post-Program Knowledge	2003 Correct	2002 Correct	2001 Correct
Produced by air flow over the wings and the angle of the wing into the wind	84%	78%	69%
Force that pulls an aircraft down	84%	84%	80%
Forward movement produced by a propeller, jet, or rocket engine	84%	79%	74%
Slows the forward movement of an aircraft	80%	76%	71%
What is Sir Isaac Newton's Law of Inertia?	70%	60%	49%
If you threw two balls of different weight using the same amount of force	84%	77%	67%
Our Solar System consists of how many planets?	91%	86%	82%
<i>The component of the STS that provides the thrust against Earth's gravity to lift the STS is what?</i>			55%
Which planet is the smallest of all planets and the farthest away from the sun?	97%	95%	93%
The development of something new, or improvement of something already existing is	80%	68%	50%
If you have something you want to do, or something you want to be in life, you should	96%	93%	89%
Which of the following can destroy an individual's dreams?	95%	92%	89%
<b>Post-test score</b>	<b>24.42%</b>	<b>22.78%</b>	<b>22.78%</b>

*\*Italicized items have been modified or deleted.*

## MEAN SCORES OF STUDENT POST-PROGRAM ATTITUDINAL RESPONSES

Item Stem	2003 Mean	2002 Mean	2001 Mean	2000 Mean
I like math.	5.24	5.34	5.26	5.53
I am good at math.	5.27	5.32	5.06	5.37
I like science.	5.56	5.67	5.52	5.62
I am good at science.	5.39	5.43	5.31	5.38
<i>I like trying new things.</i>				6.39
I am good at following directions.	5.77	5.85	5.56	5.86
<i>Other people like working with me.</i>				5.65
Learning is easy for me.	5.51	5.58	5.40	5.60
<i>I always pay attention in school.</i>				5.55
Learning can be fun.	6.16	6.18	6.12	6.29
<i>People can do cool things with math.</i>				6.22
<i>I want to learn more about technology.</i>				5.83
<i>I believe in myself.</i>				6.64
You can learn a lot by trying things out.	6.48	6.49	6.36	6.52
I think I can graduate from High School.	6.43	6.53	6.43	6.67
Military people do lots of different things.	6.31	6.34	6.03	6.49
<i>I like working with other people.</i>				6.18
I set goals for myself.	6.02	6.14	6.06	6.29
I make good decisions.	5.62	5.76	5.58	5.83
<i>I like helping others.</i>				6.29
I think I could grow up to be a STARBASE Instructor.	4.49	4.36	4.50	4.95
I can make my dreams come true.	6.16	6.07	6.14	6.28
<i>I try to stay out of trouble.</i>				6.34
You can accomplish a lot in a group.	6.34	6.34	6.23	
You can have fun working in a group.	6.35	6.34	6.27	
I like to make new things.	6.29	6.36	6.36	
I think about what I want to be when I grow up.	6.40	6.34	6.36	6.53
<i>Military people are cool.</i>				6.22
<i>Military people help other people.</i>				6.50
I want to be like my STARBASE Instructor.	4.52	4.55	4.52	5.07
I am enjoying coming to a military base.	6.37	6.28	6.03	
Military bases are cool.	6.22	6.16	5.98	
I like to think of new ways to use things.	6.13	6.19	6.06	
At STARBASE, I learned a lot of things that I can use.	6.53	6.51	6.40	6.62
I would tell my friends to come to STARBASE.	6.15	6.07	5.95	6.38
STARBASE is boring.	1.64	1.70	1.78	1.81

\**Italicized items have been modified or deleted.*

**RANK ORDER ATTITUDES**

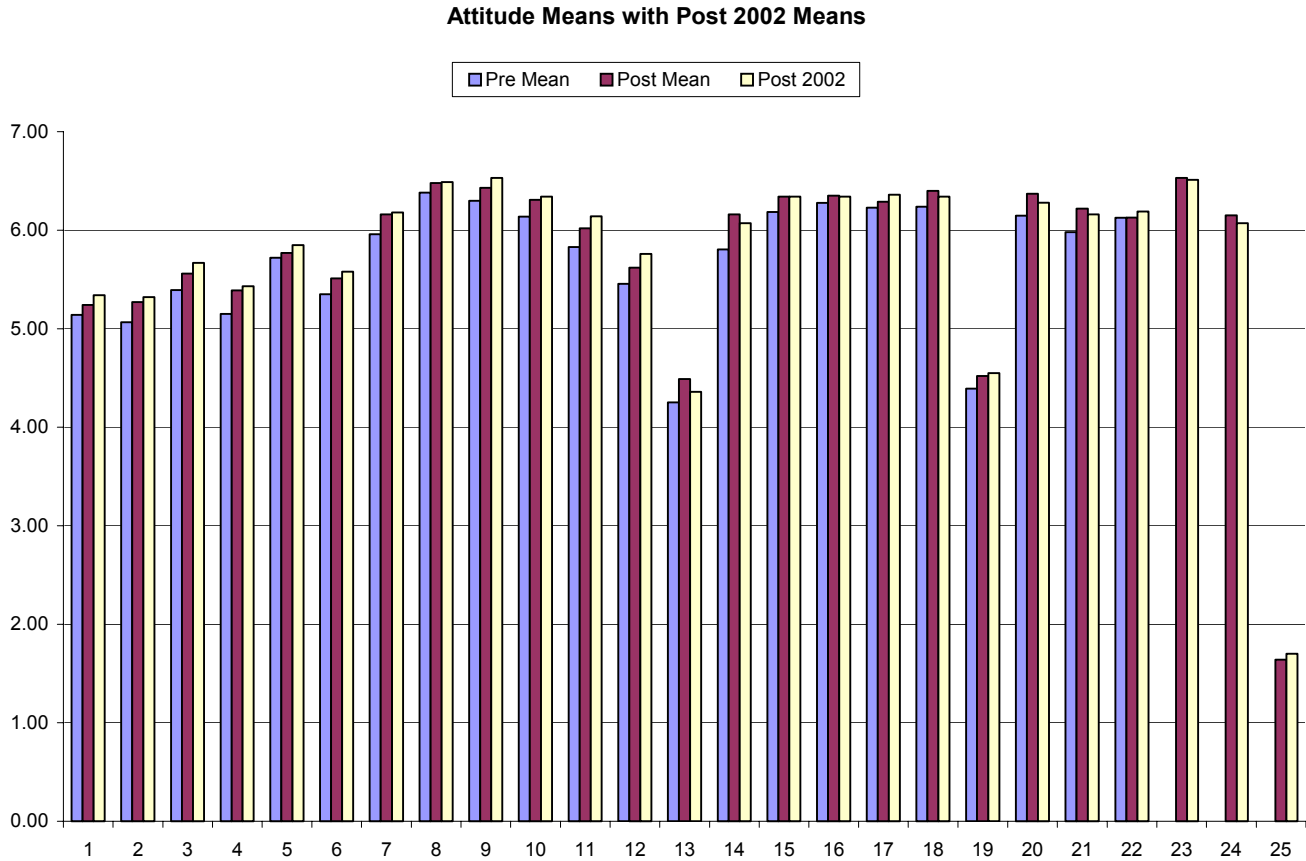
Teachers rated the STARBASE experience positively for themselves, their students, and their students' families. The teachers find the STARBASE experience useful beyond the STARBASE program and use the materials in their curriculum. They also notice improvements in their students' attitudes about school and themselves.

Survey Item	Mean	Standard Deviation
The STARBASE instructors are good role models for the students	6.82	.45
The STARBASE curriculum supports our state standards	6.75	.58
The children enjoy sharing their STARBASE experiences with others	6.70	.67
STARBASE reinforces many positive behaviors I try to teach my students	6.68	.64
The students admire their STARBASE instructors	6.66	.68
The students talk about STARBASE long after the program has ended	6.66	.53
The students enjoyed being on a military base	6.61	.81
STARBASE has helped improve the students understanding of science	6.48	.76
More interested in learning about science	6.43	.83
Parents are delighted that their children are participating in STARBASE	6.41	.92
My principal is a strong advocate of STARBASE	6.39	1.06
I would like more STARBASE resources to take back to my classroom	6.34	1.20
I use the resources STARBASE provides to teachers	6.14	1.30
More excited about learning	6.11	.89
STARBASE has helped improve the climate for participative learning in the classroom	6.09	1.18
More excited about their futures	6.04	.98
More comfortable with military personnel	5.98	1.15
Better at working in groups	5.96	1.06
More confident about what they can accomplish	5.96	.83
I have included many STARBASE resources in my curriculum	5.95	1.36
More willing to cooperate with each other	5.91	1.12
More willing to try new things	5.91	.93
More likely to encourage each other	5.89	1.17
STARBASE has helped to improve appreciation of how math can be applied to a variety of situations	5.80	1.03
Because of my participation in STARBASE, I am more comfortable with military personnel	5.75	1.51
More goal oriented	5.66	.96
Better at following directions	5.53	1.16
More comfortable making decisions	5.53	1.06
The students ask more questions about technology	5.43	1.15
More interested in learning about math	5.33	1.28
My school board is very involved in supporting STARBASE	5.31	1.38

\* Ratings are on a 7-point scale—positive to negative

**ATTITUDE MEANS FOR PRE-POST STUDENT SURVEY: ITEMS 1–25**

The graph below presents pre- and post-program means for the 25 survey items. The items are listed in consecutive order as presented in the instruments. See the Appendix B for a copy of the student instrument. All of the means for the attitude items, pre and post, are high.



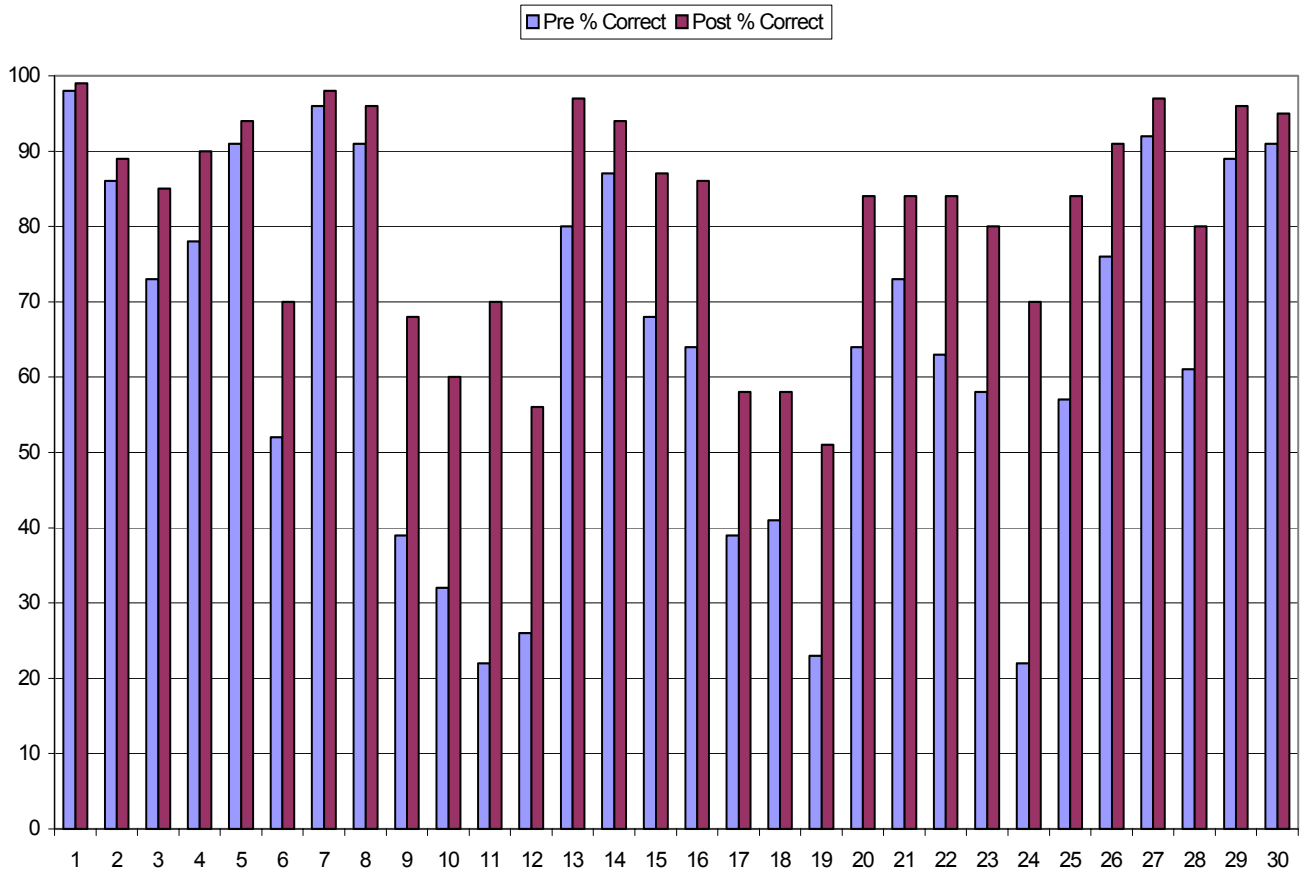
The ratings were based on a 7-point scale with seven being “Strongly Agree” and one being “Strongly Disagree”.



**PERCENT OF CORRECT SCORES FOR PRE-POST FLIGHT TEST: ITEMS 1–30**

The graph below presents pre- and post-program means for the 30 knowledge items. The items are listed in consecutive order as presented in the instruments. See Appendix B for a copy of the student instrument. Many of the knowledge items show an increase in the percent answering correctly after the program.

**2003 Assessment Data - Percent Correct Scores for Questions 1-30**



## **2003 ASSESSMENT QUOTES**

### **Commanders**

“The experience of assisting these students has provided a positive and life-forming value to our sailors. This attitude has a continuing effect on their behavior in the community.”

“Great program for the community and military. We are reaching people that would not otherwise be exposed to the military and displaying a positive image. Excellent opportunity for future recruiting.”

“This is the single most successful program that directly benefits public education in the inner cities. This program should be expanded nationwide.”

“STARBASE is a huge success. The interaction with the community is invaluable and I don’t know if there is a better way to achieve it.”

### **Military Volunteers**

“Best military sponsored program and second in community visibility only to the Air Force Air Show.”

“Seeing the light in children’s eyes get brighter is very heartening and supports my hopes for future generations.”

“STARBASE shows how discipline is a way of life, and how math and science are the study of the world around us, not just something in a book.”

“STARBASE is a great program and a good investment of DoD dollars for a positive community impact.”

“We need more programs like STARBASE to keep students interested in science.”

“This is an outstanding program that does help the students. I would take this program and expand it throughout the U.S. and overseas DoD would benefit from the STARBASE program as well.”

“We need to keep this one alive and well in the DoD arena.”

## **2003 ASSESSMENT QUOTES (CONTINUED)**

### **Teachers**

“This is absolutely one of the best programs for children I’ve ever seen. My students and I are honored to be a part of it.”

“This is an excellent program. The students really enjoy it. The students are given opportunities to apply lessons that are taught in class as well as learn new things using materials that are not available at school. What an outstanding program for students, teachers, and parents to attend.”

### **Students**

“As the weeks grew so did our brains.”

“When you said follow your dreams I did. I like animals so I started my own pet wash. I made money and gave it to the ASPCA, and they gave me some stuff for my pet wash. I guess that is a start.”

“After STARBASE I decided I liked science more than I thought I did! I didn’t know it would be so fun and I would learn so much. It was worth waking up early and eating peanut butter sandwiches for five days straight! I really like the way you made us think instead of just making us memorize a bunch of facts!”

### **STATISTICAL/MATHEMATICAL FORMULAS**

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

1. Mean – average value of a variable

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

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

N = the sample size

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

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

$\bar{x}$  = the sample mean ( $\bar{x}$  is generally represented by an x with a bar or line over the top)

n = the sample size.

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

$$t = \frac{\bar{X}_1 - \bar{X}_2}{s_{\bar{x}_1 - \bar{x}_2}}$$

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

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

$$r_{12} = \frac{[\sum (Y_1 * Y_2) - (\sum Y_1 * \sum Y_2) / N] / (N - 1)}{s_{y1} s_{y2}}$$

Y = the values of the variables

s = the standard deviation of the variables

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

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

Y = the predicted value of the dependent variable.

a = the intercept (value of Y when X=0).

b = the regression coefficients for the predictors.

X = the value of the predictor variable

## **Appendix B**

### **SURVEY INSTRUMENTS:**

<b>TEACHER SURVEY .....</b>	<b>B-3</b>
<b>PRE-POST FLIGHT QUESTIONNAIRE .....</b>	<b>B-5</b>
<b>COMMANDER SURVEY.....</b>	<b>B-9</b>
<b>MILITARY VOLUNTEER SURVEY .....</b>	<b>B-11</b>

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TEACHER SURVEY

## DoD STARBASE Teacher Survey

All information gathered by this survey is for developmental purposes. The information you provide will help us to continue to improve the STARBASE program. Please provide honest feedback about the various issues presented in this questionnaire. Completed questionnaires will be tallied by an agency outside of your school and outside of STARBASE. Individual responses will be strictly confidential and will not be released to your school or to any STARBASE representative. We are collecting information from all of the STARBASE programs. This survey contains a total of 31 questions and should take less than 10 minutes to complete. If you have any questions about this process please contact ManTech at (703) 329-3419 or DOD.STARBASE@mantech-stc.com. Please return this survey to the address on the back page. Please do not fold.

**Thank you.**

The STARBASE location I work with is: \_\_\_\_\_ What grade do you teach? \_\_\_\_\_

Did you ever visit a military base prior to your current STARBASE involvement?

- ① Never, this is my first STARBASE program
- ② Yes, for prior STARBASE programs only
- ③ Yes, for activities not related to STARBASE
- ④ Yes, for STARBASE and non-STARBASE activities
- ⑤ Other \_\_\_\_\_

I have been involved with STARBASE for (# of months): \_\_\_\_\_

I have been a Teacher for (# of years): \_\_\_\_\_

Respond to the following statements by completely darkening the appropriate numbered circle next to each item.

After attending STARBASE, the students appear...

	Disagree						Agree
	①	②	③	④	⑤	⑥	⑦
1. ... more interested in learning about math.	①	②	③	④	⑤	⑥	⑦
2. ... more interested in learning about science.	①	②	③	④	⑤	⑥	⑦
3. ... more willing to try new things.	①	②	③	④	⑤	⑥	⑦
4. ... better at following directions.	①	②	③	④	⑤	⑥	⑦
5. ... better at working in groups.	①	②	③	④	⑤	⑥	⑦
6. ... more confident about what they can accomplish.	①	②	③	④	⑤	⑥	⑦
7. ... more goal oriented.	①	②	③	④	⑤	⑥	⑦
8. ... more comfortable with military personnel.	①	②	③	④	⑤	⑥	⑦
9. ... more comfortable making decisions.	①	②	③	④	⑤	⑥	⑦
10. ... more excited about their futures.	①	②	③	④	⑤	⑥	⑦
11. ... more excited about learning.	①	②	③	④	⑤	⑥	⑦
12. ... more likely to encourage each other.	①	②	③	④	⑤	⑥	⑦
13. ... more willing to cooperate with each other.	①	②	③	④	⑤	⑥	⑦

Please go on to the next section

**Please indicate your level of agreement with these statements.**

	Disagree						Agree
	①	②	③	④	⑤	⑥	⑦
1. After STARBASE, the students ask more questions about technology.	①	②	③	④	⑤	⑥	⑦
2. STARBASE has helped to improve the students' understanding of science.	①	②	③	④	⑤	⑥	⑦
3. STARBASE has helped to improve appreciation of how math can be applied to a variety of situations.	①	②	③	④	⑤	⑥	⑦
4. STARBASE has helped to improve the climate for participative learning in the classroom.	①	②	③	④	⑤	⑥	⑦
5. Because of my participation in STARBASE, I am more comfortable with military personnel.	①	②	③	④	⑤	⑥	⑦
6. The students talk about STARBASE long after the program has ended.	①	②	③	④	⑤	⑥	⑦
7. STARBASE reinforces many of the positive behaviors I try to teach my students.	①	②	③	④	⑤	⑥	⑦
8. I use the resources STARBASE provides to teachers.	①	②	③	④	⑤	⑥	⑦
9. I would like more STARBASE resources to take back to my classroom.	①	②	③	④	⑤	⑥	⑦
10. My principal is a strong advocate of STARBASE.	①	②	③	④	⑤	⑥	⑦
11. My School Board is very involved in supporting STARBASE.	①	②	③	④	⑤	⑥	⑦
12. The STARBASE Instructors are good role models for the students.	①	②	③	④	⑤	⑥	⑦
13. I have included many STARBASE resources in my curriculum.	①	②	③	④	⑤	⑥	⑦
14. The students admire their STARBASE Instructors.	①	②	③	④	⑤	⑥	⑦
15. The STARBASE curriculum supports our state standards.	①	②	③	④	⑤	⑥	⑦
16. The children enjoy sharing their STARBASE experiences with others.	①	②	③	④	⑤	⑥	⑦
17. Parents are delighted that their children are participating in STARBASE.	①	②	③	④	⑤	⑥	⑦
18. The students enjoyed being on a military base.	①	②	③	④	⑤	⑥	⑦

**Thank You!**

*Please mail to: ManTech-STC  
5904 Old Richmond Hwy, #600  
Alexandria, VA 22303  
Attn: DoD STARBASE*



PRE-POST FLIGHT QUESTIONNAIRE

**Pre-Flight and Post-Flight Questionnaire**

LAST 4-DIGITS OF PHONE NUMBER			
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

I am in grade:

1  
2  
3  
4  
5  
6  
7  
8  
9

I am age:

0 0  
1 1  
2  
3  
4  
5  
6  
7  
8  
9

I am a:  Boy  
 Girl

I have met military people before coming to STARBASE.  No  Yes

I know someone that went through STARBASE before.  No  Yes

For each statement, fill in True if you agree or fill in False if you disagree.

True False

- T  F 1. A team works together to achieve a common goal.
- T  F 2. Drinking alcohol may decrease our bodies' ability to do simple tasks.
- T  F 3. Matter does not take up space.
- T  F 4. The Earth is the closest planet to the sun.
- T  F 5. Negative actions may make it hard for you to reach your goals.
- T  F 6. Technology usually decreases in cost after many units are sold.

7. Using teamwork results in . . .
- A sharing of work among the team.
  - B one person doing all of the work.
  - C a lot of wasted effort by team members.
  - D poor quality of work being done.

8. Which of the following is NOT a team.
- A Fire Department
  - B Police Force
  - C McDonald's employees
  - D Wal-Mart customers

9. Which of the following is NOT one of the three states of matter?
- A air
  - B gas
  - C liquid
  - D solid

10. How thick is the earth's air?  
 (A) 10 miles  
 (B) 50 miles  
 (C) 100 miles  
 (D) 200 miles
11. Air presses down 15 pounds on every inch of our bodies. The reason we don't feel this pressure is  
 (A) The atmosphere cushions the weight of the air.  
 (B) Our bodies push out 15 pounds on every inch to equalize the pressure.  
 (C) We are inside a building, so we don't feel it.  
 (D) The air is thinner closer to the ground than up in space.

12. The air is composed mostly of what element?  
 (A) hydrogen  
 (B) helium  
 (C) chlorine  
 (D) nitrogen

Match each airplane component with the letters from the diagram below.

A. Where the pilot sits

B. Moves the airplane's nose left or right

C. Allows an airplane to climb or descend

D. Produces lift for the airplane

A B C D  
 (A) (B) (C) (D) 13. Cockpit  
 (A) (B) (C) (D) 14. Wing  
 (A) (B) (C) (D) 15. Elevator  
 (A) (B) (C) (D) 16. Rudder

Select the best answer by filling in the appropriate circle.

17. If you are landing an airplane in a city that is 5,000 feet above sea level what will your altimeter read when you are on the ground?  
 (A) 0 feet  
 (B) 500 feet  
 (C) 5,000 feet  
 (D) 1,000 feet

18. To move an airplane's nose to the left, you would move the . . .  
 (A) rudder right  
 (B) rudder left  
 (C) left flap  
 (D) right flap
19. One reason an airplane is able to gain lift is because the air moving across the top of the wing  
 (A) exerts less pressure than the air moving along the bottom.  
 (B) exerts more pressure than the air moving along the bottom.  
 (C) exerts the same amount of pressure as air moving along the bottom.  
 (D) does not exert any pressure on the wing.

Match each force of flight with the letters from the picture below.

A. Lift

B. Thrust

C. Gravity

D. Drag



A B C D  
 (A) (B) (C) (D) 20. Produced by air flow over the wings and the angle of the wing into the wind.  
 (A) (B) (C) (D) 21. Force that pulls an aircraft down.  
 (A) (B) (C) (D) 22. Forward movement produced by a propeller, jet, or rocket engine.  
 (A) (B) (C) (D) 23. Slows the forward movement of an aircraft.

24. What is Sir Isaac Newton's Law of Inertia?  
 (A) Unless acted upon by outside force, an object at rest will stay at rest and an object in motion will stay in motion.  
 (B) The more force given to an object, the more it will accelerate.  
 (C) The greater the mass of the object, the greater the force needed to accelerate it.  
 (D) For every action, there is an equal and opposite reaction.



25. If you threw two balls of different weight using the same amount of force the . . .
- (A) heavier ball would go the farthest.
  - (B) lighter ball would go the farthest.
  - (C) two balls would go the same distance.
  - (D) heavier ball would go twice as far as the lighter ball.
26. Our Solar System consists of how many planets?
- (A) 4
  - (B) 6
  - (C) 7
  - (D) 9
27. Which planet is the smallest of all planets and the farthest away from the sun?
- (A) Mercury
  - (B) Pluto
  - (C) Saturn
  - (D) Earth

28. The development of something new or improvement of something already existing is
- (A) gravity.
  - (B) inertia.
  - (C) technology.
  - (D) law.
29. If you have something you want to do, or something you want to be in life, you should
- (A) wish for it really hard in order to make it come true.
  - (B) watch other people on TV to see how they do it.
  - (C) do something everyday that will help you reach your goal.
  - (D) wait for someone to give you what you want.
30. Which of the following can destroy an individual's dreams ?
- (A) setting goals
  - (B) using illegal drugs
  - (C) obtaining an education
  - (D) practicing a skill

**What is your opinion?**

							
	Strongly Disagree	Disagree	Slightly Disagree	(?) Uncertain	Slightly Agree	Agree	Strongly Agree
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. I like math. . . . .	①	②	③	④	⑤	⑥	⑦
2. I am good at math. . . . .	①	②	③	④	⑤	⑥	⑦
3. I like science. . . . .	①	②	③	④	⑤	⑥	⑦
4. I am good at science. . . . .	①	②	③	④	⑤	⑥	⑦
5. I am good at following directions. . . . .	①	②	③	④	⑤	⑥	⑦
6. Learning is easy for me. . . . .	①	②	③	④	⑤	⑥	⑦
7. Learning can be fun. . . . .	①	②	③	④	⑤	⑥	⑦
8. You can learn a lot by trying things out. . . . .	①	②	③	④	⑤	⑥	⑦
9. I think I can graduate from High School. . . . .	①	②	③	④	⑤	⑥	⑦
10. Military people do lots of different things. . . . .	①	②	③	④	⑤	⑥	⑦
11. I set goals for myself. . . . .	①	②	③	④	⑤	⑥	⑦
12. I make good decisions. . . . .	①	②	③	④	⑤	⑥	⑦
13. I think I could grow up to be a STARBASE Instructor. . . . .	①	②	③	④	⑤	⑥	⑦
14. I can make my dreams come true. . . . .	①	②	③	④	⑤	⑥	⑦
15. You can accomplish a lot in a group. . . . .	①	②	③	④	⑤	⑥	⑦

What is your opinion?

							
	Strongly Disagree	Disagree	Slightly Disagree	(?) Uncertain	Slightly Agree	Agree	Strongly Agree
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
16. You can have fun working in a group. . . . .	①	②	③	④	⑤	⑥	⑦
17. I like to make a new things. . . . .	①	②	③	④	⑤	⑥	⑦
18. I think about what I want to be when I grow up. . . . .	①	②	③	④	⑤	⑥	⑦
19. I want to be like my STARBASE Instructor. . . . .	①	②	③	④	⑤	⑥	⑦
20. I am enjoying coming to a military base. . . . .	①	②	③	④	⑤	⑥	⑦
21. Military bases are cool. . . . .	①	②	③	④	⑤	⑥	⑦
22. I like to think of new ways to use things. . . . .	①	②	③	④	⑤	⑥	⑦

Post STARBASE							
23. At STARBASE, I learned a lot of things that I can use. . . . .	①	②	③	④	⑤	⑥	⑦
24. I would tell my friends to come to STARBASE. . . . .	①	②	③	④	⑤	⑥	⑦
25. STARBASE is boring. . . . .	①	②	③	④	⑤	⑥	⑦

Thank You!

**COMMANDER SURVEY**

**OVERVIEW**

Your input about the DoD STARBASE program will add important information on the effectiveness of the program that will be documented in the 2003 Annual Report to Congress. Your cooperation and timely response is appreciated – Thank you.

**SURVEY**

**Name:** (optional) \_\_\_\_\_

**Title/Position:** \_\_\_\_\_

(i.e. Base Commander, Wing Commander)

1. Please check the ways the STARBASE program has impacted your public/community relations.

- a. Increased public awareness of the role of the military in community services/affairs.
- b. Promoted a positive view of the military to the community.
- c. Provided a foundation for involving parents, teachers, and community leaders with the military.
- d. Increased the number of articles, public affairs promotions and media attention to the military's contribution to the students/community.
- e. No impact.
- f. Additional comments: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

2. In your view, which of the above has proved to be the most important to military/community relations? \_\_\_\_\_

3. Have you received any feedback from the community about the STARBASE program?

Yes \_\_\_ No \_\_\_ If yes, please explain. \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**COMMANDER SURVEY (CONTINUED)**

4. The STARBASE program benefits the members of your unit by providing (an):

- a. Opportunity to support a worthy cause.
- b. Outlet for community service.
- c. Additional experience in teaching and instruction.
- d. Opportunity for dependents to attend the program.
- e. Little or no benefit.
- f. Additional comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

5. Please check the ways in which the Military facility supports the STARBASE program.

- a. Facilities (classrooms and offices)
- b. All or some utilities
- c. Custodial/maintenance services
- d. Printing/reproduction
- e. LAN and computer support
- f. Administrative support
- g. Transportation
- h. Security
- i. Others (please specify) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

6. Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**MILITARY VOLUNTEER SURVEY**

**OVERVIEW**

Your input as a volunteer for the DoD STARBASE program will add important information on the effectiveness of the program that will be documented in the 2003 Annual Report to Congress. Your cooperation and timely response is essential - Thank you.

**SURVEY**

**Name:** (optional) \_\_\_\_\_

**Rank:** \_\_\_\_\_

**Branch of service:** \_\_\_\_\_

**STARBASE site:** \_\_\_\_\_

**Volunteer activity:** \_\_\_\_\_

(i.e., instructor, tour guide)

**Estimated hours committed in FY03:** \_\_\_\_\_

(Oct. 1, 2002 – Sept. 30, 2003)

1. Does STARBASE influence the community's perception of the military?

Yes \_\_\_ No \_\_\_ If yes, please explain. \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

2. How has your volunteer work with the STARBASE program affected you?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**MILITARY VOLUNTEER SURVEY (CONTINUED)**

3. Is the military making a difference in the community through the STARBASE program?

Yes \_\_\_ No \_\_\_ If yes, in what ways? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

4. What feedback, if any, have you received about STARBASE from the community and/or other military personnel?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

5. What feedback, if any, have you received from the students that you served at STARBASE?

\_\_\_\_\_  
\_\_\_\_\_

6. If available, will you volunteer your time in the future? Yes \_\_\_ No \_\_\_

7. Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



## **Appendix C**

### **DoD STARBASE ACADEMIES**

<b>DIRECTORY OF DoD STARBASE ACADEMIES .....</b>	<b>C-3</b>
<b>DoD STARBASE ACADEMIES TIME LINE .....</b>	<b>C-7</b>
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### DIRECTORY OF DOD STARBASE ACADEMIES

State	City	Military Installation	Director	Director E-Mail	Phone	Mailing Address
Alaska	Anchorage	National Guard Training Site, Fort Richardson	Andrea Owdom	<a href="mailto:aowdom@ngchak.org">aowdom@ngchak.org</a>	(907) 384-6351 fax: 6350	STARBASE Alaska Camp Carroll, Bldg 60730 P.O. BOX 5185 Fort Richardson, AK 99505-0185
California	Sacramento	California Army National Guard Armory	Lt Col Tom Edwards	<a href="mailto:castarbase@sbcglobal.net">castarbase@sbcglobal.net</a>	(916) 387-7405 fax: 8309	California STARBASE 8400 Okinawa Street, Suite 1 Sacramento, CA 95828-0904
California	San Diego	Navy Fleet Training Center	Nicholas Jordon	<a href="mailto:Nicholas.Jordon@navy.mil">Nicholas.Jordon@navy.mil</a>	(619) 556-7589 fax: 9310	STARBASE ATLANTIS Building 3411, Room 209 Fleet Training Center 3975 Norman Scott Road San Diego, CA 92136-5589
Connecticut	Hartford	Connecticut Air National Guard Base	Bob Gillanders	<a href="mailto:Bobcms86@aol.com">Bobcms86@aol.com</a>	(860) 728-0090 fax: 3293	STARBASE Warthog 251 Maxim Road Hartford, CT 06114-1607
Connecticut	Waterbury	Army National Guard	Bob Gillanders	<a href="mailto:Bobcms86@aol.com">Bobcms86@aol.com</a>	(860) 728-0090	STARBASE Warthog – Waterbury 269 Maxim Road Hartford, CT 06114
District of Columbia	Washington	Naval District of Washington	Judy Kalish	<a href="mailto:Kalish.Judith@ndw.navy.mil">Kalish.Judith@ndw.navy.mil</a>	(202) 433-0531	STARBASE ATLANTIS 645 Rickover Street, SE, Suite 102 Washington Navy Yard, DC 20374-5001
Florida	Jacksonville	Florida Air National Guard Base	Sydney Watson	<a href="mailto:starbasefl@aol.com">starbasefl@aol.com</a>	(904) 741-3014 fax: 3011	STARBASE Florida, Inc. 14300 FANG Drive Jacksonville, FL 32218-7933
Florida	Pensacola	Naval Air Station Pensacola Naval Air Station Whiting Field	Donna Eichling	<a href="mailto:deichling@aol.com">deichling@aol.com</a>	(850) 452-8287	STARBASE ATLANTIS Code 00K 6490 Saufley Field Road Pensacola, FL 32509-5241
Georgia	Atlanta	Dobbins Air Force Base	Bill Wells	<a href="mailto:Bill.wells@ga.ngb.army.mil">Bill.wells@ga.ngb.army.mil</a>	(678) 575-5905	STARBASE Georgia 1388 1st Street Bldg 840, Finch Building Dobbins AFB, GA 30069-5007
Georgia	Warner Robins	Robins Air Force Base	Wesley Fondal, Jr.	<a href="mailto:wfondal@earthlink.net">wfondal@earthlink.net</a>	(478) 926-1769	STARBASE Robins 1941 Heritage Boulevard Robins AFB, GA 31098-2442
Hawaii	Pearl Harbor	Naval Submarine Training Center Pacific	Crystal Trujillo	<a href="mailto:crystal.trujillo@cnet.navy.mil">crystal.trujillo@cnet.navy.mil</a>	(808) 472-9965	STARBASE ATLANTIS Naval Submarine Training Center, Pacific (NSTCP) 1130 Bole Street Pearl Harbor, HI 96860-4437

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State	City	Military Installation	Director	Director E-Mail	Phone	Mailing Address
Illinois	Great Lakes	Naval Training Center	Vacant Contact: Steve Mustain	<a href="mailto:Steven.mustain@cnet.navy.mil">Steven.mustain@cnet.navy.mil</a>	(850) 452-1001	STARBASE ATLANTIS 2417 Paul Jones Street, Room 114, Bldg 837, Naval Station Great Lakes, IL 60088-2934
Kansas	Topeka	Forbes Field Air National Guard Base	Jeff Gabriel	<a href="mailto:Jeff.Gabriel@kstope.ang.af.mil">Jeff.Gabriel@kstope.ang.af.mil</a>	(785) 274-1480 fax: 1631	STARBASE Kansas State Defense Building 2800 SW Topeka Boulevard Topeka, KS 66611-1287
Kansas	Wichita	McConnell Air Force Base	Jeff Gabriel	<a href="mailto:Jeff.Gabriel@kstope.ang.af.mil">Jeff.Gabriel@kstope.ang.af.mil</a>	(785) 274-1480 fax: 1631	STARBASE Kansas State Defense Building 2800 SW Topeka Boulevard Topeka, KS 66611-1287
Louisiana	Barksdale AFB	Barksdale Air Force Base	Sheila Schencke	<a href="mailto:sheila.schencke@barksdale.af.mil">sheila.schencke@barksdale.af.mil</a>	(318) 456- 1315/1300 fax: 1151	STARBASE Louisiana 917 WG/STARBASE 1000 Davis Avenue East Barksdale AFB, LA 71110-2286
Louisiana	New Orleans	Louisiana Military Department, Jackson Barracks	Cheryl Arbour	<a href="mailto:arbourc@la-arng.ngb.army.mil">arbourc@la-arng.ngb.army.mil</a>	(504) 278-6603 fax: 6599	Pelican State STARBASE Bldg 104, Jackson Barracks New Orleans, LA 70146-3330
Maine	Bangor	Maine Air National Guard Base	Charles Parker	<a href="mailto:charles.parker@mebngr.ang.af.mil">charles.parker@mebngr.ang.af.mil</a>	(207) 990-7505 fax: 7150	STARBASE Maine 105 Maineiac Avenue, Suite 510 Bangor, ME 04401
Michigan	Detroit	Selfridge Air National Guard Base	Barbara Koscak	<a href="mailto:mistarbase@aol.com">mistarbase@aol.com</a>	(586) 307-4884 fax: 5751 DSN 273-4884	STARBASE Detroit PO Box 450082 27310 D Street Selfridge ANG Base, MI 48045-0082
Michigan	Selfridge	Selfridge Air National Guard Base	Barbara Koscak	<a href="mailto:mistarbase@aol.com">mistarbase@aol.com</a>	(586) 307-4884 fax: 5751 DSN 273-4884	STARBASE One PO Box 450082 27310 D Street Selfridge ANG Base, MI 48045-0082
Minnesota	St Paul	Minneapolis/St Paul Air National Guard Base	Kim Van Wie	<a href="mailto:kvanwie@starbasemn.org">kvanwie@starbasemn.org</a>	(612) 713-2530 fax: 2540 DSN 783-2540	STARBASE MN, Inc. c/o MN ANG 659 Mustang Avenue St Paul, MN 55111-4128
Mississippi	Gulfport	Naval Construction Training Center	Shelley Bard	<a href="mailto:Shelley.bard@cnet.navy.mil">Shelley.bard@cnet.navy.mil</a>	(228) 871-3466 fax: 3468	STARBASE ATLANTIS Naval Construction Training Center 5510 CBC 8th Street Gulfport, MS 39501-9040
Mississippi	Meridian	Naval Air Station/Choctaw Indian Reservation	Gordon Harman	<a href="mailto:Gordon.Harman@cnet.navy.mil">Gordon.Harman@cnet.navy.mil</a>	(601) 679-3809 fax: 3812	STARBASE ATLANTIS Naval Air Station 2626 Rosenbaum Avenue, Bldg 266 Meridian, MS 39309-0001

State	City	Military Installation	Director	Director E-Mail	Phone	Mailing Address
Nebraska	Lincoln	Nebraska National Guard Base	Chuck Lewis	<a href="mailto:chuck_lewis@alltel.net">chuck_lewis@alltel.net</a>	(402) 309-1044 fax: 1045	STARBASE Nebraska Room 201 Penteman Armory 2400 NW 24th Street Lincoln, NE 68524-1892
New Mexico	Albuquerque	Kirtland Air Force Laboratory	Gerald Mora	<a href="mailto:Gerald.mora@kirtland.af.mil">Gerald.mora@kirtland.af.mil</a>	(505) 846-6936	STARBASE La Luz 3550 Aberdeen Avenue, SE Kirtland AFB, NM 87117-5748
North Carolina	Charlotte	North Carolina Air National Guard	Barbara Miller	<a href="mailto:starnc@bellsouth.net">starnc@bellsouth.net</a>	(704) 398-4819 fax: 4822	STARBASE North Carolina 145th AW, 5225 Morris Field Dr Charlotte, NC 28208-5797
Oklahoma	Oklahoma City	Will Rogers Air National Guard Base	Bill Scott	<a href="mailto:Bill.scott@oktuls.ang.af.mil">Bill.scott@oktuls.ang.af.mil</a>	(918) 833-7757 fax: 7769 DSN 894-7757	STARBASE Oklahoma, Inc. 138 Fighter Wing 4200 N. 93rd East Avenue Tulsa, OK 74115-1699
Oklahoma	Tulsa	Tulsa Air National Guard Base/Native American Initiative	Bill Scott	<a href="mailto:Bill.scott@oktuls.ang.af.mil">Bill.scott@oktuls.ang.af.mil</a>	(918) 833-7757 fax: 7769 DSN 894-7757	STARBASE Oklahoma, Inc. 138 Fighter Wing 4200 N. 93rd East Avenue Tulsa, OK 74115-1699
Oregon	Klamath Falls	Kingsley Field Air National Guard Base	Marsha Beardslee	<a href="mailto:starbase@earthlink.net">starbase@earthlink.net</a>	(541) 885-6472	STARBASE Oregon 173 FW/STARBASE 302 Bong Street, Suite 19 Klamath Falls, OR 97603
Oregon	Portland	Jackson Army National Guard Armory Portland Air National Guard Base	Marilyn Sholian	<a href="mailto:msholian@pps.k12.or.us">msholian@pps.k12.or.us</a>	(503) 916-3142 fax: 2474	STARBASE Oregon 8020 N.E. Tillamook Street Portland, OR 97213-6655
Pennsylvania	Boswell	Johnstown US Marine Corp Base	Brandon Jones	<a href="mailto:Brandon@outdoorodyssey.org">Brandon@outdoorodyssey.org</a>	(814) 629-6516 fax: 9172	STARBASE Pennsylvania 450 Boy Scout Road Boswell, PA 15531-1952
Pennsylvania	Pittsburgh	Navy and Marine Corps Reserve Center	Earl Morse	<a href="mailto:starbase.earl.morse@adelphia.net">starbase.earl.morse@adelphia.net</a>	(412) 672-4890 x135 fax: 4894	STARBASE ATLANTIS N&MC Reserve Center 625 Pittsburgh McKeesport Port Blvd. North Versailles, PA 15137-2267
Puerto Rico	Carolina	Muniz Air National Guard Base	Idabelles Matos	<a href="mailto:starbase@prsanj.ang.af.mil">starbase@prsanj.ang.af.mil</a>	(787) 253-7502 fax: 2513 DSN 860-9502	STARBASE Puerto Rico Muniz ANGB 200 Carr Sector Central Carolina, PR 00979-1514
Rhode Island	Newport	Naval Station Newport RI	Vacant Contact: Steve Mustain	<a href="mailto:Steven.mustain@cnet.navy.mil">Steven.mustain@cnet.navy.mil</a>	(850) 452-1001 ext 1604	STARBASE ATLANTIS Building 440 Naval Station Newport, Rhode Island 20841
South Carolina	Beaufort	Marine Corps Air Station	Wendell Roberson	<a href="mailto:robby@islc.net">robby@islc.net</a>	(843) 524-1320 fax: 1326	STARBASE Beaufort Marine Corps Air Station, Bldg 660 P.O. Box 55013 Beaufort, SC 29904-5013

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State	City	Military Installation	Director	Director E-Mail	Phone	Mailing Address
South Carolina	Columbia	McEntire Air National Guard Station	Jim Prater	<a href="mailto:praterje@tag.scmd.state.sc.us">praterje@tag.scmd.state.sc.us</a>	(803) 576-1740	STARBASE Swamp Fox 1 National Guard Road Columbia, SC 29201-4752
South Dakota	Rapid City	Camp Rapid and Ellsworth Air Force Base	Judy Gorman	<a href="mailto:starbase@sd.ngb.army.mil">starbase@sd.ngb.army.mil</a>	(605) 737-6083 fax: 6082	STARBASE Black Hills Attn: Judy Gorman 1212 Mountain Springs Lane Rapid City, SD 57702-0273
South Dakota	Sioux Falls	South Dakota Air & Army National Guard/Project NOVA	Susan Garrett	<a href="mailto:sdskyking@hotmail.com">sdskyking@hotmail.com</a>	(605) 367-4930 fax: 4926	STARBASE South Dakota 801 W. National Guard Drive Sioux Falls, SD 57104-0116
Texas	Houston	Ellington Field	Gail Whittemore-Smith	<a href="mailto:Gail.whittemore@txelli.ang.af.mil">Gail.whittemore@txelli.ang.af.mil</a>	(281) 929-2034 fax: 2036 DSN 454-2034	STARBASE Texas 14657 Sneider Street, Bldg 1055 Houston, TX 77034-5586
Texas	San Antonio	Lackland Air Force Base	Ron Jackson	<a href="mailto:starbase@stic.net">starbase@stic.net</a>	(210) 925-3708 fax: 3702 DSN 945-3708	STARBASE Kelly 203 Galaxy Road, Suite 112 Lackland AFB, TX 78236-0112
Vermont	Rutland	Rutland Armory	Douglas Gilman	<a href="mailto:Douglas.gilman@vtburl.ang.af.mil">Douglas.gilman@vtburl.ang.af.mil</a>	(802) 660-5201 fax: 5940 DSN 220-5201	STARBASE Vermont Vermont ANG 105 NCO Drive South Burlington, VT 05403-5873
Vermont	South Burlington	Vermont Air National Guard Base	Douglas Gilman	<a href="mailto:Douglas.gilman@vtburl.ang.af.mil">Douglas.gilman@vtburl.ang.af.mil</a>	(802) 660-5201 fax: 5940 DSN 220-5201	STARBASE Vermont Vermont ANG 105 NCO Drive South Burlington, VT 05403-5873
Virginia	Norfolk	Navy Fleet Training Center	Gary McGowan	<a href="mailto:Gary.mcgowan@cnet.navy.mil">Gary.mcgowan@cnet.navy.mil</a>	(757) 445-5905 fax: 2624	STARBASE ATLANTIS Fleet Training Center Building N-25, Room 2102 9549 Bainbridge Avenue Norfolk, VA 23511-2594
Washington	Bangor	Navy Trident Training Facility	Joseph Barrett	<a href="mailto:Joseph.p.barrett@cnet.navy.mil">Joseph.p.barrett@cnet.navy.mil</a>	(360) 315-2618	STARBASE ATLANTIS 2000 Thresher Avenue, Room D222 Code 00K4 Silver Dale, WA 98315-2000
West Virginia	Charleston	West Virginia Air National Guard Base	COL Dennis Christian	<a href="mailto:Dennis.Christian@wv.ngb.army.mil">Dennis.Christian@wv.ngb.army.mil</a>	(304) 561-6357 fax: 6377	WV STARBASE Academy 1701 Coonskin Drive Charleston, WV 25311-1025
West Virginia	Martinsburg	West Virginia Air National Guard Base	CPT David Frush	<a href="mailto:David.Frush@wvmart.ang.af.mil">David.Frush@wvmart.ang.af.mil</a>	(304) 262-5501 fax: 5111 DSN 242-9501	Martinsburg STARBASE c/o 167th Airlift Wing 222 Sabre Jet Boulevard, Room 104 Martinsburg, WV 25401-7704
Wyoming	Cheyenne	Wyoming Air National Guard Base	David Orr	<a href="mailto:davido@starbasewy.org">davido@starbasewy.org</a>	(307) 772-6161 fax: 6017 DSN 943-6161	STARBASE Wyoming 217 Dell Range Boulevard Cheyenne, WY 82009-4792

**DoD STARBASE ACADEMIES TIME LINE**

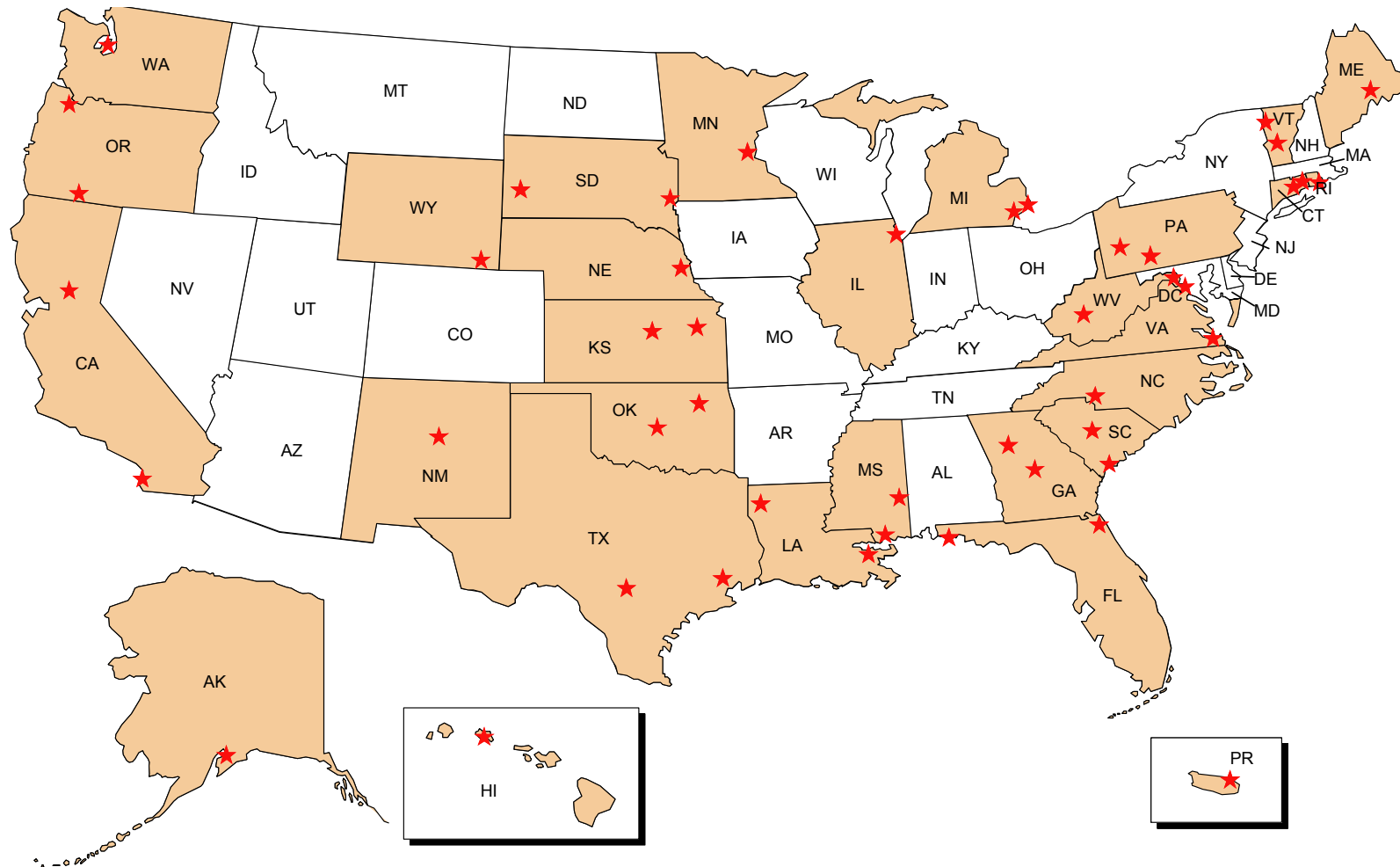
1989	1993	1994	1995
Michigan, Selfridge *	California, Sacramento Kansas, Topeka/ Wichita Minnesota, St. Paul North Carolina, Charlotte Oklahoma, Tulsa Oregon, Portland/Klamath Falls	Florida, Jacksonville Florida, Pensacola Iowa, Johnston ** South Dakota, Sioux Falls Texas, Houston Vermont, South Burlington Wyoming, Cheyenne	Puerto Rico, Carolina Texas, San Antonio Virginia, Norfolk
1996	1998	1999	2000
Georgia, Warner Robins	California, San Diego	Louisiana, Barksdale Louisiana, New Orleans South Carolina, Beaufort	Kansas, Wichita*** Michigan, Detroit Oregon, Klamath Falls*** Pennsylvania, Boswell Vermont, Rutland
2001	2002	2003	
Connecticut, Hartford DC, Washington Georgia, Atlanta Hawaii, Pearl Harbor Illinois, Great Lakes Maine, Bangor Mississippi, Gulfport Oklahoma, Oklahoma City South Carolina, Columbia Washington, Silver Dale West Virginia, Charleston	Alaska, Anchorage Mississippi, Meridian Nebraska, Lincoln Pennsylvania, Pittsburgh Rhode Island, Newport South Dakota, Rapid City West Virginia, Martinsburg	New Mexico, Albuquerque Connecticut, Waterbury	

\* Initial pilot program site with grant from the Kellogg Foundation

\*\* Iowa was officially terminated at the end of FY 2002 in accordance with the November 21, 2001 OASD/RA Memorandum

\*\*\* January 2000 OASD/RA identified sites in Kansas and Oregon as separate STARBASE Academies

DoD STARBASE ACADEMY LOCATIONS



- 46 STARBASE Academies in 28 states, the District of Columbia, and Puerto Rico
- SD, MS, and OK provide STARBASE program to American Indians as part of DoD Outreach Initiative
- 2 new STARBASE Academies were established:
  - NM, CT (2nd Site)

FY 2003 **DoD STARBASE** LOCATIONS