NASA COMMUNITY COLLEGE AEROSPACE SCHOLARS (NCAS)

FY 2017 ANNUAL PERFORMANCE REPORT

FUNDING SOURCE:
OFFICE OF EDUCATION
MUREP
STATE OF TEXAS

LINE OF BUSINESS:
STEM ENGAGEMENT

MANAGING ORGANIZATION:
JOHNSON SPACE CENTER
OFFICE OF EDUCATION

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ACTIVITY DESCRIPTION

NASA Community College Aerospace Scholars (NCAS) is a nationwide program designed for post-traditional learners enrolled in an accredited 2-year institution in the U.S. who are interested in a Science, Technology, Engineering or Math (STEM) career. NCAS participants complete a 5-week online non-credit course about NASA missions and research culminating in a four-day onsite experience hosted at a NASA field center. The onsite experience consists of a team-based engineering design challenge under the mentorship of NASA engineers and scientists. Teams design, build and test a robotic rover for competition. In addition to the rover competition, scholars tour NASA's unique facilities, learn from NASA subject matter experts, network with NASA's diverse workforce, receive resume feedback, and guidance on improving their resumes for NASA internship and employment opportunities.

NCAS helps students make the connection between a STEM degree and NASA career opportunities and realize that working in STEM is an attainable goal. NCAS prepares and motivates students to participate in other competitive NASA projects, programs, and internships, and encourages community college students to finish their 2-year degree and pursue a 4-year degree or career in a STEM field.

ACTIVITY GOALS

- Provide a unique opportunity for community college students to contribute to NASA's work in exploration and discovery.
- Build a diverse future STEM workforce by engaging community college students in authentic learning experiences with NASA's people, content and facilities.
- Create powerful connections to NASA's mission inspiring scholars to continue to pursue their academic and professional goals.

At the conclusion of their participation in NCAS, students will

- Aspire to STEM-related career
- Continue to pursue NASA learning opportunities such as internships and competitions
- Complete 2-year degree
- Transfer to a 4-year university for a STEM degree

ACTIVITY BENEFIT TO PERFORMANCE GOALS

FY 2017 Performance Goals

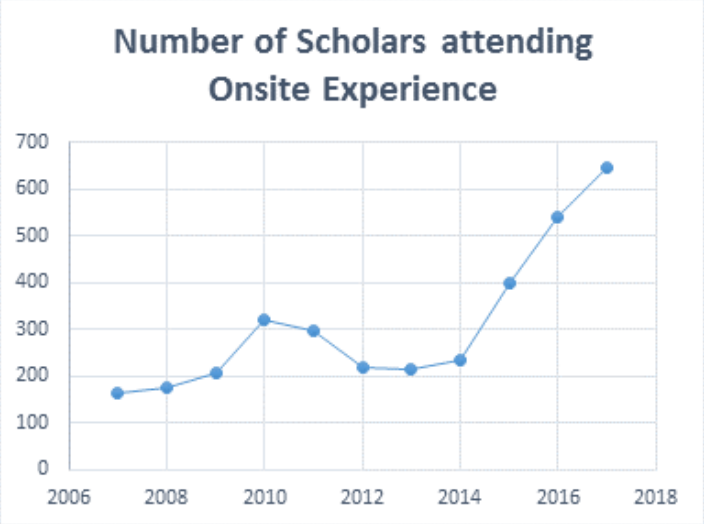
2.4.1: Assure that students participating in NASA higher education projects are representative of the diversity of the Nation.

The NCAS recruitment and retention strategies focus on students from Minority Serving Institutions. In FY17, 71% of the students who participated in both the online and onsite components of NCAS attended Minority Serving Institutions. The NCAS logic model and design use research based-practices to serve the unique needs and challenges of underrepresented students.

2.4.5: Continue to provide opportunities for learners to engage in STEM education engagement activities that capitalize on NASA unique assets and content.

The NCAS online learning experience features research-based, self-paced, and state-of-the-art tools, methods, and platforms to inform, engage and educate a diverse audience. Each of the three module features two NASA Communications Priorities. Evaluation data shows students increase their understanding of NASA missions and research because of their participation. The subsequent onsite experience immerses students in NASA culture, workforce, and team approach to engineering design. Evaluation results show students leave with increased levels of skill, confidence and knowledge of today's milestones and the nation's long-term goals.

ACTIVITY ACCOMPLISHMENTS



NCAS continued to expand the number of opportunities available for STEM students across the nation with 950 students accepted into the online component of NCAS. These students represented 256 community colleges from 40 states and the District of Columbia. 691 students completed the online course and 668 of those students received invitations to attend an onsite experience, with 71% of the students from Minority Serving Institutions. The number of women participants has increased from 35% in 2016 to 39% in 2017. The nine onsite experience hosting centers include Armstrong Flight Research Center, Ames Research Center, Glenn Research Center, the Jet Propulsion Laboratory, Johnson Space Center, Kennedy Space Center, Langley Research Center, Marshall Space Flight Center, and Stennis Space Center.

FY17 2-Year Institutions Represented by NCAS Participants

NCAS accomplished its objectives to improve community college students' knowledge, confidence and aspirations in STEM.

The students learned the online content about Mars. On the pre/post-tests, students showed a statistically significant improvement (<0.01 level) on all of the 10 items increasing from an average pre-score of 48% to an average post score of 79%. The experience significantly impacted the students' knowledge: why NASA is going to Mars (4.8 before/9.2 after), how NASA robots have been used to explore Mars (4.4 before/ 9.2 after), and how the ISS is used to benefit humans (3.6 before /9.2 after).

Students improved their understanding during the onsite experience. Participants reported statistically significant gains in understanding in all areas: understanding of what people in STEM careers actually do (6.4 before/ 8.9 after), the different kinds of STEM careers (6.3 before/ 8.9 after), the kinds of people who go into STEM careers (5.9 before/ 9.0 after), the academic preparation needed for STEM careers (6.9 before/ 9.1 after), and the career paths people have followed in their careers (5.5 before/8.9 after).

The onsite experience impacted students. Participants in the onsite reported statistically significant gains in their interest, skills, and confidence: Interest in engineering (7.1 before/8.8 after), interest in Mars missions (6.8 before/9.1 after), interest in robotics (6.0 before/ 8.6 after), skills in the engineering design process (5.5 before to 8.0 after), interest in pursuing a 4-yr STEM degree (8.8 before/ 9.7 after), interest in pursuing opportunities with NASA (7.3 before/9.5 after), and confidence in science and engineering (7.2 before/ 9.1 after).

ACTIVITY CONTRIBUTION TO ANNUAL PERFORMANCE INDICATORS (APIs)

FY 2017 Annual Performance Indicators

ED-15-1: Provide significant, direct student awards in higher education to (1) students across all institutional categories and levels (as defined by the U.S. Department of Education); (2) racially or ethnically underrepresented students, (3) women, and (4) persons with disabilities at percentages that meet or exceed the national percentages for these populations, as determined by the most recent, publicly available data from the U.S. Department of Education's National Center for Education Statistics for a minimum of two of the four categories.

While NCAS does not meet the threshold for qualifying as a significant award, the project prepares students to pipeline into additional NASA activities. NCAS uses its resources to maximize the number of students across the Nation it can reach focusing on women and student participants from Minority Serving Institutions.

ACTIVITY IMPROVEMENTS MADE IN THE PAST YEAR

Hosting Center Expansion-In FY17 NCAS expanded the number of hosting centers to nine by adding Glenn Research Center.

Increased Efficiency in Recruiting-NCAS introduced a technology solution for recruitment with SignalVine, a two-way text-messaging platform for higher education. With only six weeks to recruit

instead of the usual 14 weeks NCAS achieved a 10% increase over the previous semester in completed applications. This innovative and effective method streamlined processes and more efficiently used resources resulting in substantial savings of time.

Making the Leap Event-NCAS introduced a new event to bridge the gap between online participation and the scholar's travel to a NASA field center for the onsite experience. This virtual event gave insight to NCAS alumni and current fall participants about the ins-and-outs of the "giant leap" from community college to a 4-year university. Five NCAS alumni, having successfully bridged from community college to universities, interacted with 82 NCAS alumni eager to hear their stories. Talking points included the transfer process, how life on a university campus differs from a community college campus, what challenges will be faced, and "college hacks" to balance work/life/school. From practical comments like "using the career advising center to help check resumes," to thought provoking ideas such as "consider everyone you meet in your life as a resource," their advice and words of wisdom resonated among all attendees. https://youtu.be/2ETgR9W8WS8

NCAS Student Assistants (SAs)-In an effort to provide additional opportunities for MSI students, NCAS created a role for the most talented NCAS alumni to come back as a peer leader and role model in a paid position as an NCAS Student Assistant or SA. SAs helped implement the engineering design workshops taking place at each center throughout the year. In FY17, NCAS hired eighteen Student Assistants representing 17 Minority Serving Institutions. The SAs proved valuable to both students and staff with their unique perspective as program alumni.

Increased Social Media Impact- Scholars are enthusiastic and effective ambassadors to the public. NCAS continued the use of the #NCAS2017 and #MUREP hashtags and encouraged their use at various student milestones. These are curated using Tagboard and can be viewed at https://tagboard.com/ncas2017/318898. The strategic planning of social media posting strategies employed in 2017 resulted in a total impact of 89,947,028 views. Tagboard tool allows NCAS to create a coherent and compelling story for the public while engaging, inspiring and educating people of all ages.

ACTIVITY PARTNERS AND ROLE OF PARTNERS IN ACTIVITY EXECUTION

Nine NASA Centers collaborate in hosting onsite experiences for NCAS participants. Armstrong Flight Research Center, Ames Research Center, Glenn Research Center, the Jet Propulsion Laboratory, Johnson Space Center, Kennedy Space Center, Langley Research Center, Marshall Space Flight Center, and Stennis Space Center.

Oklahoma State University Cooperative Agreement with Johnson Space Center-OSU leads a consortium of partners from the 13 institutions within the TAMU System, Langston University, OSU Center for Sovereign Nations, Northern Oklahoma College, the Oklahoma 4-H Foundation, and the Technology for Learning Consortium in the mission to collaborate with NASA Johnson Space Center, Agency Mission directorates, and NASA Headquarters to provide competitive and innovative STEM educational opportunities to K-16 students and educators. The goals of OSU's NSPACE project (NASA STEM Pathway Activities -- Consortium for Education) are to deliver a nationwide approach to NASA's goals to improve STEM instruction; increase and sustain youth and public engagement in STEM; enhance the STEM experience of undergraduate students; better serve groups historically underrepresented in STEM fields; and design education for tomorrow's STEM workforce. https://education.okstate.edu/nasa

The state of Texas, in partnership with NASA's Johnson Space Center and the Texas educational community, developed TAS in 1999 to encourage more students to pursue studies and careers in science, technology, engineering and mathematics (STEM). NCAS receives a portion of this funding to support Texas community college student participants.