

2018

Cadet Impact Report



Academy Summary

The purpose of the six-day residential JROTC STEM Leadership Academy is to engage a unique population of high school students, 9th and 10th grade JROTC cadets, in STEM content, skills, and fields of study needed by business and industry today. The Academy is designed to increase awareness of good-paying STEM career opportunities in our area for Mobile’s youth and what it takes to secure these jobs.

The 2018 STEM Leadership Academy built upon and expanded the three prior years Academies, this year focusing on the **MARITIME INDUSTRY.**

A key aspect of the Academy is the STEM curriculum, which this year involved designing, building, and testing underwater robots.

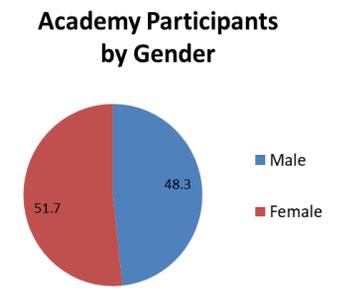
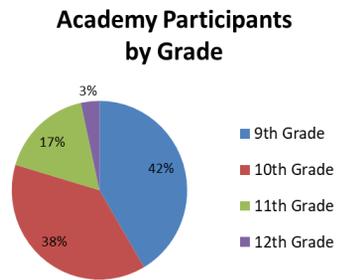
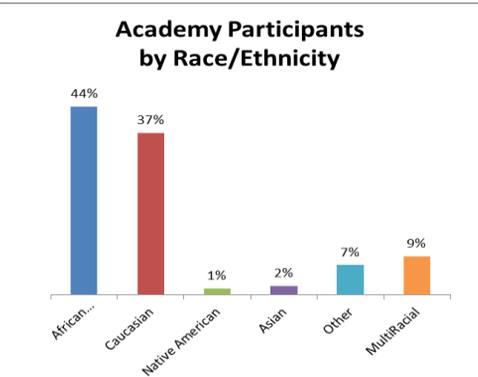
The Academy integrates five types of activities to ultimately increase the number of Mobile JROTC cadets interested in and prepared for the technical and other STEM dependent jobs that are in high demand in our area.

- 1 Teambuilding, Communication, and Leadership Development Activities
- 2 Team STEM Design Challenges
- 3 Industry Site Visits and Guest Speakers
- 4 University, College, and Educational Field Trips
- 5 JROTC Cadet Leadership Challenge Activities

Participants

School	Total
Baker HS	16
Blount HS	10
Bryant HS	9
Chickasaw HS	11
Citronelle HS	5
Davidson HS	8
LeFlore HS	6
Montgomery HS	15
Murphy HS	15
Rain HS	9
Satsuma HS	13
Theodore HS	19
Vigor HS	9
Williamson HS	6
TOTAL	151

The 2018 Academy had the goal of serving 160 cadets. The rosters included 168 names, however, as in past years, there was some attrition due to illness and other personal circumstances. Of this group, 151 cadets in 9th -12th grade participated in the Academy and completed the pre/post assessment.

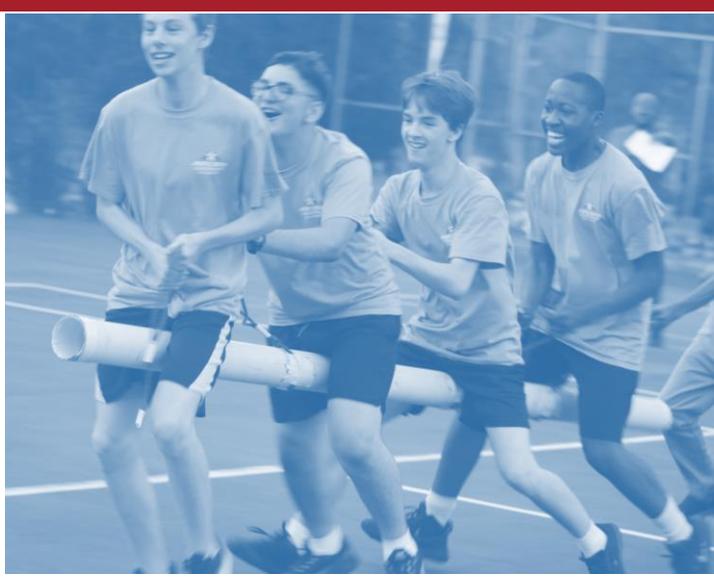


Teambuilding, Communication, and Leadership Development

Carefully structured activities were planned for the Academy week to engage Cadets in valuing teamwork and communication skills and help them develop leadership skills needed to be a successful team member and leader. Activities included:

- Winning Colors Personality Assessment
- Sports Night
- Team STEM Challenges
- JROTC Fitness Challenges

Cadets also responded to daily journal reflection prompts related to their ability to work in teams. When asked how they would use what they learned, cadets responded:



It will help me improve my relationships with people in life.

- Moses, Blue Platoon

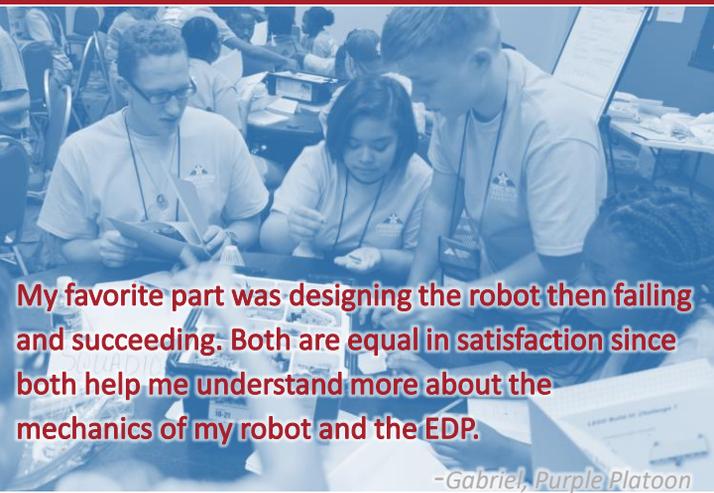
We communicated much more than usual, and we made a success of a robot.

- Isis, Green Platoon

The most valuable thing I learned...was leadership and gained confidence in myself.

- Summer, Green Platoon

Team STEM Design Challenges



My favorite part was designing the robot then failing and succeeding. Both are equal in satisfaction since both help me understand more about the mechanics of my robot and the EDP.

- Gabriel, Purple Platoon

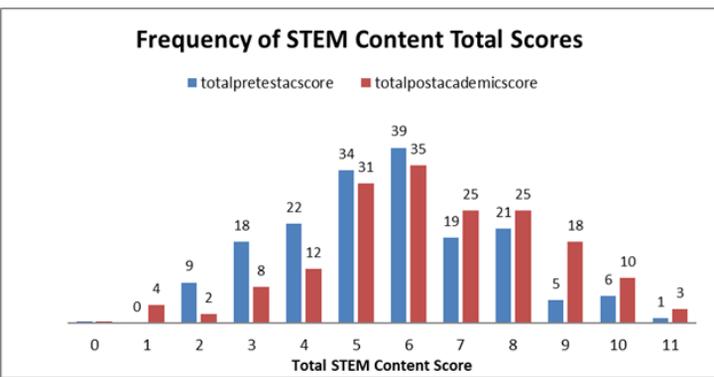
...engineering ...teaches me some of the things I will need when I begin to chase after careers in this field.

- Jorge, Purple Platoon

Results from the pre/post-assessment indicate students made statistically significant gains in all three content areas-science, mathematics, and engineering. Cadets could score up to 11 points on the content portion of the assessment.

The graph provides a visual comparison of the number of cadets' total scores before and after the Academy. **More cadets got the majority of content items correct on the post-test than on the pre-test.**

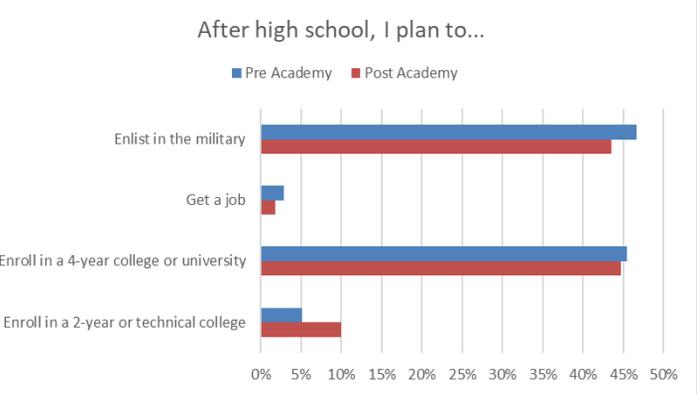
A paired-samples t test was conducted to examine the difference between total STEM content scores before and after the JROTC STEM Leadership Academy. There was a statistically significant difference between the pre-test ($M=5.11$, $SD=2.49$) and the post-test ($M=5.81$, $SD=2.79$), $t(192) = -3.07$, $p = .002$. The eta squared statistic (.047) indicates a small to moderate effect size.



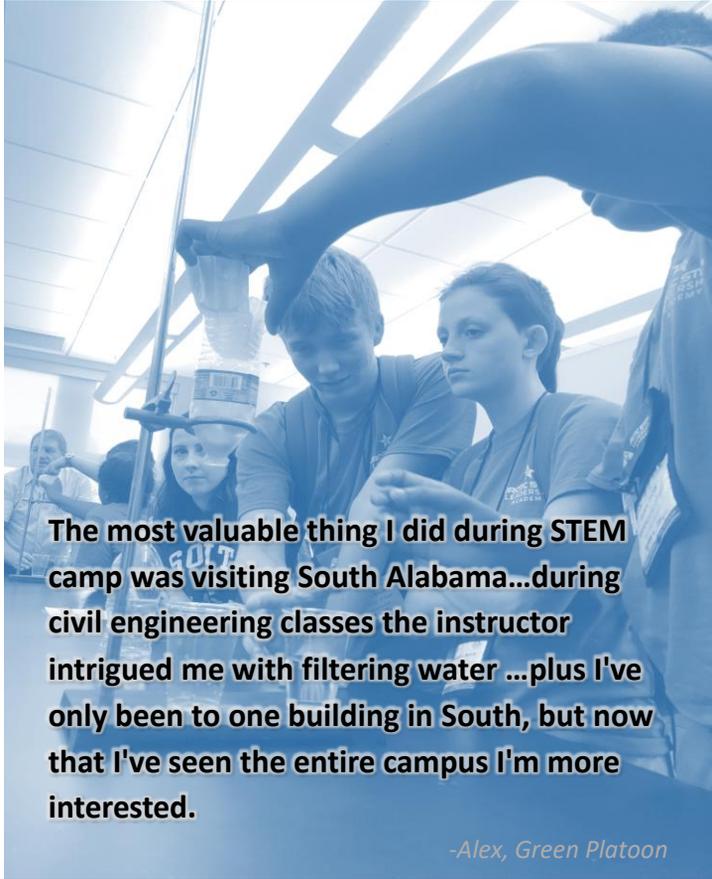
University, College, and Educational Field Trips

Cadets resided on the Spring Hill College campus for the entire Academy, learning what life is like on a college campus, and also participated in engineering investigations at University of South Alabama. Cadets also toured 5 Rivers Delta and Gulf Quest to learn more about the maritime industry and the unique ecology of the Mobile Bay.

While cadets seem to have a stable idea of what they plan to do after high school, there were reports from cadets in increased interest in STEM jobs.



The biggest shift in cadets' plans were an increased interest in enrolling in a 2-year or technical college.



The most valuable thing I did during STEM camp was visiting South Alabama...during civil engineering classes the instructor intrigued me with filtering water ...plus I've only been to one building in South, but now that I've seen the entire campus I'm more interested.

-Alex, Green Platoon

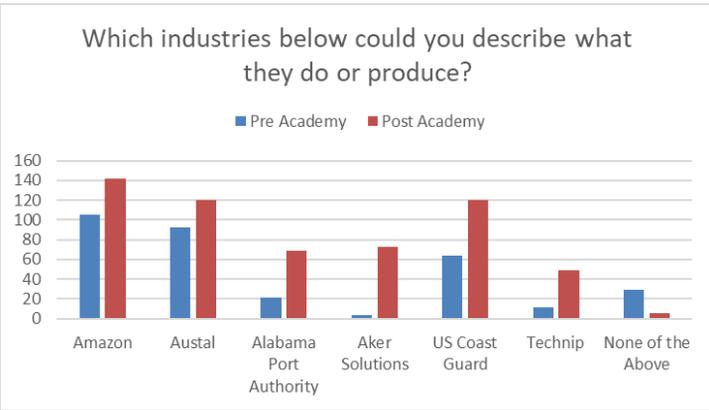
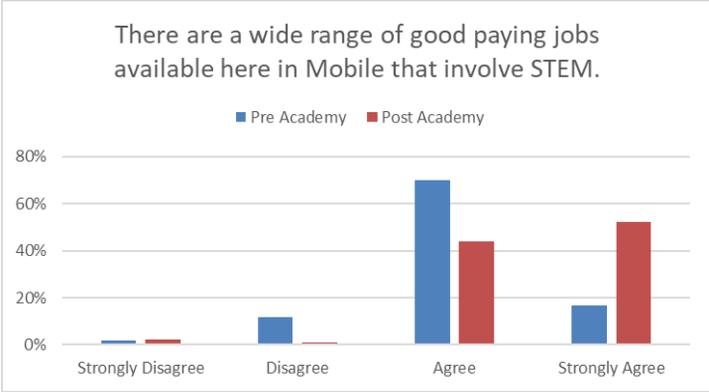
Industry Site Visits & Guest Speakers

Academy Cadets visited Austal, Amazon, the Alabama State Port Authority, the U.S. Coast Guard, Aker Solutions, and TechnipFMC. The goal of these visits was to help Academy Cadets see how STEM is used in the region's maritime industry, and for them to hear from human resource personnel as to requirements for hiring and key traits looked for in applicants, as well as salaries of high demand jobs from technicians to engineers.

Results from the pre/post-assessment and journal entries indicate Cadets increased their awareness of STEM jobs in the region. One student reported:

The most valuable thing I heard during this academy was that women in STEM fields were accepted and normalized even though these fields are male dominated, it was reassuring to know that while there would still be challenges to face as a woman in STEM many employers and employees saw women as competent and equal to men.

-Taylor, Red Platoon



JROTC Cadet Leadership Challenge Activities

The foundation of the Academy lies in the JROTC character education curriculum and culture. Students who participate in the STEM Academy have all been exposed to the JROTC culture and curriculum for at least one school year prior to the summer experience. This curriculum is extended during the Academy to include:

- **Rappelling**
- **Drownproofing**
- **Land Navigation**
- **Physical Training**

Over 30% of the open-ended responses from cadets regarding the most valuable or favorite activities during the Academy were related directly to the JROTC activities.

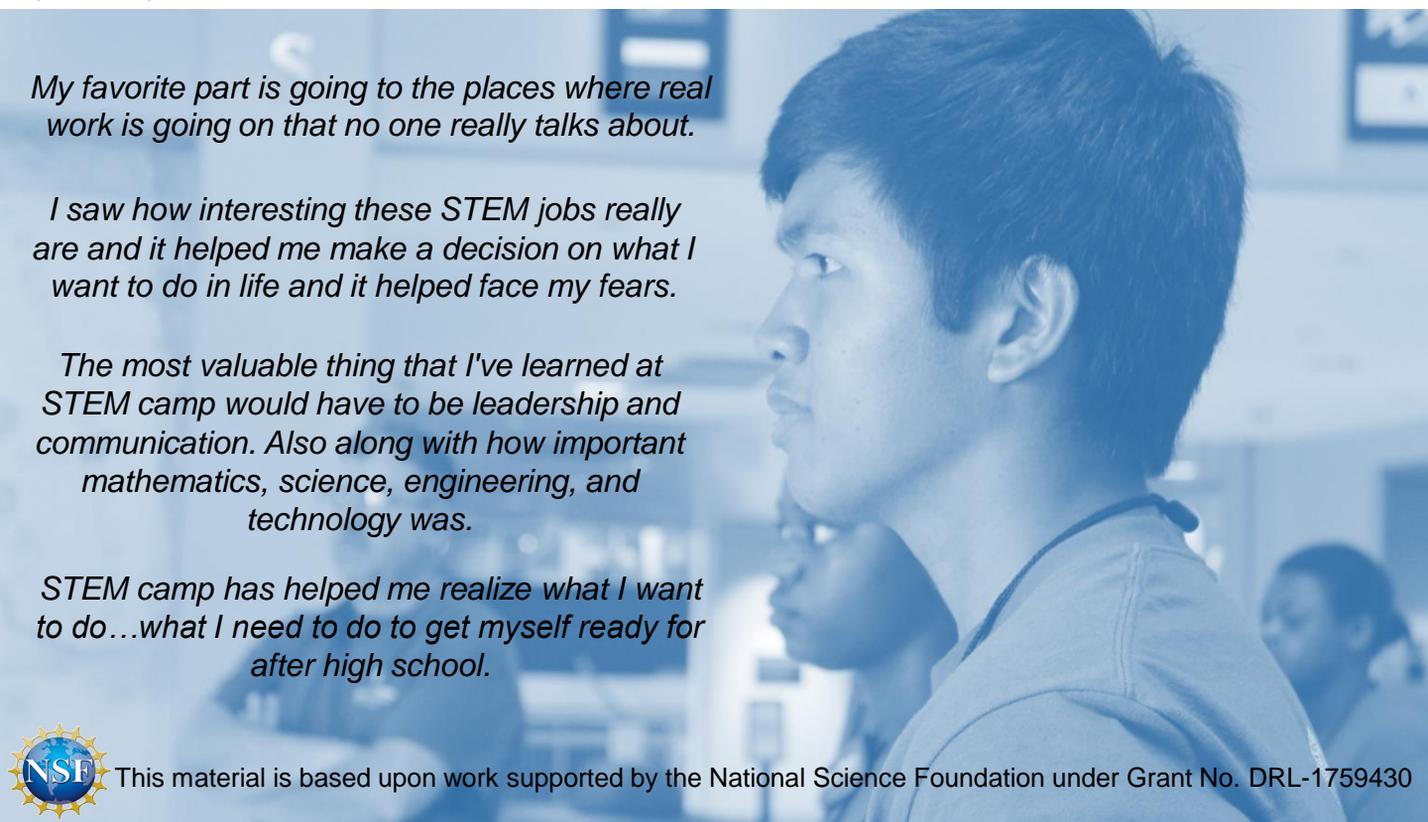
My favorite part of being here was rappelling because I felt like I can accomplish anything and not being afraid is the best.

-Katie, Yellow Platoon



Overall Conclusions

Based on the analysis of quantitative and qualitative data, the 2018 JROTC STEM Leadership Academy experience increased Cadet awareness of and interest in STEM jobs available in the region. Furthermore, Cadets seemed to have more confidence in their ability to enter a STEM career field. Cadets also made gains in science, mathematics, and engineering content which further supports their ability to be successful in STEM academics and careers. These conclusions can best be expressed by the cadets themselves:



My favorite part is going to the places where real work is going on that no one really talks about.

I saw how interesting these STEM jobs really are and it helped me make a decision on what I want to do in life and it helped face my fears.

The most valuable thing that I've learned at STEM camp would have to be leadership and communication. Also along with how important mathematics, science, engineering, and technology was.

STEM camp has helped me realize what I want to do...what I need to do to get myself ready for after high school.

