SAN DIEGO ACADEMY

JROTC STEM LEADERSHIP ACADEMY

CADET IMPACT REPORT 2024

The **JROTC STEM Leadership Academy** is a six-day residential summer camp that helps meet today's workforce needs by engaging a diverse population of high school students—JROTC Cadets going into 9th-12th grades—in activities that open pathways to STEM learning and careers.

The Academy seeks to increase Cadet awareness of local high-paying, in-demand STEM career opportunities and their understanding about what it takes to secure these jobs. To do this, the Academy integrates several activities aimed at informing JROTC Cadets about STEM jobs, piquing their interest to pursue these jobs, giving them hands-on application of STEM concepts in a team setting, and developing 21st century workforce skills.

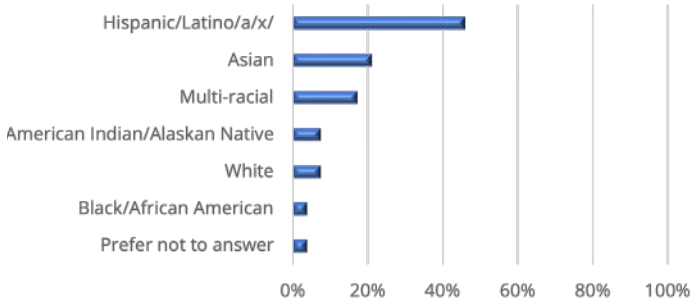
The 2024 San Diego Academy in California focused on the aviation industry and a related STEM-in-the-Air curriculum, in which Cadets investigated STEM concepts using paper airplanes and foam gliders while completing missions of increasing complexity. Cadets then applied the concepts to design, build, and test wings on a motorized, single-propeller, tethered model airplane.

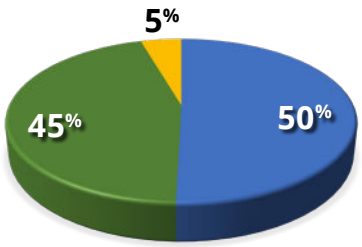
ACTIVITIES

- STEM Design Challenges
- Visits to Industries, Colleges/Universities, and Educational Venues
- JROTC Cadet Leadership Challenge Activities
- Inspirational Guest Speakers

10 HIGH SCHOOLS | **133** CADETS

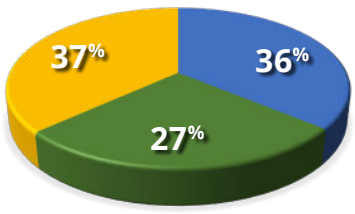
2024 SAN DIEGO ACADEMY CADETS BY RACE/ETHNICITY





CADETS BY GENDER

- Male
- Female
- Prefer not to say



CADETS BY GRADE

- 9
- 10
- 11

How did CADETS respond to teamwork experiences?

"Our team agreed that we needed to think more critically as a group and speak our opinions. We were able to come to a consensus in times of challenging circumstances and evenly divide our work amongst the group."

9TH GRADER
SAN DIEGO HIGH SCHOOL

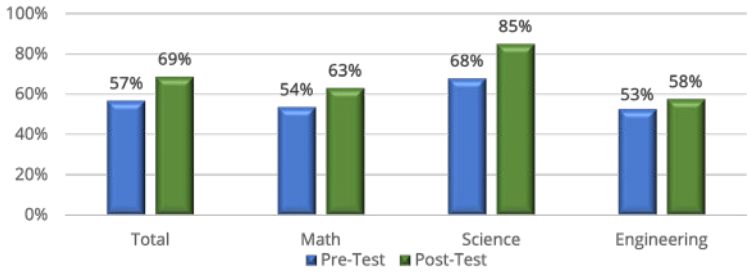
The JROTC STEM Leadership Academy engaged Cadets in developing and valuing skills in teamwork, communication, and leadership needed to be successful contributors and collaborators. Carefully structured activities designed to do this included:

- Winning Colors® Personality Assessment
- Team Building Activities
- STEM Design Challenges
- JROTC Fitness Challenges and Sports Nights

STEM-in-the-Air Team Design Challenge

Academy Cadets applied concepts for principles of flight, force vectors, proportional reasoning, and aspect ratio, as well as the engineering design process during their team design challenges. Pre- and post-assessment results indicated that Cadets at the San Diego Academy achieved statistically significant gains in STEM content knowledge overall, with gains in math and science being greatest.

2024 SAN DEIGO CADETS' CORRECT ANSWERS TO STEM CONTENT QUESTIONS



"We made planes powered by small propellers go around poles, and we had to make the wings ourselves, which showed us how the shape of the wings affected the way it flew."

9TH GRADER
SAN DIEGO HIGH SCHOOL

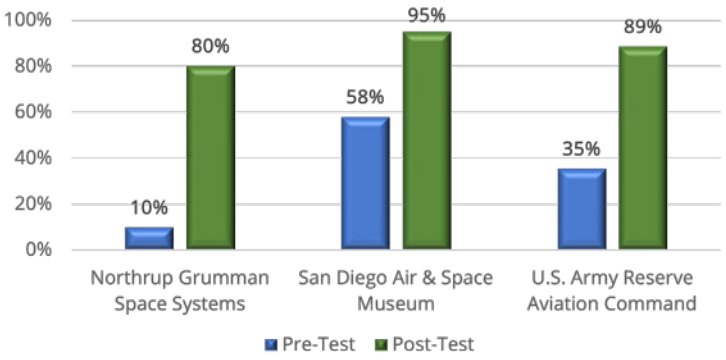
"At Northrop Grumman, we got to see up close and touch a lot of space equipment. My favorite part was getting to see the reflectors used on the James Webb space telescope. It's a really impressive innovation, and I got to talk to people who worked on them."

11TH GRADER, KEARNY HIGH SCHOOL

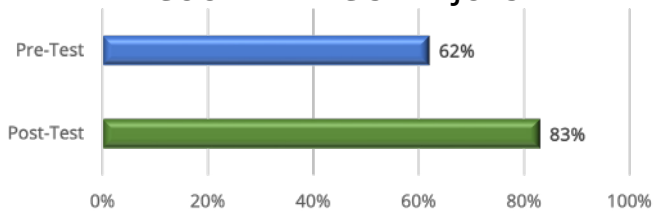
Industry Site Visits

To raise Cadets' awareness of how STEM is used in the aviation industry, the 2024 San Diego Academy arranged visits to Northrup Grumman Space Systems, San Diego Air & Space Museum, and the U.S. Army Reserve Aviation Command. Cadets heard from human resource personnel about hiring requirements, traits and skills needed, training programs offered, and salaries for local, high-demand STEM jobs.

2024 SAN DIEGO CADETS ABLE TO DESCRIBE INDUSTRY/CENTER



2024 SAN DIEGO CADETS AWARE OF LOCAL, GOOD-PAYING STEM JOBS



Educational Experiences

San Diego Academy Cadets got a taste of campus life while residing at University of San Diego. Five guest speakers inspired Cadets with personal stories of perseverance and commitment. The Academy welcomed Brigadier General Christopher W. Cook, Deputy Commanding - Support for the 63rd Readiness Division, who discussed with Cadets the Army's commitment to leadership development, community service initiatives, and role in preparing future leaders.

HOW WILL 2024 SAN DIEGO CADETS USE ACADEMY EXPERIENCES IN THE FUTURE?

"I found the talk with our General very inspirational. He gave us a lot of useful advice that I will use throughout my life."

11TH GRADER, CRAWFORD HIGH SCHOOL

What are the CADETS Saying?

"We did team building for the zipline and obstacle course to get comfortable with each other and learned effective communication methods. It was fun, and I wouldn't have gotten to do this without being part of this program."

10TH GRADER
HERBERT HOOVER HIGH SCHOOL

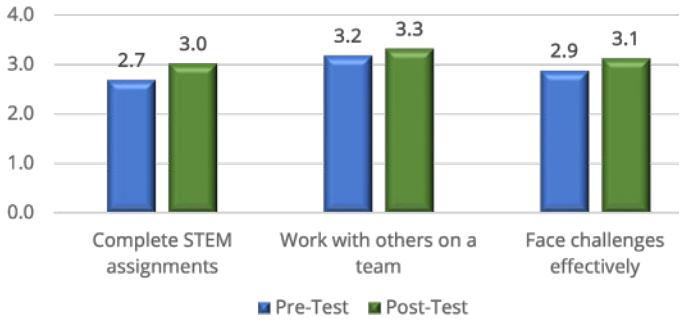
JROTC Cadet Leadership Challenge Activities

The foundation of the Academy lies in the JROTC culture and character education curriculum. Cadets who attended the Academy received additional exposure to that curriculum and culture by participating in several JROTC activities, including:

- Rappelling
- Drownproofing
- Land Navigation
- High Ropes Course

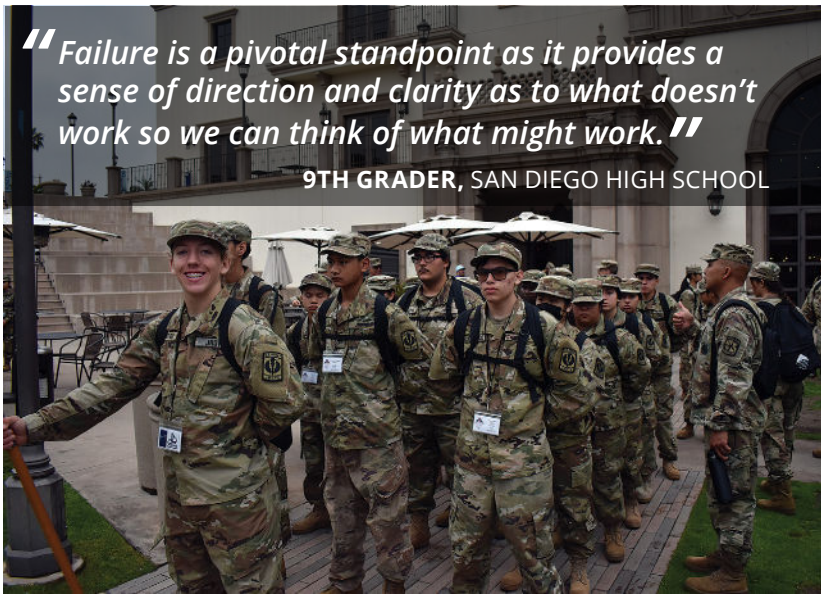
Forty-eight percent of San Diego Academy Cadets stated in their journal reflections that their most favorite part of the Academy was the JROTC activities. Combining JROTC challenge activities and STEM design challenges resulted in linked experiences that helped build academic, team, and leadership skills.

2024 SAN DIEGO CADETS' BELIEF IN THEIR ABILITY TO...



Overall Conclusions

Based on the analysis of quantitative and qualitative data collected, the 2024 San Diego JROTC STEM Leadership Academy increased a diverse group of Cadets' awareness of and interest in local STEM career opportunities and increased their confidence in being able to enter a STEM career field. Cadets made gains in math, science, and engineering knowledge and experienced working with technology, which increases the likelihood they will succeed in STEM courses and careers. Cadets gained skills in teamwork, leadership, communication, and other 21st century workforce skills, and experienced growth in social skills, confidence, and personal responsibility. All combined, the Academy provided experiences that opened pathways to STEM learning and careers.



center for STEM Education

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EOE/F/M/VETS/DISABILITY