PIKE COUNTY/WIREGRASS
REGION ACADEMY

JROTC STEM
LEADERSHIP
ACADEMY

CADET IMPACT REPORT 2023

The **JROTC STEM Leadership Academ**y 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 in their understanding about what it takes to secure these jobs. To do this, the Academy integrates several activities that inform JROTC Cadets about STEM jobs, pique their interest to pursue these jobs, give them hands-on application of STEM concepts in a team setting, and develop 21st Century workforce skills.

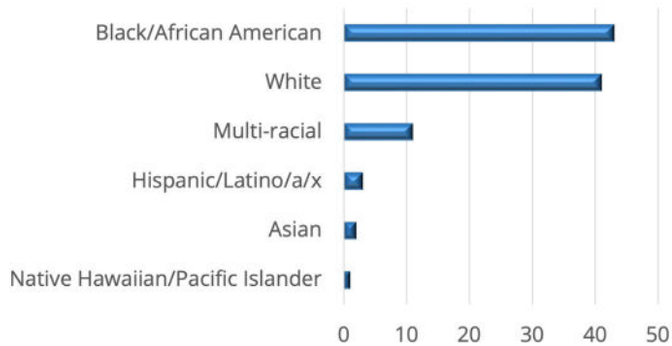
In 2023, the Academy focused on Advanced Manufacturing industries and related STEM on the Ground curriculum, in which Cadets designed, built, and tested remote-controlled, multi-purpose robots that completed several missions, each with increasing complexity.

ACTIVITIES

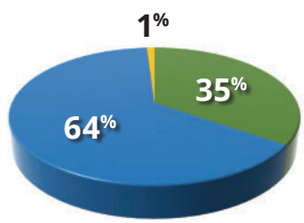
- STEM Design Challenges
- Visits to Industries, Colleges/Universities, and Educational Venues
- JROTC Cadet Leadership Challenge Activities
- Inspirational Guest Speakers

13 HIGH SCHOOLS | **98** CADETS

PERCENT ACADEMY CADETS BY RACE/ETHNICITY

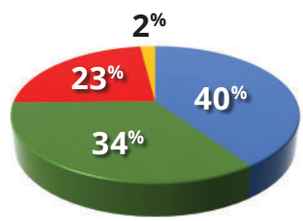


CADETS BY GENDER



- Male
- Female
- Prefer not to say

CADETS BY GRADE



9 10 11 12

The JROTC STEM Leadership Academy engaged Cadets in developing and valuing teamwork, communication, and leadership skills 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

How did Cadets respond to teamwork experiences?

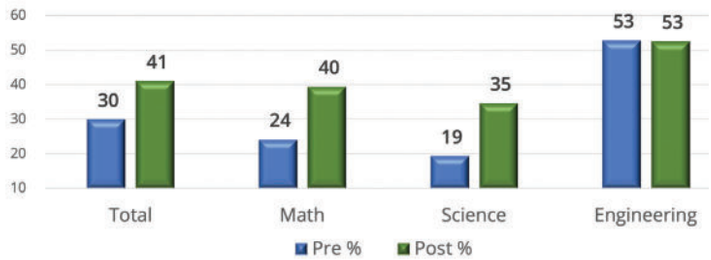
"At the beginning when others tried to voice their ideas, I wanted to stick to mine as I thought it was the right way. At the week's end when one team member gave an idea, I readily agreed to try it out. Their idea worked very well and allowed us to complete our challenge."

11TH GRADER
BOB JONES HIGH SCHOOL

STEM on the Ground Team Design Challenge

Academy Cadets applied the STEM concepts of Simple and Complex Machines, Gear and Gear Ratios, Inverse Relationships (lifting force versus speed), and the Engineering Design Process during their team design challenges. Pre- and post-assessment results indicated that cadets achieved statistically significant gains in STEM content knowledge overall, with gains in math and science being greatest.

CADET CORRECT ANSWERS TO STEM CONTENT QUESTIONS



"Building a robot, you're proud of yourself after struggling to get those little gears into the wheels. You wanna give up, but you don't. And then when you get done, it's like, 'Dang, I just built that!'"

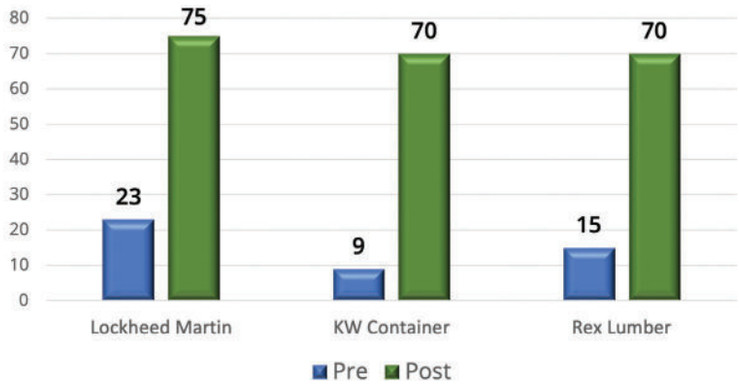
ACADEMY CADET
PIKE COUNTY/WIREGRASS REGION

Industry Site Visits

To raise Cadet awareness of how STEM is used in the region's manufacturing industry, the Academy arranged visits to Lockheed Martin, KW Container, Rex Lumber, and Alabama Aviation College. Cadets heard from human resource personnel about hiring requirements, key traits needed, training programs offered, and salaries of high-demand jobs from technicians to engineers.

Results from pre- and post-assessments showed that Cadets' awareness of and interest in local STEM jobs increased. At the end of the Academy, 53% of Cadets strongly agreed that there are good-paying local STEM jobs compared to 26% of Cadets at the beginning of the Academy.

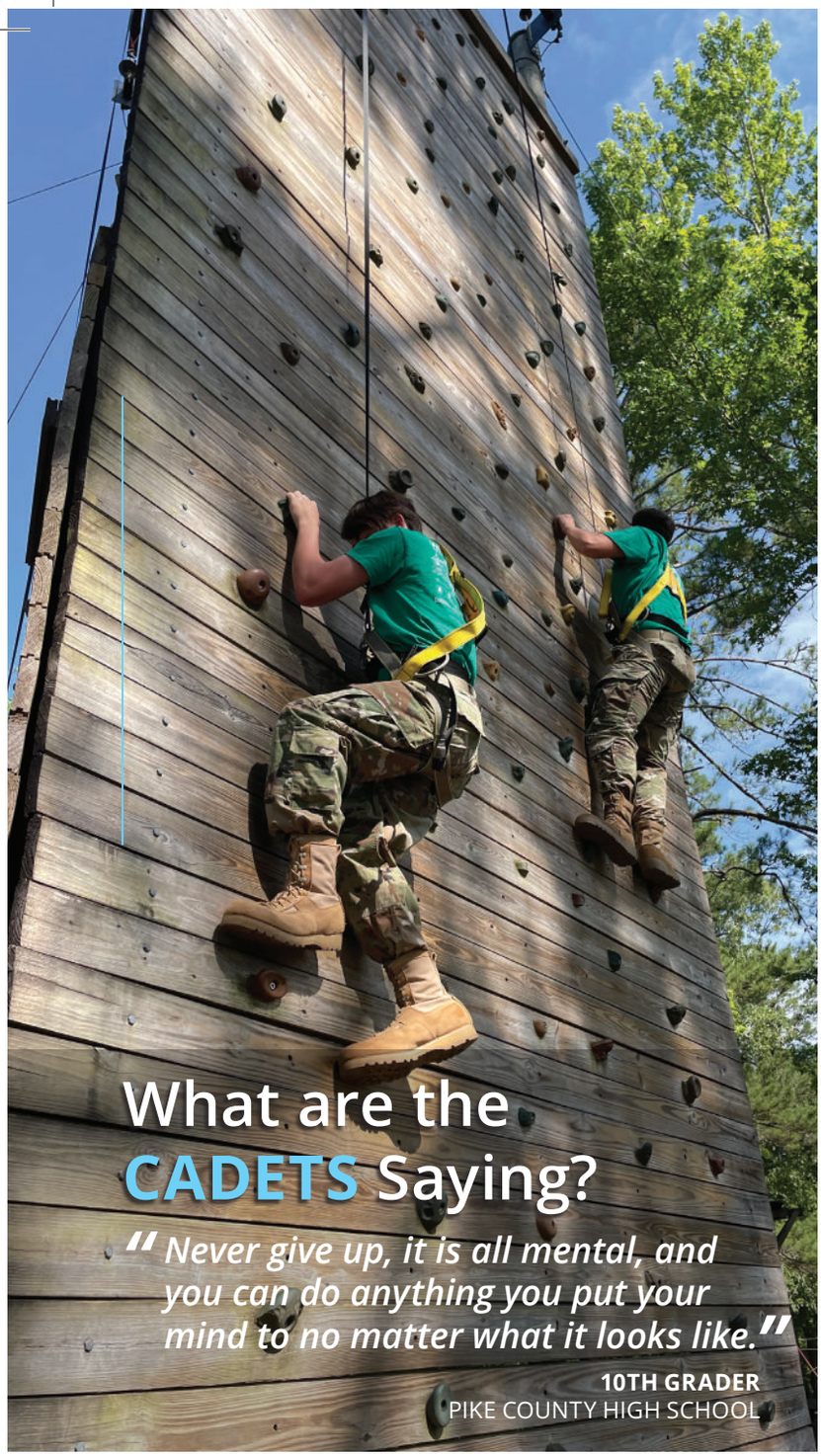
NUMBER OF CADETS ABLE TO DESCRIBE INDUSTRY



Educational Field Trips

Cadets resided at Troy University, giving them a taste of campus life, and visited Enterprise State Community College. Staff at both schools gave information about expectations, fields of study, student support, and enrollment.

HOW WILL ACADEMY EXPERIENCES HELP CADETS IN THE FUTURE?



What are the CADETS Saying?

"Never give up, it is all mental, and you can do anything you put your mind to no matter what it looks like."

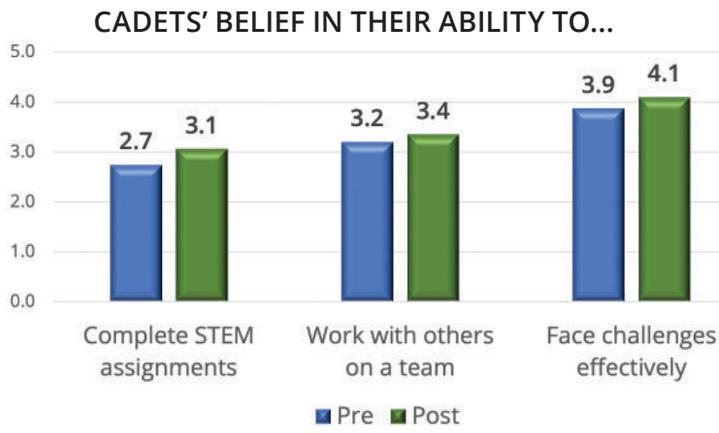
10TH GRADER
PIKE COUNTY HIGH SCHOOL

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 activities:

- Drownproofing
- Land Navigation
- Drill and Ceremony
- Physical Training

Fifty percent of 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.



Overall Conclusions

Based on the analysis of quantitative and qualitative data collected, the 2023 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 and science knowledge and in experience working with technology, which increases the likelihood they will succeed in STEM courses and careers. Cadets achieved gains in teamwork, leadership, communication, and other 21st Century workforce skills and experienced growth in confidence, courage, and personal responsibility. All combined, the Academy provided experiences that opened pathways to STEM learning and careers.

center STEM Education

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EOE/F/M/VETS/DISABILITY