PIKE COUNTY/WIREGRASS REGION 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.

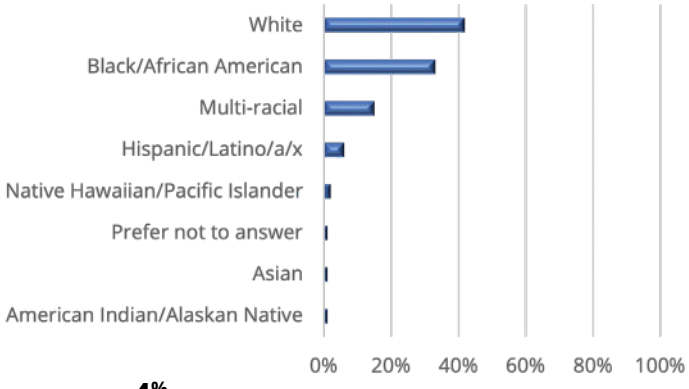
The 2024 Pike County/Wiregrass Region Academy in Alabama focused on the aviation industry and a related STEM-in-the-Air curriculum, in which Cadets investigated STEM concepts using paper airplanes and foam gliders while completing missions of increasing complexity. Cadets then applied the concepts to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

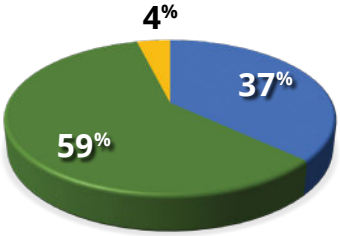
ACTIVITIES

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

18 HIGH SCHOOLS I **98** CADETS

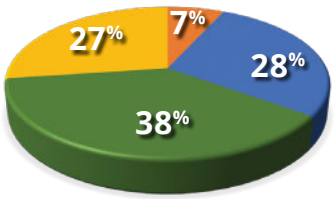
2024 PIKE COUNTY/WIREGRASS REGION ACADEMY CADETS BY RACE/ETHNICITY





CADETS BY GENDER

- Male
- Female
- Prefer not to say



CADETS BY GRADE

- 8
- 9
- 10
- 11

How did CADETS respond to teamwork experiences?

"When I was designing a wing for the plane, it frustrated me so much that I started giving up. Luckily my teammates had my back, and we were able to design a good wing."

10TH GRADER
GREENVILLE HIGH SCHOOL

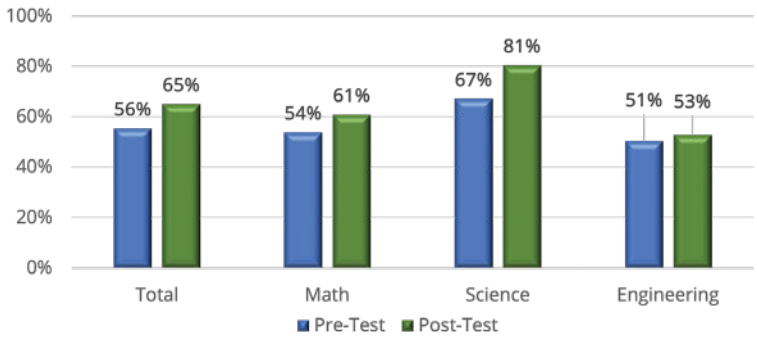
The JROTC STEM Leadership Academy engaged Cadets in developing and valuing skills in teamwork, communication, and leadership needed to be successful contributors and collaborators. Carefully structured activities designed to do this included:

- 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 2024 Pike County/Wiregrass Region Academy achieved statistically significant gains in STEM content knowledge overall, with gains in math and science being greatest.

2024 PIKE COUNTY/WIREGRASS REGION CADETS' CORRECT ANSWERS TO STEM CONTENT QUESTIONS

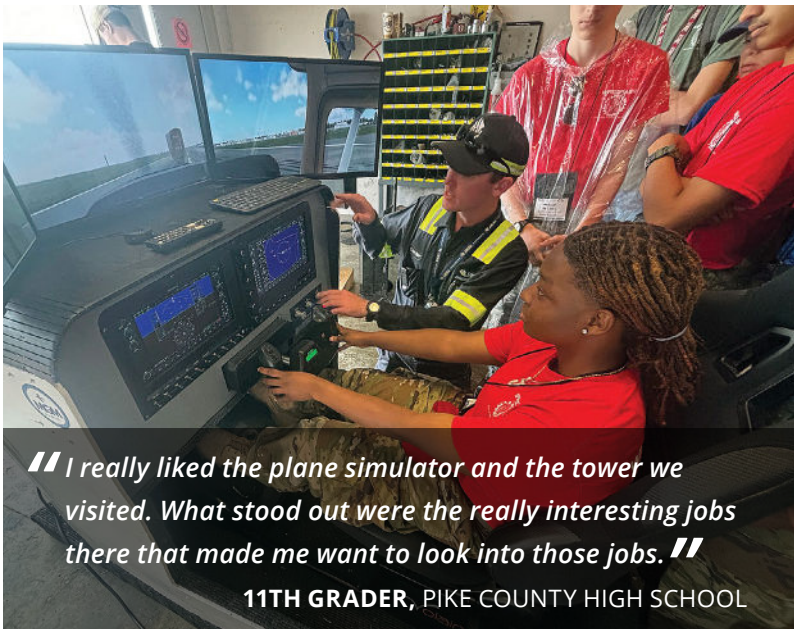


"For a team to work together better, you need to let go of personal opinions, be more open minded, think outside of the box, and let go of rigid concepts."

9TH GRADER
GOSHEN **HIGH SCHOOL**

Industry Site Visits

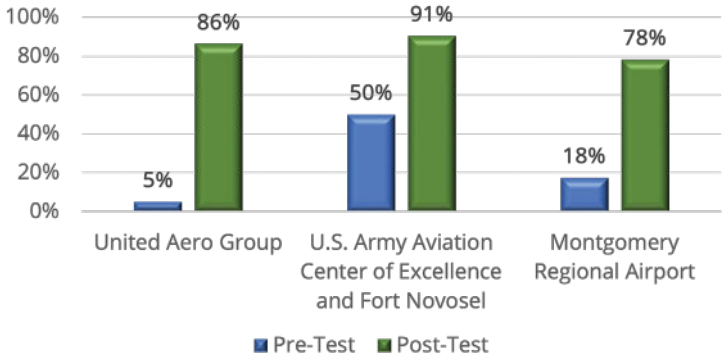
To raise Cadets' awareness of how STEM is used in the aviation industry, the 2024 Pike County/Wiregrass Region Academy arranged visits to the Montgomery Regional Airport, United Aero Group, and the United States Army Aviation Center of Excellence at Fort Novosel. Cadets heard from human resource personnel about hiring requirements, traits and skills needed, training programs offered, and salaries for local, high-demand STEM jobs.



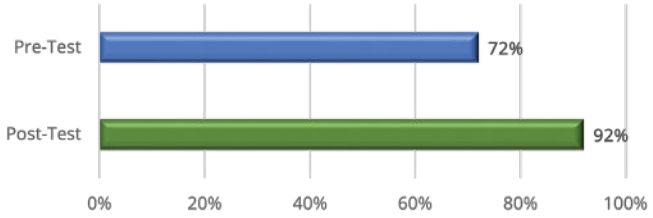
"I really liked the plane simulator and the tower we visited. What stood out were the really interesting jobs there that made me want to look into those jobs."

11TH GRADER, PIKE COUNTY HIGH SCHOOL

2024 PIKE COUNTY/WIREGRASS REGION CADETS ABLE TO DESCRIBE INDUSTRY/CENTER



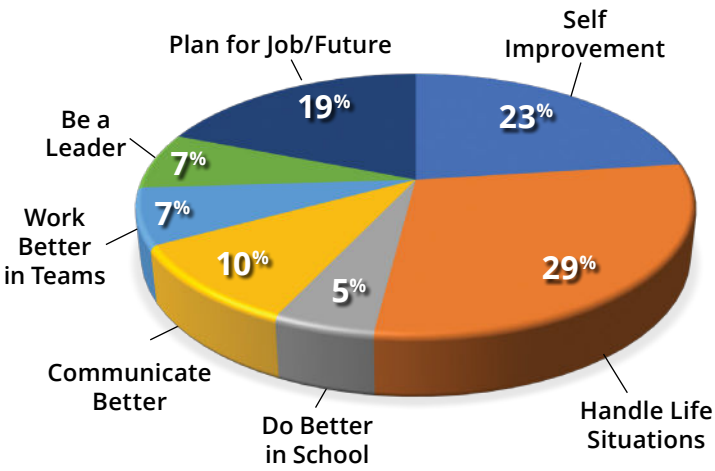
2024 PIKE COUNTY/WIREGRASS REGION CADETS AWARE OF LOCAL, GOOD-PAYING STEM JOBS



Educational Experiences

Cadets at the 2024 Pike County/Wiregrass Region Academy got a taste of campus life while residing at Troy University. Cadets also visited the Alabama Aviation College at Enterprise State Community College where they learned about fields of study, student support, and enrollment. Guest speakers inspired cadets with stories of perseverance and commitment, including a retired military person who authored a book about the habits of success and a representative from a workforce initiative focused on the intersection of STEM trades and aviation.

HOW WILL 2024 PIKE COUNTY/WIREGRASS REGION CADETS USE ACADEMY EXPERIENCES IN THE FUTURE?



"The Alabama Aviation College does a lot more than just aviation. Mechatronics was neat to learn about, too. But the aviation parts caught my eye the most, more specifically, aviation maintenance."

10TH GRADER
ROBERTSDALE HIGH SCHOOL

What are the CADETS Saying?

"I got over my fear of ziplining and even went back again. The only thing that is standing in your way right now, right at this moment is fear. Leave fear behind you. Take that step, and it will be okay."

9TH GRADER
REHOBOTH HIGH SCHOOL

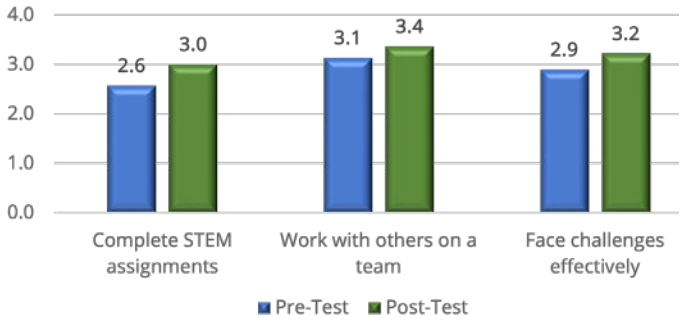
JROTC Cadet Leadership Challenge Activities

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:

- Drownproofing
- Land Navigation
- High Ropes Course
- Physical Fitness Training

Forty-four percent of Cadets at the Pike County / Wiregrass Region Academy stated in their journal reflections that their 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

2024 PIKE COUNTY/WIREGRASS CADETS' BELIEF IN THEIR ABILITY TO...



Overall Conclusions

leadership skills. Based on the analysis of quantitative and qualitative data collected, the 2024 Pike County/ Wiregrass Region 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