ANNUAL PERFORMANCE REPORT
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Dr. Susan Stansberry
Oklahoma State University
OSU NASA Education Projects
228 Scott Hall, Stillwater, OK 74075

Cooperative Agreements
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With 50+ years of expertise and experience, Oklahoma State University proudly continues to serve NASA STEM Engagement initiatives and students and educators across the nation by aligning itself with NASA's missions and goals. NSPACE is comprised of a phenomenal team of professionals who work tirelessly to implement excellence in online and face-to-face learning experiences.

During Year Two, NSPACE reached over 155,000 students and over 19,000 educators through our continuing — plus four newly developed — activities. We reached a goal this year of implementing onsite experiences at each of the 10 NASA Centers across the nation. To facilitate this growth, our team has doubled since 2017.

To support the progress of this outstanding staff, we gathered on the OSU campus in Stillwater, Oklahoma, for a Professional Development Leadership Summit featuring expert researchers in STEM education, engineering, online teaching and learning, team building and reaching and serving underrepresented populations. Additionally, we implemented a Ph.D. in Education cohort for NASA professionals seeking a higher degree. These students are able to take advantage of a reduced tuition rate as OSU employees and maximize learning opportunities through hybrid (online with face-to-face meetings at NASA's Johnson Space Center) delivery of coursework. We have begun development of an online community of practice to centralize innovative, research-based professional development and collaborative learning opportunities for all NSPACE employees, and we are exploring the possibility of expanding the Ph.D. cohort opportunity to employees at all 10 NASA Centers.

Along with our partners — the 13-campus Texas A&M University system, 4-H, the Center for Sovereign Nations, Langston University, Northern Oklahoma College and Technology for Learning Consortium, Inc. — we are capitalizing on successes of the past to better serve the future of space exploration as NASA works towards a lunar presence and then on to Mars. The highlights of each activity on the following pages will give you a glimpse of the impact of this important work.

— Dr. Stansberry

Asssociate Professor, Educational Technology
Co-Investigator, NASA STEM Pathway Activities – Consortium for Education (NSPACE)
Founder, Emerging Technologies and Creativity Research Lab
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Quotes found in this report are from a third-party evaluation report. The external evaluator withholds names to protect participant privacy.

NASA’S OFFICE OF STEM ENGAGEMENT
FOCUS AREAS

Building a diverse, skilled, future workforce

Enabling contributions to NASA’s work

Strengthening STEM through connections to NASA

NATIONAL SCIENCE AND TECHNOLOGY COUNCIL’S COMMITTEE OF STEM PRIORITIES

◆ Improve STEM Instruction
◆ Better Serve Groups Historically Under-represented in STEM Fields
◆ Enhance STEM Experience of Undergraduate Students
◆ Design Graduate Education for Tomorrow’s STEM Workforce
◆ Increase and Sustain Youth and Public Engagement in STEM
EXECUTIVE SUMMARY–YEAR TWO

NASA STEM Pathway Activities – Consortium for Education (NSPACE)

Oklahoma State University (OSU) leads the consortium of seven partners, including 13 institutions with 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’s Johnson Space Center, agency mission directorates and NASA Headquarters to provide competitive and innovative STEM engagement opportunities to kindergarten through graduate students and educators.

The goals of OSU’s NSPACE project are to deliver a nationwide approach to NASA’s goals to improve STEM instruction; to increase and sustain youth and public engagement in STEM; to enhance the STEM experience of undergraduate students; to better serve groups historically underrepresented in STEM fields; and to design education for tomorrow’s STEM workforce.

https://education.okstate.edu/nasa.html
YEAR 2 TRIUMPHS

- **15**: NSPACE activities
- **4**: New activities launched
- **155K+**: Students reached
- **19K+**: Educators reached
- **51**: States and territories reached
- **1.3B+**: People reached through Twitter, Instagram, Facebook and other social media platforms

Aligning activities with NASA missions and increasing student opportunities to contribute directly to NASA’s missions.

- **34%** of NSPACE employees are alumni of NASA STEM Engagement activities.
- **18%** Increase in full-time NSPACE employees.
- **7** employees working on advanced degrees.
- Transitioned to new communication software, Zoom, providing more effective web conferences.
- Expanded weekly NSPACE meeting to include personnel at four NASA Centers, helping NSPACE reach a national audience and consistent messaging.

Hosted NSPACE Summit at OSU, providing employees targeted professional development aligning with NASA’s missions and goals.

Armstrong Flight Research Center
Langley Research Center
Stennis Space Center
Johnson Space Center

People reached through Twitter, Instagram, Facebook and other social media platforms.
BEGINNING ENGINEERING, SCIENCE, and TECHNOLOGY

BEST

“In robotics, I really like it to be child directed. With the BEST activity, I can now use the engineering design process because it adds accountability.”

— 6th grade science and robotics teacher

https://go.nasa.gov/best
NASA’s Beginning Engineering, Science and Technology (BEST) introduces the principles of engineering to audiences through hands-on, NASA-themed activities applying the engineering design process to solve problems and generate solutions. BEST activities help develop a unique combination of 21st century learning and innovation skills including creativity, critical thinking, problem solving, communication and collaboration. NASA’s BEST supports educators in implementing activities through conferences, face-to-face institutes, professional development sessions and webinars.

**YEAR 2 TRIUMPHS**

![Image](image.png)

- **1,741** Educators and students participated in NASA’s BEST activities in nine states
- **61** BEST digital badging certificates awarded to teachers
- **270** Students conducted BEST activities at two special events
- **163** Educators reached with five presentations at three conferences
- **202** Educators reached through nine in-person workshops

**IMPROVEMENTS**

NASA’s BEST engineering design process model is integrated into NASA Professional Development workshops at all six NASA BEST Centers. ◇

**ON THE HORIZON**

Release of BEST Activity Guide – Engineering Design Challenges for Students which includes three new sections.
COMMERCIAL CREW PROGRAM

CCP

“Excellent to hear from the expert and to connect the knowledge with a hands-on activity. Thank you!”

– Educator

https://www.nasa.gov/stem/ccp

Focus Area: Strengthening STEM through connections to NASA
The Commercial Crew Program (CCP) Next Generation STEM pilot provides integrated, evidence-based, authentic experiences and educational content for students and educators focusing on informing and inspiring the future workforce about the Agency’s program to launch American astronauts in American rockets from American soil. CCP capitalizes on the excitement surrounding Boeing and SpaceX building and launching crewed spacecraft to the International Space Station while providing educational content with NASA-unique resources for this historic time in human spaceflight.

**Ordered a set of 10 Oculus Go headsets and the accompanying gear for the CCP Next Generation STEM virtual reality field trips, increasing NASA’s Johnson Space Center’s ability to demo this new educational technology.**

Continuing beta testing of all educator resources in development during the initial pilot phase of the CCP Next Generation STEM program. Subsequent revisions have been made to adjust for student and educator feedback.

**Astro-Not-Yets storybook geared towards grades K-5 with an accompanying Sound on a String activity.**

Pilot educator professional development launch weeks and launch viewing party kits for the upcoming CCP crewed launches.

Demonstrate and share CCP educational resources with educators.

Releasing a CCP explainer video for grades K-5, with two accompanying classroom activities.

**1,200** Students, educators and community members were exposed to CCP educational resources and demonstrations at the FIRST Robotics World Championships.

**5,000+** Educators received CCP information and resources at three national conferences (SEEC, ISTE and NSTA).

**30** Educators attended the CCP educational activity presentation at SEEC.

**YEAR 2 TRIUMPHS**

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**ON THE HORIZON**

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**IMPROVEMENTS**
HIGH SCHOOL AEROSPACE SCHOLARS

HAS

“Probably one of the best experiences I have ever had as a teacher regarding facilitating inquiry-based investigations and STEM with highly motivated high school students. Every teacher involved with STEM could benefit from participating in HAS!”

– HAS counselor

https://go.nasa.gov/has
Celebrating its 20th anniversary, High School Aerospace Scholars (HAS) is an interactive, online course culminating in an all-expenses-paid, onsite experience at NASA’s Johnson Space Center. During the school year, Texas high school juniors gain knowledge learning the past, present and future of aeronautics, space exploration and NASA’s journey back to the Moon. Eligible students travel to Johnson to complete engineering design challenges and assist in planning a mission to Mars.

**YEAR 2 TRIUMPHS**

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**263**

Students participated in six onsite visits in June and July 2018.

**778**

Students enrolled in the HAS online course, representing 180 cities and 351 institutions throughout the state of Texas.

**41%**

Female for 2018-2019 online course.

**22%**

Of 2018-2019 online course participants are from Title I schools.

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**IMPROVEMENTS**

Enhanced counselor training, focusing on inquiry-based instruction.

Changed format of NASA subject matter expert presentations to a roundtable discussion, leading to student-driven discussions.

Consolidated student videos projects into a single, collaborative video each week, enabling greater collaboration and leadership opportunities for students.

Streamlined online application requirements.

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**ON THE HORIZON**

This summer, 270 students are participating in the 2019 HAS onsite experience.

Onsite participants will visit University of Houston’s Sensing, Workflow, Algorithm, Recognition and Modeling (SWARM) lab.

The HAS team supported Space Day Texas by speaking with six legislative offices to engage them in NASA milestones, including the 20th anniversary of HAS.
HIGH SCHOOLS UNITED WITH NASA TO CREATE HARDWARE

HUNCH

Focus Area: Enabling contributions to NASA’s work

www.nasahunch.com

“Participating in HUNCH taught me fundamental engineering skills and gave me a glimpse of the opportunities available at NASA.”

– HUNCH student
High schools United with NASA to Create Hardware (HUNCH) began 16 years ago with three schools producing hardware training items for the International Space Station (ISS). HUNCH has grown to more than 200 schools from 38 states; a 25 percent increase from last year. In addition to producing space flight hardware for the ISS and crew training, HUNCH reaches a diverse population of students through design projects, sewing flight and training articles, a video challenge and a culinary challenge. More than 20,000 students have participated in HUNCH with 94 percent moving on to pursue undergraduate degrees.

**YEAR 2 TRIUMPHS**

- 2,300+ Students participated in HUNCH during the 2018/2019 school year
- 15 Hygiene Kits delivered to the ISS Program Office for flight to station

**IMPROVEMENTS**

- Improved video challenge by partnering with Association for Career and Technical Education.
- Website 1.0 rollout with automated forms for data collection.
- Annual recognition ceremony for students and educators was made available digitally for all HUNCH participants.

**ON THE HORIZON**

- Completing 60 flight locker build agreement and more locker production to continue.
- Rollout of website 2.0 with improved automated forms for data collection incorporating lessons learned from website 1.0.
- Selecting a winning dish from the 2019 culinary challenge for crew consumption and evaluation.

Earlier this year, the 2018 culinary challenge winning dish—Orange Blackberry Croissant—was flown to the space station and positively evaluated by the Expedition 59 crew.
In partnership with 17 organizations across several industries to provide greater support and resources to students, schools and educators.

More than 600 items have been produced by HUNCH students for flight or training in 16 year history.

Providing products and designs for Orion and Gateway programs.

Software projects nearing flight-ready status and final review will be held soon.

Teams presented their designs and prototypes for Materials International Space Station Experiment (MISSE) straps, crew quarters organizer and ISS footpads in April 2019.

Submissions received thanks to newly expanded challenge requirements.
Design and prototyping projects will be flown by the end of 2019 to the International Space Station: Ball Clamp Monopod, Tape Dispenser and 3D Printed Fan Cover.

Space Flight Assemblies consisting of over 20,000 individual precision parts have been produced and delivered to the ISS Program Office.

HUNCH culinary items flown to station, with one put in regular rotation for the crew.
“The Aerospace Academy activity has allowed these students to be exposed to STEM at an early age and will benefit them all their lives.”

— Educator
Houston Independent School District (HISD) Aerospace Academies supports five schools in HISD awarded grants from the U.S. Department of Education to become STEM magnet schools involving programs focusing on aerospace engineering. HISD Aerospace Academies provides content, resources and teacher professional learning opportunities to aid educators in training the next generation of space explorers heading to the Moon and Mars.

ON THE HORIZON

Populating the online learning community with opportunities to support HISD educators’ continuous learning.

Reorganizing personnel structure for the 2019-2020 school year.

Providing support for summer camp activities.

Continuing to provide NASA STEM professional development for educators.
MICROGRAVITY NEUTRAL BUOYANCY
EXPERIMENT DESIGN TEAMS

MgNExT

“Micro-g is the reason why I applied for JSC internships (both Pathways and USRA) in the first place!”

– MgNExT participant

https://go.nasa.gov/mgnext
Microgravity Neutral Buoyancy Experiment Design Teams (MgNExT) challenges undergraduate students to design, build and test a tool or device addressing an authentic, current space exploration challenge as NASA makes plans for the Moon and Mars. The overall experience includes hands-on engineering design, test operations and public outreach. Student teams travel to the NASA’s Johnson Space Center to test their tools in the simulated microgravity environment of the Neutral Buoyancy Laboratory (NBL) — a 6.2 million gallon pool used for astronaut training.

**YEAR 2 TRIUMPHS**

119
Students and 10 educators traveled to JSC to test their tool in the NBL ◇

19%
Of students are female ◇

18
Institutions representing 18 states including three Minority Serving Institutions and two community colleges.

**IMPROVEMENTS**

Held challenge-specific virtual information sessions with technical subject matter experts allowing student teams to ask more specific questions and leading to better designs.

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

Announced team selections via a Facebook Live event. The event lasted 20 minutes and had approximately 100 viewers.

**ON THE HORIZON**

The zip tie cutter device, designed in a MgNExT challenge by the Lone Star College-Cy Fair team, is scheduled to launch to the International Space Station in July. The tool will be utilized by astronauts in planned spacewalks to repair the Alpha Magnetic Spectrometer.

In June, 39 students and 7 educators from 8 institutions will attend an onsite test week of their designs for this year’s challenges: sharp edge detection and removal, camera attachment mechanism and mini-arm end effector.
“All of the other program coordinators and PIs treat me with respect. They respect my opinion. They respect my ideas, and I feel important, which is worth its weight in gold.”

– MUREP participant

www.nasa.gov/education/murep
The MUREP Institutional Research Opportunity (MIRO) aims to strengthen and develop the research capacity of Minority Serving Institutions (MSI) in areas of value to NASA’s mission. NASA invites MSIs across the nation to submit research proposals based on current NASA needs. Selected institutions receive funding, support from NASA subject matter experts and the opportunity for student internships at a NASA center.

**MIRO**
MUREP Institutional Research Opportunity

- **6,249** Students impacted through MIRO awardee outreach events and activities
- **75** Interns placed at seven NASA Centers; 56% of interns placed were female

**MOO**
MUREP Other Opportunities

- **1,407** Students and educators impacted through MOO awards given to six institutions
- **40** Interns placed; 50% of interns placed were female

MUREP Other Opportunities (MOO) awards six Minority Serving Institutions with NASA funding and support to innovatively create and implement STEM opportunities designed to attract, retain and support the success of underrepresented students including women and girls and persons with disabilities into STEM fields. Awards assist faculty and students in research and provide authentic STEM engagement related to NASA missions.

**MUREP Sustainability Initiative (MSI)**

- **26** Institutional engagement activities involving 135 Minority Serving Institutions
- **817** College students and educators reached

The MUREP Sustainability Initiative (MSI) builds capacity to increase long-term sustainability at Minority Serving Institutions by creating awareness of opportunities including grants and cooperative agreements with a focus on increasing contract opportunities in partnership with NASA’s Offices of Small Business Programs, Technology Transfer, Small Business Innovative Research, Small Business Technology Transfer and Space Act Agreements.
MUREP INNOVATION AND TECH TRANSFER
IDEA COMPETITION

MITTIC

“MITTIC is a great learning experience. It teaches you a lot about how the engineers work together and learn more aspects of the business and project management side that you might not be familiar with in a STEM degree.”

– MITTIC participant

https://go.nasa.gov/NASAMITTIC
Minority University Research and Education Program (MUREP) Innovation and Tech Transfer Idea Competition (MITTIC) is a NASA spinoff challenge to develop new ideas for commercialization by seeking concept papers from multi-disciplinary student teams enrolled at Minority Serving Institutions (MSIs). Teams select a NASA technology and partner with a NASA small business company to propose a business plan for competitive review. Selected teams present their business plan in a lightning pitch competition at NASA’s Johnson Space Center to a diverse panel of start-up incubators, venture capitalists and NASA personnel. The winning team visits NASA’s Ames Research Center and Silicon Valley for an immersive experience to further develop the business plan.

ON THE HORIZON
Launch MITTIC 2.0.

2019 Historically Black Colleges and Universities (HBCU) Conference Week hosts MITTIC competition.
NASA COMMUNITY COLLEGE AEROSPACE SCHOLARS

NCAS

“The NCAS program allowed me to see my dreams in absolute clarity and fully realize my own potential to do great things. It allowed me to meet and form connections with some incredible people who shared similar interests and dreams as my own. This week will be remembered and stored with my most cherished memories.”

– NCAS participant

https://go.nasa.gov/ncas
NASA Community College Aerospace Scholars (NCAS) is an educational experience for community college students interested in exploring STEM. Students participate in a five-week online community, consisting of discussions, webinars with NASA subject matter experts and design challenges about future missions to the Moon and Mars. Select students attend a four-day engineering design challenge at a NASA Center.

**IMPROVEMENTS**

Added an “After the Leap” webinar inspiring and engaging participants to pursue STEM careers after the NCAS experience.

Hired an activity coordinator to improve NCAS communication and branding.

Added a dedicated travel day to the NCAS onsite experience schedule mitigating delayed starts, ensuring full team presence in team building activities.

**YEAR 2 TRIUMPHS**

1,064

Students participated in NCAS online community

757

Students participated in 21 onsite activities at 10 NASA centers and facilities and at the American Indian Higher Education Consortium Conference

23

Webinars presented with NASA subject matter experts and staff with a total of 3,074 attendees

4

Bags of microalgae launched in research payload to the International Space Station, developed by NCAS alum

**ON THE HORIZON**

Expanding NCAS to serve greater audiences by replicating it at community colleges across the nation.

Six community colleges from four states (CA, MS, NJ and OK) will implement the NCAS experience on their own campus to increase number of students reached by NCAS curriculum. Faculty at the college will support their own students through the online course then provide an on-campus NCAS onsite experience. One successful student from each school will be placed in a NASA internship.

The next round of scholars begin their online course, and eligible students will attend NASA onsite experiences in fall 2019.
NASA SPACESUIT USER INTERFACE TECHNOLOGIES FOR STUDENTS

S U I T S

“I really feel that this ignited a fire in the younger students to push for a truly awesome solution next year.”

– SUITS participant

https://go.nasa.gov/NASASUITS
NASA Spacesuit User Interface Technologies for Students (SUITS) design challenge is a STEM engagement activity where undergraduate and graduate student teams use existing hardware and software platforms, such as the Microsoft HoloLens, to create prototype spacesuit user interfaces to assist astronauts in conducting spacewalk tasks and demonstrate them in simulated environments as NASA prepares for missions to the Moon and Mars. After development, selected student teams travel to the NASA’s Johnson Space Center to evaluate their prototypes.

YEAR 2 TRIUMPHS

150+
Students from 18 institutions participated in SUITS online community

62
Students and faculty advisors from 12 institutions tested prototypes at Johnson

24
NASA volunteers from eight organizations served as design evaluators

1
Webinar presented by a retired astronaut providing students the opportunity to ask questions about their designs to someone with spacewalk experience

IMPROVEMENTS

Teams not selected to participate in the onsite experience were invited to participate virtually in onsite activities. Virtual participants shared ideas and results with the SUITS community, presented to technical leads and watched live streamed events.

ON THE HORIZON

Student teams continue executing their outreach plans.

Teams are updating their code by applying lessons learned during testing. Teams will submit their final code and report soon.
“Wow! What an incredible week of learning and fun! We cannot wait to bring back all we have learned and share it with our students and community!”

– Educator

https://go.nasa.gov/nos
Network of States (NoS) provided systemic, long-term support for NASA Centers and their communities by building strong regional networks for partner-delivered NASA educator professional development. NoS used the systemic structural design of a connected teaching model to build an education network aligning with national standards and design enhanced teaching practices by integrating NASA-unique STEM content and effective use of technology.

**IMPROVEMENTS**

Connected participants with NASA subject matter experts and activities related to NASA’s missions including: Ascent Abort-2, Apollo 50th Anniversary, Exploration Mission-1, Gateway, NASA 60th Anniversary, Orion, Space Launch System and the Year of Education on Station.

Increased the number of organizations representing the advisory committee from 9 to 11.

Expanded states served from one to three.
STEM IN DEEP SPACE

SDS

Focus Area: Strengthening STEM through connections to NASA

“...I wanted to reach out with a personal thank you for everything you do for students and teachers. Seeing the spark of curiosity that was ignited within the students at my school today as they participated in the Gateway Videocast was an incredible experience. Please pass my thanks on to everyone involved in this program, as well as the rest of the education teams you work with. You and your teams are making an impact on these students that will last for years to come!”

– Educator

https://go.nasa.gov/sds
STEM in Deep Space (SDS) connects 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. SDS also enables avenues for students to contribute to NASA's future deep space missions including a collaboration with NASA's Advanced Exploration Systems in which students will design garments to protect crew from radiation through the Wearable Equipment for Averting Radiation (WEAR) Challenge.

**ON THE HORIZON**

SDS will pilot the WEAR Challenge, connecting students to NASA scientists and engineers to contribute to the mission by developing wearable equipment to protect astronauts from exposure to radiation during deep space travel.

SDS will also pilot Gateway Interactive Virtual Environments (GIVE). During GIVE, students will design components for either the Gateway mockup or the Gateway virtual reality habitat.

**YEAR 2 TRIUMPHS**

- **Gateway interactive videocasts with subject matter experts in the Integrated Power, Avionics, and Software Gateway mockup, which were viewed live by 1,236 participants.**

- **425 Students on 25 teams are participating in inaugural WEAR challenge.**
“Incorporating space learning throughout the year really made the downlink so much more valuable for the kids. They are still so excited to learn anything about the ISS, watch videos of the astronauts and talk about the science that makes it all happen. I think the downlink experience has created NASA supporters for life. They will remember this forever.”

– Parent

https://www.nasa.gov/stemonstation
STEM on Station (SoS) uses the International Space Station, its crew and the onboard research to inspire, engage and educate students and educators. SoS leverages the opportunities of the crewed spacecraft to advance NASA and the nation’s STEM education and workforce pipeline through NASA’s missions and unique assets including a comprehensive website, conversations with astronauts in space, lessons taught from the space station and hands-on STEM activities developed through high-profile partnerships.

YEAR 2 TRIUMPHS

75,486
Record-setting views on the STEM on Station website in a one-month period

134,000
Students and 2,900 educators reached by 35 in-flight Education Downlinks between astronauts aboard the International Space Station and students in 18 states plus Washington D.C.

23,690
Views on YouTube and 5.79M social media impressions earned by six STEMonstrations

9,000+
Educators reached through ISTE, CAST, SEEC and NSTA conferences

IMPROVEMENTS

Collaborated with NASA’s Johnson Space Center audio engineers and live television producer to purchase downlinks tech kits for organizations who do not have required technical equipment to produce quality audio and video which decreased the number of clients with poor quality audio and video during downlinks.

Began sending feedback to crew after each downlink about each event.

Condensed STEMonstration script elements to accommodate limited crew availability. This includes narration from crew post-mission to reduce the amount of crew time required on station.

Collaborated with management to re-establish review process for STEMonstrations.

ON THE HORIZON

Coordinating a research payload challenge for higher education institutions to send experiments to the space station which involve a Citizen-Science aspect for high school and/or middle school students to participate in the research.

Partnering with Microsoft to develop and release space station-focused Hack STEM lessons. Hack STEM lessons are inquiry-and project-based activities that embed computational and design thinking into hands-on lessons for middle school students.

Coordinating seven downlinks scheduled between June and September 2019.
“Being the first New York City Public School to participate in NASA’s Year of Education on Station was the most unimaginable experience ever to happen at our school. This all happened because one student inspired me to pursue the opportunity. Everything he loved, imagined and dreamed about space was brought to realization during this educational downlink. His dream inspired an event that energized an entire school community and had an infinite impact on everyone who viewed, attended or contributed to it.”

– Assistant Principal

https://www.nasa.gov/stemonstation
The Year of Education on Station (YES) capitalized on the fortunate scenario of astronauts and former classroom teachers Joe Acaba and Ricky Arnold on back-to-back missions to the International Space Station. YES leveraged this unique opportunity to engage students and educators in NASA-unique STEM activities while providing a strong connection to humans living in space by highlighting the space station as an educational platform.

ON THE HORIZON

While YES concluded in October 2018, downlinks will continue to inspire students and STEMonstrations will continue to be filmed and released. YES provided significant data to improve processes and quality of product for downlinks and STEMonstrations, standing as the Agency’s STEM Engagement Council’s example for activities and collaborations as the Office of Education transforms into the Office of STEM Engagement.