Dr. Susan Stansberry,  
Principal Investigator  
Oklahoma State University  

Oklahoma State University Research  
1201 S. Innovation Way Dr.  
Suite 108  
Stillwater, OK. 74074-1581  

NASA STEM Pathway Activities –  
Consortium for Education  

Cooperative Agreements: 80NSSC17M0021, 80NSSC17M0022, 80NSSC17M0023, and 80NSSC17M0024  

AUGUST 19, 2017 – FEBRUARY 28, 2024  

FINAL PERFORMANCE REPORT  

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Mission Accomplished!

From 2017 to 2023, Oklahoma State University (OSU) and our consortium of partners, the 13 institutions within the Texas A&M University system, Langston University, OSU Center for Sovereign Nations, Northern Oklahoma College, the Oklahoma 4-H Foundation, and the Technology for Learning Consortium, worked as the NASA STEM Pathways – Consortium for Education (NSPACE) to deliver a nationwide approach to NASA's strategic goals for the Office of STEM Engagement. Throughout the cooperative agreement, we have created unique opportunities for students, worked to build a diverse future STEM workforce, and strengthened public understanding of NASA's mission and work.

In 2023-2024, OSU continued to support these efforts by providing continuity in innovative online delivery through maintaining the learning management system and other educational technology software for the new NASA Science, Technology, Engineering, and Mathematics (NSTEM) contract. Collaborating with the NSTEM contract has given us the opportunity to continue supporting NASA STEM Engagement as our NSPACE cooperative agreement comes to a close.

This final report provides an overview of the entire NSPACE cooperative agreement beginning August 19, 2017 and ending February 28, 2024. Our team led numerous OSTEM activities, online courses and events, and onsite experiences to benefit K-20 students and educators. By developing original STEM engagement resources, leveraging the unique aspects of NASA facilities, and sparking interest in STEM in students with diverse backgrounds, we expanded NASA's reach and met the Office of STEM Engagement's strategic goals.

View our previous annual performance reports on the OSU NSPACE website.

During our final two years of the NSPACE cooperative agreement, we continued to navigate a hybrid work environment while bringing onsite experiences back to NASA centers. We used innovation, creativity, research, and best practices to combine our newer virtual events with one-of-a-kind opportunities to experience a NASA center. Through over 150 virtual and onsite experiences at NASA centers and partner institutions, we have engaged over 750,000 participants. We have designed, developed, and delivered 25 innovative activities for K-20 students and over 130 NASA-unique lessons for K-12 educators and students. Our personnel and partners have been supported professionally through three intense professional development summits and a continual online community of practice. In turn, they have shared our research-based practices in scholarly publications and at over 35 different heimdalconferences through presentations, exhibits, virtual reality field trips.

The OSU-NASA Education partnership began in 1968 sending the Space Mobile out to schools across the nation. Now, 55 years later, as we bring NSPACE to a close, we are proud and grateful to have played a vital role in inspiring, engaging, educating, and employing the Artemis generation.

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NSPACE activities fall under one of two categories — STEM Collaborations: Activities in collaboration with partners, including school districts, State of Texas, and Houston Livestock Show & Rodeo; or STEM Operations: Activities funded through NASA Headquarters by Minority University Research and Education Projects (MUREP), Next Gen STEM (NGS) and the National Space Grant College and Fellowship Project (Space Grant).

NASA STEM Pathway Activities - Consortium for Education (NSPACE) Overview

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STEM Collaborations

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STEM Operations

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Aerospace-X provides unique opportunities to stimulate STEM learning and engaging experiences for students and educators. Discover how NASA’s technological breakthroughs of today transform tomorrow’s future with Aerospace-X. AV STEM activities focus on cutting-edge aeronautics content that encourage our future aviation explorers to take a deep dive into the intersection of flight.

Beginning Engineering, Science, and Technology (BEST) introduced the principles of engineering to audiences through hands-on, NASA-themed activities applying the engineering design process to solve problems and generate solutions.

Bell Museum located at the University of Minnesota aimed to strengthen interest and engagement in STEM in a diverse set of students, teachers and the public by developing a full-dome planetarium production focused on the human factors of long-duration spaceflight.

NASA’s Commercial Crew Program (CCP) kept educators and Artemis Generation students engaged in the historic return of human spaceflight to American soil through a variety of STEM tools. Reddi Ask Me Anything AMA opportunities, and The Astro-Not-Yets storybook series.

High School Aerospace Scholars (HASS) is an authentic STEM learning experience for Texas high school juniors to engage with NASA’s missions and become the next generation of explorers. HAS is a year-long commitment for participants, starting in the fall with a four-month online learning experience related to space exploration, Earth science, technology, and aeronautics. Students passing the online learning experience receive an invitation to Moore, the five-day gamified virtual summer experience mentored by NASA scientists and engineers. During the summer experience, students work in teams to plan an Artemis-themed mission to the Moon and Mars. Top teams from the virtual summer experience are invited to attend a two-day residential production focused on the human factors of long-duration spaceflight.

Hydromagnetics Rocketry and Engineering (HREM) is an educational partnership between NASA and STEM educators. The program is designed to support teachers and students in research of pertinent missions.

Innovating the Next Generation of Engineers (I-NEXT) is an authentic, mission-driven engineering design challenge where students engage and inspire high school students to design and create a space vehicle to travel to an uncharted exoplanet.

Minority University Research and Education Project (MUREP) engages underrepresented populations through a wide variety of initiatives. Multiyear grants are awarded to assist Minority Institution faculty and students in research of pertinent missions.

MUREP Institutional Research Opportunity (MIRO) was established to strengthen and develop the research capacity and infrastructure of Minority Serving Institutions in areas of strategic importance and value to NASA’s mission and national priorities. Overall, MIRO awards aim to promote academia and to enhance and sustain the capability of institutions to perform NASA-related research and education, which directly supports NASA’s four mission directions—Aeronautics Research, Human Exploration and Space Operations, Science and Technology.

MUREP Innovation Technologies for Student Competition (MOTIC) is a virtual NASA intellectual property spinoff challenge to develop new ideas from within the Artemis Generation for commercialization and entrepreneurship through the delivery of a graduate degree and a “Space Tank” lightning pitch competition for student teams enrolled at Minority Serving Institutions. The winning team presents their concept to NASA and various tech companies in Silicon Valley while also qualifying for NASA instrumentation and matching funds up to $15,000 for their institution.

MUREP Other Opportunities (MO) engaged and inspired the Artemis generation through strengthening curriculum and career pathways in STEM.

MUREP Sustainability Initiative (MUSI) supported capacity building, increasing long-term sustainability at Minority Serving Institutions by creating awareness of opportunities including NASA agreements and significantly increasing contracting opportunities.

MUREP Space Technology Artemis Research (M-STAR) Grant strengthens NASA’s research capacity and infrastructure of U.S. Minority Serving Institutions in areas of strategic importance and value to NASA’s mission and national priorities. The main goals are to promote learning in STEM and to enhance the capability of institutions to participate in NASA’s Space Technology Mission Directorate.

MURP Music for Everyone (M4E) is a STEM engagement activity for community college students seeking to transfer to a 4-year institution or go directly to the labor force. M4E uses NASA’s unique expertise, research, facilities, and other resources to engage students in authentic and experiential learning experiences. These selective mission opportunities are offered alongside an opportunity to apply for a paid Internship. M4E also partners with Minority Serving Institutions, enabling teams to engage students in similar experiences that are scaled to the institutions’ STEM networks.

NASA Quest User Interface Technologies for Students (NASA UIS) is a design challenge engages undergraduate and graduate student teams to design and create educational models and assets using mission-based content and assets at NASA’s Johnson Space Center in Houston.

Next Gen STEM Earth (NGS Earth) connects students and educators to NASA’s Office of STEM Engagement using station and Earth science resources to inspire, engage, and educate a diverse group of students and educators. Formerly known as STEM on Station, Earth continues to provide a comprehensive website of resources, In-flight Education Downlink, lessons taught from the space station, space station payload opportunities, and hands-on STEM activities with a focus on Earth and the ground using high-profile partnerships to amplify NASA’s missions and unique assets.

Next Gen STEM NASA Sparking Participation in Authentic Real World Experiences (NSP NASA SRP) is an opportunity for pre-college youth and educators to engage with NASA’s missions. NASA SRP uses evidence-based educational interventions and tools with a traditional education event and broaden student participation, especially in underrepresented communities. Using NASA-based names and educational resources, participants learn about NASA and STEM while creating projects to showcase their learning. Participants select the broad area of their interest for their wish to enter based on their capabilities and interests.

Network of States (NoS) provides systemic, long-term support for NASA Centers and their communities by building strong regional networks for partner-delivered NASA educator professional development.

Student Opportunities in Aeronautics Research (SOAR) challenges high school and undergraduate students to design and test experiments related to atmospheric and ground mapping, cosmic dust collection, thermal management and control systems, spacecraft launch support, and test bed operations for future airborne or space-borne systems.

STEM on Station (SoS) advanced the national STEM education and workforce pipeline through a comprehensive website of resources, conversations with astronauts in space, lessons taught from the space station, space station payload development opportunities, and hands-on STEM activities developed through high-profile partnerships leveraging NASA’s mission and unique assets.

Space Grant is a national network of colleges and universities. These institutions are working to expand opportunities for Americans to understand and participate in NASA’s aeronautics and space projects by supporting and enhancing science and engineering education, research, and public outreach efforts.

STEM in Deep Space (SDS) connected students and educators to deep space exploration missions including Gateway, the Moon, and Mars using NASA-unique facilities, subject matter experts, and resources to inspire students to pursue STEM.

WEAR STEM Challenge was an engineering design challenge where NASA presented problems related to wearable technology to high school and undergraduate level students, seeking contributions to deep space exploration missions.

NASA Virtual Science and Engineering Expo was a nationwide challenge for educators and pre-college students to connect with NASA’s ongoing missions.

Year of Education on Station (YES) leveraged the opportunity of astronauts and former classroom teachers Joe Acaba and Ricky Arnold on back-to-back missions to the International Space Station to engage students and educators in NASA’s unique STEM activities and highlighting the space station as an educational platform.

Activity names in teal are Year Six activities. Activities in orange occurred in previous years of the NSPACE agreement.
NSPACE Cooperative Agreement

The goals of the NSPACE cooperative agreement were 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.

750K+ participants served through the course of the NSPACE agreement

150+ virtual and onsite experiences hosted at 10 NASA centers and partner institutions

130+ NASA-unique lessons developed for K-12 educators and students

35+ conferences supported through presentations, exhibits, and virtual reality field trips

25 NASA-unique activities facilitated, including launching six new activities

3 Professional Development Summits for team members

NSPACE TIMELINE

2017
- NSPACE begins with 11 activities
- SUITS launches
- SOAR launches
- Year of Education on Station

2018
- CCP launches
- HISD launches
- MITTIC launches
- MSI added
- SDS launches
- SOAR sunsets
- Year of Education on Station

2019
- HAS celebrates 20 years
- Micro-g NExT celebrates 5 years
- NoS sunsets
- Supported Apollo 50th celebrations

2020
- In-person experiences go virtual
- Bell Museum added
- MSI sunsets
- Space Grant added

2021
- MSI sunsets
- NGS NASA SPARX launches
- SoS and CCP become NGS Earth

2022
- Return to onsite events
- MIRO celebrates 30 years

NSPACE AT A GLANCE

The goals of the NSPACE cooperative agreement were 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.

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- SoS and CCP become NGS Earth

2022
- Return to onsite events
- MIRO celebrates 30 years
Year 1 at a Glance

AUGUST 19, 2017 – MAY 31, 2018

63K educators reached

182K students reached

45 states + Washington, D.C., Puerto Rico, U.S. Virgin Islands represented

12 activities implemented

The NCAS team conducted 11 onsite experiences at eight NASA centers, reaching 453 students.

9 MgUE teams visited Johnson Space Center to test their prototypes on the Precision Air Bearing Floor.

43% of SOAR participants were from Minority Serving Institutions.

MOO team established 13 new partnerships supporting sustainability of programs.

NSPACE implemented BEST at six NASA centers.

Micro-g NExT participants represented 22 colleges and universities in 16 states, four Minority Serving Institutions, and one community college.

SoS’s In-flight Education Downlinks with astronauts reached 40,000+ educators and 150,000+ students.

The HAS team worked with 683 students, representing 83 Texas counties, enrolled in the 16-week, online course.

NASA SUITS launched first mission-driven coding challenge, developing a new partnership with EVA Office.
NSPACE Year 2 at a Glance
JUNE 1, 2018 – MAY 31, 2019

19K educators reached

155K students reached

18% increase in full-time NSPACE employees

16 activities implemented

433% increase in downlink events from an average year at the conclusion of YES.

1,741 educators and students participated in NASA’s BEST activities in nine states.

5,000+ educators received CCP information and resources at three national conferences.

SoS team reached 9,000+ educators through ISTE, CAST, SEEC and NSTA conferences.

6,249 students impacted through MIRO awardee outreach events and activities.

Launched partnership with five HISD Aerospace Academies.

Launched MITTIC with 70 students and faculty from 10 Minority Serving Institutions.

Micro-g NExT introduced two new challenges for students to complete: Extra Vehicular Activity Camera Attachment Mechanism and Mini-Arm End Effector.

46 NoS educators hosted at NASA’s Johnson Space Center for week-long onsite train-the-trainer workshops.
GLOBAL PANDEMIC led NSPACE team to develop new ways to reach participants.

49 states and territories represented.

155K participants reached.

13 activities implemented.

41K+ views of the six CCP 360 degree virtual reality field trips.

1,243 NCAS students from 274 community colleges in 42 states invited to 20 onsite events at all 10 NASA centers.

HUNCH delivered 600 spacewalk wire ties, 177 design developments for flight, 131 softgoods, 25 lockers, 2 prototypes for flight, and 1 culinary item.

WEAR teams performed outreach to

16,000+ students and

26,000+ community members.

43% of participating MITTIC institutions were Historically Black Colleges and Universities and 54% were Hispanic-Serving Institutions.

10 new MIRO awardee institutions, doubling the number of active awardees.

3,657 classrooms livestreamed the Astro Socks Design Challenge Showcase and Microsoft Education Downlink.
NSPACE Year 4 at a Glance

JUNE 1, 2020 – MAY 31, 2021

9
new positions in NSPACE

4
activities created virtual curriculum

8
awards received from NASA

14
activities implemented

Bell Museum • CCP • HAS • HISD • HUNCH
Space Grant • Micro-g NExT • MIRO • MITTIC • MOO • NCAS
NASA SUITS • SoS • SDS

300%
increase in first-time participating institutions progressing to Phase 2 of the Micro-g NExT challenge.

350,000+
students reached through SoS’s 13 education downlinks in partnership with national organizations.

3,700+
direct and indirect MOO participants.

Montana, Idaho, Kentucky, and Oklahoma Space Grant Consortia traveled to Chile with their students to record gravity waves produced by a complete solar eclipse.

Since 2003, HUNCH students delivered more than 20,000 individual parts and components fabricated, and over 1,340 flight products to NASA.

130
students participated live in SDS culminating event.

42% of MITTIC participants were first-generation college students.

4
certificates, 10 new courses, and 17 revised courses developed from MIRO research.

2003
350,000+
students reached through SoS’s 13 education downlinks in partnership with national organizations.

3,700+
direct and indirect MOO participants.

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Since 2003, HUNCH students delivered more than 20,000 individual parts and components fabricated, and over 1,340 flight products to NASA.

130
students participated live in SDS culminating event.

42% of MITTIC participants were first-generation college students.
**NSPACE Year 5 at a Glance**

**JUNE 1, 2021 – MAY 31, 2022**

- **168K** participants from 50 states and territories
- **2** team awards received from NASA
- **3** new tools to enhance virtual connections (Communique, STEM Gateway, Mursion)
- **12** activities implemented
- **828** students attended 18 Space Grant webinars featuring resume workshops and NASA subject matter experts.
- **78%** of MIRO student awards were granted to underrepresented students based on gender, disability, race, and/or ethnicity.
- **40%** of HAS students were female.
- **36,000+** students participated in NASA SPARX.
- **23%** increase in MITTIC letters of intent from 2020.
- **54%** of Micro-g NEExT participants were underrepresented learners.

The University of Baltimore NASA SUITS team shared their research and experiences during a special video event hosted by the Baltimore Museum of Industry.
NSPACE Year 6 at a Glance

JUNE 1, 2022 - FEBRUARY 28, 2023

72K students and educators served

4 new employees hired

6 onsite events

12 activities implemented

25 employees attended the NASA STEM Better Together conference.

HAS • HISD • Micro-g NExT • MRL • MIITIC • MUREP
NCAS • NASA SUITS • NGS Aeronaut-X • NGS Earth
NGS NASA SPARX • Space Grant

YEAR 6 SOCIAL FEED
HISD

The five Houston ISD Aerospace Academies receiving NASA support all improved in their school ratings from the start of service by the NASA instructional coaching team.

SUCCESS STORY

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<tr>
<th>HISD School</th>
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<td>B</td>
</tr>
<tr>
<td>Davies Aerospace Academy</td>
<td>B</td>
<td>A</td>
</tr>
<tr>
<td>Deady Middle School</td>
<td>F</td>
<td>C</td>
</tr>
<tr>
<td>Booker T. Washington High School</td>
<td>C</td>
<td>B</td>
</tr>
<tr>
<td>Milby High School</td>
<td>C</td>
<td>B</td>
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High School Aerospace Scholars (HAS)

High School Aerospace Scholars provides an innovative unique one-of-a-kind experience opportunity for all Texas high school juniors culminating in a team-based summer experience where teams are mentored by NASA scientists and engineers with a goal of creating a preliminary design review with a specific design challenge and research based on one of nine sequential Artemis missions. During the HAS online course students are provided opportunities to engage with NASA subject matter experts who are directly involved with NASA’s Artemis mission initiatives. During the summer virtual experience, Moonshot, students connect to NASA internships, robotic and engineering experts, and Texas colleges to pursue STEM careers.

SUCCESS STORY

The HAS team expanded recruitment efforts with in-person recruitment in areas of Texas with historically less participation in HAS. The team visited five schools to share information about HAS with students and teachers, resulting in 38 students accepted into the HAS online course from the schools. Compared to last year, in which only two students were accepted into HAS from the five schools visited. The HAS team’s in-person visits made a substantial impact on recruitment in underrepresented schools.

880 scholars from 333 high schools in 176 cities across Texas.

79% completion rate of Module One.

200+ students from Title 1 high schools (5th year in a row).

100+ students from rural high schools (4th year in a row).

Houston Independent School District Aerospace Academies (HISD)

NASA instructional coaches help teachers create structured and widely accessible, experiential learning opportunities for students on campus to engage with NASA’s work in exploration and discovery. Partnering with teachers, NASA instructional coaches develop and deploy a continuum of STEM experiences to facilitate authentic learning opportunities to cultivate student interest in pursuing STEM careers and foster interest in aerospace fields.

4,000+ students served at five campuses in the 7th largest school district in the country.

100 teachers receiving direct support.
Micro-g Neutral Buoyancy Experiment Design Teams (Micro-g NExT)

Micro-g NExT challenges students to design innovative solutions to real-world problems as they work alongside a NASA mentor to design mission ready hardware meeting a specific relevant mission need. In 2022, Micro-g NExT offered three Artemis-focused concept design challenges, two created by the Extravehicular Activity (EVA) Tools Group out of NASA’s Johnson Space Center and one developed by NASA’s Jet Propulsion Laboratory. For the 2022-2023 academic year, Micro-g NExT is offering four unique design challenges related to diverse aspects of NASA’s missions. Two challenges focusing on extravehicular activity tools were created by the Tools Group, a challenge focusing on Orion Crew Safety was created by NASA’s Search and Rescue office out of Goddard Spaceflight Center, and a challenge focusing on astronaut training was created by the engineering team at the Neutral Buoyancy Laboratory at Johnson.

150 attendees from 33 institutions in 18 states attended info sessions.
52% of participants were underrepresented learners.
15 institutions from 12 states.

NASA Spacesuit User Interface Technologies for Students (NASA SUITS)

The NASA SUITS design challenge engages undergraduate and graduate student teams to design and create spacesuit information displays in augmented reality environments. The NASA SUITS challenge requirements support NASA’s Artemis missions through research and development of human autonomy for future spacewalks on the Moon and Mars. Teams receive invitations to test and evaluate prototypes with engineers while using mission-unique facilities and assets at NASA’s Johnson Space Center in Houston.

10 teams selected from 15 institutions, including five Minority Serving Institutions, and four community colleges.
8 of 10 teams from 2022 submitted research for publication.
3 former SUITS students interned at Johnson Space Center in Fall 2022.

I don’t think I would be an International Space Station flight controller now without the experience that I had gained from Micro-g NExT.

HARRIET HUNT
Minority University Research and Education Project (MUREP)

The MUREP Space Technology Artemis Research Grant strengthens and develops the research capacity and infrastructure of U.S. minority serving institutions in areas of strategic importance and value to NASA’s mission and national priorities. The main goals are to promote STEM literacy and to enhance the capability of institutions to participate in NASA’s Space Technology Mission Directorate opportunities.

Minority Serving Institution Engagement creates relationships with Minority Serving Institutions (MSIs) and underrepresented students to assist them in participating in NASA MUREP activities. Outreach events spanned the country, including:
- Historically Black Colleges and Universities (HBCU) Week Career Fair in Washington, D.C.
- NASA’s virtual booth at the Federal Asian Pacific American Council Career Fair
- MUREP Precollege Summer Institute program at Alabama A&M University

MUREP sponsored a total of 25 fellows and scholars to attend the 2022 Southern Regional Education Board Institute on Teaching and Mentoring. Alumni fellows served as panelists to share their experience in a NASA student program and tips for current students to succeed. Fellows and scholars participated in networking opportunities, social events, and a cultural immersion experience at the Martin Luther King Jr. National Historical Park.

17 interns placed at five NASA centers during summer 2022.
4 interns placed during fall 2022 and spring 2023.
7 awardee institutions hosted site visits.
100% of principal investigators participated in NASA STEM Better Together conference.
MUREP Institutional Research Opportunity (MIRO)

The MIRO activity continues to demonstrate progress in building research capacity at Minority Serving Institutions. NASA STEM-related academics and research promoted through the MIRO-funded projects have allowed the awardees to establish viable partnerships, conduct research in alignment with NASA priorities, and offer experiential opportunities for diverse student groups.

- 8,704 students and 1,706 educators reached through 316 activities.
- 31 internships across 11 NASA centers funded by MIRO awardees.
- 5 site visits to foster connections between NASA and awardees.

RESEARCH OUTCOMES

- 179 peer-reviewed publications and 16 other technical publications
- 239 presentations - 105 invited papers and 134 peer-reviewed papers
- 8 patents
- 18 new courses
- 61 revised courses
- 84 new proposals received funding, with over $26,150,827 received

MUREP Innovation & Technology Transfer Idea Competition (MITTIC)

MITTIC increases the diversity of the NASA pipeline by engaging specifically with Minority Serving Institutions to expose them to NASA missions, technology, and opportunities. Students, as well as institution representatives, are presented with unique opportunities to engage with NASA subject matter experts within the fields of STEM and business to learn about NASA’s mission and develop their entrepreneurial skills as they further NASA’s reach and the Artemis Generation.

MITTIC provides an engaging in-person experience through live conversations with subject matter experts and a unique experience through the Space Tank competition. Teams are also able to attend a multitude of tours with NASA and industry subject matter experts.

66% female student participants.
38% Historically Black Colleges and Universities.
50% Hispanic Serving Institutions.
25% Asian American and Native American Pacific Islander-Serving Institutions.

MITTIC - not only does it give you the opportunity to learn more, but it gives you the support you need, as a student, to keep going.

JACQUELINE PALMA,
Fall 22 Student Team Member

*Some Minority Serving Institutions qualify as more than one category.
NCAS funded 14 NASA internships in summer 2022 to NCAS alumni. Since 2014, informal tracking shows nearly 275 internships awarded to NCAS alumni. Through internships, NCAS alumni contribute to NASA’s missions and programs. NCAS uses a proven model to inspire students to continue to a four-year institution pursuing a STEM degree.

41% self-reported as female.
69% self-reported as a minority.
87% of participants from a MSI.

NextGen STEM: Earth

In-flight Education Downlinks align to NASA’s Office of STEM Engagement’s goals of attracting a diverse group of students to STEM. Utilizing pre-recorded videos removes facility and technology barriers, thus broadening participation. Engaging with astronauts and learning how they live and work, provides authentic learning experiences with NASA’s people, content, and facilities.

Moon Trees is a unique opportunity for students across the United States to directly engage in the Artemis mission. Students can connect with NASA missions and contribute to NASA’s work through the citizens science opportunities featured in the newly released Moon Tree Toolkit. Through the collaboration with the USDA Forest Service, students can explore different career opportunities which help them see themselves in the future STEM workforce.

Student Payload Opportunity with Citizen Science (SPOCS) teams consisted of multi-disciplinary, diverse college students contributing to microgravity research performed on station. Students sent research payloads to the space station and involved K-12 students in an authentic learning experience. Each SPOCS team worked with a NASA mentor who was able to connect each team directly to other NASA missions.

54K+ students and educators reached through 18 In-Flight Education Downlinks.
3 SPOCS teams launched their experiment payloads aboard CRS-25 and CRS-26.
35 pre-service teachers provided professional development through our partnership with The University of Houston.
4 new STEMonstrations: Simple Machines, Area and Volume, Engineering Design Process, and Lab Safety.
NextGen STEM: Sparking Participation and Real-World Experiences (SPARX)

SPARX activities are hands-on, standards-based, authentic learning experiences designed to provide opportunities for students to improve their STEM identity and connect with NASA work and missions.

The new format for SPARX establishes a set of thematic activities, divided into four grade bands: K-2, 3-5, 6-8, and 9-12. Each set of activities focuses on NASA missions with an emphasis on learning the engineering design process. The new activities are undergoing various internal and external reviews.

NextGen STEM: Aeronaut-X

9,000 students and teachers attended the STEM expo at Edwards Air Force Base on Oct. 14, 2022, to learn about aeronautics, robotics, and rocketry. NSPACE employees flew in from around the country to engage children in STEM activities, including building marshmallow versions of Ingenuity, the Mars helicopter, and learning binary.

National Space Grant College and Fellowship Project

Space Grant

The Space Grant national network includes over 850 affiliates from universities, colleges, industry, museums, science centers, and state and local agencies. These affiliates belong to one of 52 consortia in all 50 states, the District of Columbia and the Commonwealth of Puerto Rico.

905 students attended 16 webinars. (9% increase in attendance from last year.)

250 directors and affiliates attended five webinars and meetings.

10 states in the Western Region are represented by NSPACE.