NAC STEM Engagement Meeting

September 30, 2022
NAC STEM Engagement Committee Meeting

Monday, August 1, 2 pm to 5 pm Eastern
Open to the Public

Agenda:
• Opening Remarks by Chair
• OSTEM Recent Events
• Revisit NAC Topics of Interest
• STEM Engagement 2022 Priorities: Partnerships
• Formulation of New Findings and Recommendations
• Other Related Topics
AGENDA

Opening Remarks by Chair

Office of STEM Engagement: Recent Events

NAC Topics of Interest

Partnerships

Discussion
AGENDA

Opening Remarks by Chair

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Discussion
OSTEM is making substantive contributions to the National Space Council (NSpC) priority for STEM Education efforts:

- Co-chair and membership on new Interagency Space STEM Task Force
- Active participation in drafting the Space STEM Roadmap

NASA will be a key contributor in execution of actions outlined in the roadmap

Remarks during recent NSpC:
Deputy OMB Director, Nani Coloretti stated “…the budget request seeks to broaden and diversify student participation in STEM to inspire and develop the next generation of scientists, engineers, and explorers...these investments are critical for delivering on the administration’s priorities.” Vice President Harris responded by saying “as we often say, the budget should reflect our priorities.”
NASA STEM Engagement
Back-to-School Campaign 2022

Katherine Brown
Public Affairs Officer, NASA's Office of STEM Engagement
Campaign Overview

Week 1
- 9 Posts
- 448,000 Impressions
- 7,000 Engagements
- 57,000 Views

Week 2
- 7 Posts
- 889,000 Impressions
- 10,000 Engagements
- 71,000 Views

Week 3
- 7 Posts
- 392,000 Impressions
- 6,000 Engagements
- 52,000 Views

Totals
- 23 Posts
- 1,730,000 Impressions
- 23,000 Engagements
- 180,000 Views

28 agency accounts participated in the campaign.

Highlights

Week 1
- **Downlink Promo**
  - 211,000 Impressions
  - 2,000 Engagements
  - 41,000 Views

Week 2
- **Victor Glover BTS Message**
  - 230,000 Impressions
  - 3,500 Engagements
  - 47,000 Views

Week 3
- **ASC Twitch**
  - 81,000 Impressions
  - 2,300 Engagements
  - 39,500 Views (on Twitch)
<table>
<thead>
<tr>
<th>Back to School 2021</th>
<th>Back To School 2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 NASA Accounts Participated</td>
<td>28 NASA Accounts Participated</td>
</tr>
<tr>
<td>125 posts from NASA STEM</td>
<td>45 posts from NASA STEM</td>
</tr>
<tr>
<td>Across Facebook &amp; Twitter for the 3-Week Period:</td>
<td>Across Facebook &amp; Twitter for the 3-Week Period:</td>
</tr>
<tr>
<td>39 Million Reach</td>
<td>76.8 Million Reach</td>
</tr>
<tr>
<td>2,000 Follower Gain</td>
<td>2,256 Follower Gain</td>
</tr>
</tbody>
</table>
NASA Experts Answer "When Will I Ever Use This?"
Department of Education Collaboration
Shared on nasa.gov homepage and social media
YouTube Views: 19,700
Currently #5 most viewed on our page
Earned 203 subscribers

Surprisingly STEM: Marine Biologists @ NASA Kennedy
Premiere of Surprisingly STEM series
YouTube Views: 8,700
Other STEM Social Views: 13,500
Earned 93 subscribers

Surprisingly STEM: Soft Robotics @ NASA Langley
Second episode of Surprisingly STEM
YouTube Views: 22,000
Earned 396 subscribers
AGENDA

Opening Remarks by Chair

Office of STEM Engagement: Recent Events

NAC Topics of Interest

Partnerships

Discussion

The Council recommends that the NASA Administrator and NASA Mission Directorates, along with the NASA Office of Procurement, should ensure that NASA assists building research capabilities and infrastructure at Minority Serving Institutions (MSIs).

The Council recommends that the NASA, other Federal STEM agencies, and other partners (current and potential) should collaborate to support the STEM education community in addressing the disruption of schools and other identified challenges resulting from the ongoing COVID-19 pandemic. NASA alone cannot solve this.
“NASA is fully committed to Diversity, Equity, Inclusion, and Accessibility (DEIA) for our entire workforce and all our workplaces. This means our Agency will continually prioritize the following: reinforcing a culture in which our employees feel they can be authentic, welcomed, respected, included, and engaged; maintaining an environment where our employees consistently and systematically receive fair, just, and impartial treatment; and ensuring our employees can fully and independently access facilities, information and communication technology, programs, and services.”

Sen. Bill Nelson
NASA Administrator

September 29, 2021
NASA Strategic Objective 4.3
Build the next generation of explorers.
Engage students to build a diverse future STEM workforce.

NASA STEM Engagement Goals:
1. Create unique opportunities for a diverse set of students to contribute to NASA's work in exploration and discovery.
2. Build a diverse future STEM workforce by engaging students in authentic learning experiences with NASA's people, content, and facilities.
3. Attract diverse groups of students to STEM through learning opportunities that spark interest and provide connections to NASA’s mission and work.

Focus Areas:
- Broaden student participation to increase diversity, equity, and inclusion in STEM through NASA opportunities and activities.
- Build strategic partnerships and networks, expanding NASA's STEM ecosystem to magnify reach and impact.
- Expand NASA contributions in engaging K-12 students in STEM pathways.
**Focus Area: Broadening Student Participation**

**Purpose:** Provides an integrated set of efforts for broadening student participation to increase diversity, equity, and inclusion in STEM through NASA opportunities and activities.

**Overarching Goals:**

1. Enhance communications and stakeholder engagement and build networks and relationships.
2. Strengthen practices and systems.
3. Focus on metrics and evaluation to effectively measure progress.
4. Drive a collective focus across NASA’s STEM Engagement community.
Where Are We Headed?

• Reexamining existing efforts
• Reevaluating target goals and developing a formalized feedback process
• Integrating DEIA requirements language in solicitations and contract awards
• FY 22 performance assessment and evaluation studies
• Expanding partnerships with other federal agencies (NSF, DoD, ED, NOAA)
• Strategically leveraging partners, networks and influencers to expand reach to underrepresented/underserved students
Agency Diversity, Equity, Inclusion, and Accessibility (DEIA) Initiative

Diane DeTroye
Manager, Portfolio Integration, NASA's Office of STEM Engagement
**Agency-wide DEIA Initiative**

*Administration Executive Orders*

**External**
- **EO13985**  
  Advancing Racial Equity and Support for Underserved Communities  
  • Equity Action Plan
- **EO14041**  
  Advancing Educational Equity, Excellence, and Economic Opportunity Through Historically Black Colleges and Universities
- **OMB Memo 22-03**  
  Advancing Equity in Federal Procurement

**Internal & External**
- **EO14020**  
  Gender Policy Council  
  • Gender Equity Plan
- **EO14031**  
  Advancing Equity, Justice, and Opportunity for Asian Americans, Native Hawaiians, and Pacific Islanders
- **EO14050**  
  Advancing Educational Equity, Excellence, and Economic Opportunity for Black Americans
- **EO14045**  
  Advancing Educational Equity, Excellence, and Economic Opportunity for Hispanics

**Internal**
- **EO140069**  
  Advancing Economy, Efficiency, and Effectiveness in Federal Contracting by Promoting Pay Equity and Transparency
- **EO14049**  
  Advancing Educational Equity, Excellence, and Economic Opportunity For Native Americans and Strengthening Tribal Colleges and Universities
- **EO14030**  
  DEIA in the Federal Workforce  
  • DEIA Strategic Plan
- **EO13988**  
  Preventing and Combating Discrimination on the Basis of Gender Identity or Sexual Orientation

**Color Coding**
- **Green** = Plan has been developed or is in work
- **Yellow** = OSTEM will be a part of the plan
- **Gray** = EO does not involve OSTEM
OSTEM and Agency-wide DEIA Initiatives

Understand the requirements and scope of the Executive Orders

Work collaboratively with Agency Lead offices and other Agency organizations in the development of plans

Leverage existing work and activities where possible
  • Support the establishment of new plans, activities, measures, metrics

Ensure our efforts are accurately reflected
Minority University Research and Education Project

Torry A. Johnson
Manager, Minority University Research and Education Project, NASA's Office of STEM Engagement
MUREP VISION

To enhance the research, academic and technological capabilities at MSIs by providing authentic student learning experiences related to NASA missions that contribute to a diverse future STEM Workforce.
FY 22 MUREP ENGAGEMENT UPDATE – WHAT'S NEW?

MSI Entry Point Activities – Planning Grants, Prizes, Challenges
❖ MSI Space Accelerator / SMD Challenge
❖ MUREP Small Business Technology Transfer Research (MSTTR) / STMD Planning Grant
❖ HEOMD / ARMD Planning Grant

Broadening Participation
❖ Graduate Degrees for Minorities in Engineering and Science (GEM) Fellowships
❖ Women’s College / University effort

Dedicated Solicitations for HBCU, PBI & Tribal / Indigenous Institutions
❖ MUREP Precollege Summer Institute (PSI)
❖ Data Science Equity Access Priority (DEAP) / SMD
❖ MUREP for American Indian and Alaska Native STEM Engagement (MAIANSE) Connect

Pending Partnerships
❖ Advancing Minorities Interest in Engineering (AMIE)
❖ United Negro College Fund (UNCF)
❖ Thurgood Marshall College Fund (TMCF)
FY22 New MUREP Awards

**MUREP High Volume in Partnership with ARMD**
Seeks to support the development of a broader technical aerospace high-volume manufacturing workforce while increasing interest in related entrepreneurship opportunities.
$3M / 4 Awards

**MUREP PSI in Partnership with Department of Education**
Designed to strengthen support for students in pre-college summer programs
$640k / 10 Awards

**MAIANSE CONNECT – Indigenous Institutions**
Aimed at fostering connections between Indigenous culture and NASA.
$1.3M / 4 Awards

**MSI Space Accelerator Challenge in Partnership with SMD**
NASA’s first MSI Space Accelerator designed to advance agency goals to improve future science missions.
$150k / 3 Faculty
- Access to incubators and venture capital mentoring
- 10 weeks to commercialize idea
NASA MSI Exchange:
Leveraging Technology to Drive Participation

KEY FEATURES & BENEFITS
- Official NASA MSI Listing
- MSI Capability Statements
- MSI Awareness & Connectivity
- Powers Your Search for Diverse Academic Collaborators!

SERVICES
- Bi-Weekly Newsletter
- MSI Training & Development
- Data Collection & Reporting
MUREP AWARD OBLIGATIONS BY MSI TYPE

(Grants & Cooperative Agreements)

FY21

- HBCU: 32%
- HSI: 33%
- Multiple Categories: 21%
- TCU: 6%
- PBI: 5%
- AANAPISI: 2%
- ANNH: 1%

FY22

- HSI: 47%
- AANAPISI: 4%
- Multiple Categories: 20%
- TCU: 5%
- PBI: 0.5%
- NASNTI: 0.5%
- HBCU: 23%
Objectives
❖ Showcase HBCU / MSI Research Capabilities
❖ Matchmaking w/Govt Agencies, SBIR/STTR, Small Business & Prime Contractors
❖ Relationship Building to Enhance Partnerships & Maximize Opportunities for Success!

Designed to address NASA's one percent (1%) federal contracting goal with HBCU/MSI partners.

Road Tour Stats – FY21/FY22
❖ 3 Events
❖ 131 MSIs Represented
❖ 267 Faculty & Staff Participants
❖ 106 Business Partners Engaged
NASA Partnering with White House Initiative to Advance HBCUs and Scholars!

**HBCU WEEK ENGAGEMENT:**

- **Mini NASA MITTIC Student Pitch Competition**
  - Student Poster Session
  - Showcase Spinoff Technology Concepts
  - "Space Tank" Panel and Judges
  - Winner Cash Prize & NASA Immersion Experience

- **NASA Exhibits**
  - MSI & Student Opportunities

- **NASA Sessions**
  - HBCU Agency Collaboration
  - Federal Contracting Career Recruitment

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**Annual National HBCU Week Conference**

Advancing Educational Equity, Excellence and Economic Opportunity

20-23 September 2022

White House Initiative on Historically Black Colleges and Universities
AGENDA

Opening Remarks by Chair

Office of STEM Engagement: Recent Events

NAC Topics of Interest

Partnerships

Discussion
NASA STEM Engagement Partnerships Overview

Rob LaSalvia
Partnership Manager, NASA's Office of STEM Engagement
AGENDA

1. Connection to Agency Portfolio
2. STEM Engagement Partnership Strategy
   – Goals and Priorities
   – Coordination and Process
   – Selection Criteria
3. Summary of Engagement
5. Trends and Recommendations for Improvement
###connection to the agency portfolio

**NASA Support Structures (STEM Engagement)**

<table>
<thead>
<tr>
<th>Grants and Cooperative Agreements</th>
<th>Networks and Alliances</th>
<th>Partnerships</th>
</tr>
</thead>
</table>
| • NASA Defines Requirements and Provides financial support  
  • Space Grant  
  • EPSCOR  
  • MUREP  
  • TEAMS II | • NASA led support structure to share mission content and direct services to institutions or educators.  
  • Museum and Informal Education Alliance  
  • Astro-camp | • NASA and External organizations collaborate on mutually beneficial goals.  
• Level of effort is substantial enough that a formal agreement is generally necessary.  
• No NASA funding is provided. |
## STEM Engagement Strategy (2020-Present)

### Goals

<table>
<thead>
<tr>
<th>Inputs</th>
<th>Outputs</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>NASA:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• NASA mission data and imagery</td>
<td>• National campaigns (social media, platforms, traditional media)</td>
<td>• Engage students across the United States in opportunities connected to NASA missions, themes or programs</td>
</tr>
<tr>
<td>• Subject matter expertise (technical, NASA missions/programs)</td>
<td>• Products showcasing STEM careers and role models</td>
<td>• Bolster external efforts that contribute to federal STEM goals.</td>
</tr>
<tr>
<td>• Subject matter expertise (NASA STEM education and related disciplines)</td>
<td>• Products and activities designed to educate and engage students</td>
<td>• Broaden participation of students from groups traditionally underrepresented in STEM careers</td>
</tr>
<tr>
<td>• Role models and real-life examples of STEM</td>
<td>• Products and activities designed to support educators in STEM topics</td>
<td></td>
</tr>
<tr>
<td>Partners:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Subject matter expertise (target audience)</td>
<td>• Student challenges, competitions, citizen science or research opportunities</td>
<td></td>
</tr>
<tr>
<td>• Subject matter expertise (product/activity development)</td>
<td>• Evaluation reports, best practices, lessons learned, publications</td>
<td></td>
</tr>
<tr>
<td>• Audiences and networks: students and educators</td>
<td></td>
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</tr>
</tbody>
</table>
**Entreprise-Wide Partnership Coordination**

Guiding Documents:
- Agency Partnership Handbook (Update in Progress)
- STEM Engagement Partnerships Practical Guide (2021)
- STEM Engagement Partnership Best Practices (2021)
- Open Partnership Call (Annual Updates)
- STEM Engagement Partnership Rubric (2021)
Office of STEM Engagement releases on open call for partnerships. This document is updated annually based upon feedback from the SEC and OGC.

- Goals
- Priorities
- Supports Available
- Selection Process and Criteria
- Format for Statement of Interest Submission
- Timeline
- Shell Agreement

### Selection Criteria (Top Level)

- Alignment to Goals
- Benefit to NASA and Partner
- Target Audience
- Diversity and Inclusion Plan
- Intended Outcomes
- Anticipated Return on Non-Financial Investment
- Timeline

https://www.nasa.gov/stem/partnerships/index.html
### Engagement with 119 Organizations (April 2021-May 2022)

#### Key Numbers

- **25** Active Non-Reimbursable Space Act Agreements
- **21** Informal collaborations to share content or engage students
- **16** Projects (completed or in-progress) about the Artemis I Mission
- **7M+** Digital engagements (Content Downloads, Education Multi-Media Uses and Virtual Event Participants)*

#### Example Collaborators

- noggin
- Microsoft
- USPTO
- stemnext
- Charles Stewart Mott Foundation
- National Park Service
- NSF
- Discovery Education
- U.S. Department of Education
- LEGO

* Source: Partner Provide Metrics for SY 20-21
NASA Strategic Partnerships Highlighted by National Space Council September 2022

$1.25 million for After School Learning Centers:
- Department of Education is providing $1.25M to support NASA’s engagement in 21st Century Community Learning Centers

Artemis Moon Trees Educator Resources:
- Department of Agriculture and NASA are announcing the Artemis Moon Trees Program with online educational resources

LEGO Build to Launch Series:
- LEGO Education – NASA partnership developed series for students to explore the technology, STEM concepts and careers behind the Artemis I mission

“Noggin’s Space Place” Series:
- Series developed through NASA partnership with Noggin, Nickelodeon’s standards-aligned media platform that reaches of millions of young children and families

COSI Learning Lunchbox STEM kits:
- TEAM II funded Center of Science and Industry (COSI) in Columbus, Ohio to provide STEM Learning Lunchbox kits to underserved youth and families

Million Girls Moonshot Flight Crew Program:
- NASA’s partnership with STEM Next Opportunity Fund provides resources for its Million Girls Moonshot Flight Crew program with youth representatives from every U.S. state

Space Exploration Theme for Hour of Code Activities:
- Code.org will highlight connections between computer science and space exploration in the 2022 Hour of Code. NASA’s partnership to provide extensive support

PARTNERSHIP EXAMPLES

Google

• Collection of 65 NASA Developed 3D Models and support resources for educators and the public.
• Launched on Sept 13, 2022, is now featured in Search, Classroom and Arts and Culture.

COSI Learning Lunchboxes

• Innovative collaboration to distribute STEM kits through food banks to underserved students.
• Over 75,000 Artemis I themed kits have been distributed to students and families to date.

Crayola Education: Good Night Moon

• Garnered 144M+ Social Media Impressions
**STEM Next Opportunity Fund**

- Collaboration to support the Million Girls Moonshot in afterschool programs through Curriculum Support Resources, STEM Mentors and Educator Training and Support
- ISS downlink and watch party reached over 24K students and educators

**Microsoft**

- NASA supported Microsoft in use of Artemis data sets and themes as a real-world context for online coursework.
- 65K users have earned badges. Courses have a 4.8 (out of 5) approval rating.

**NOGGIN/Viacom**

- Collaboration to introduce Pre-K and elementary students to STEM concepts and careers.
- Scheduled release of Space Themed Playlist in October 2022.
- You tube Feature "Rhymes Through Time- My Best" garnered 1.5 Million views.
**PARTNERSHIP EXAMPLES**

**LEGO Education**
- Build to Launch Series focuses on open ended student design and creativity. The 10-week series introduces students to a variety of NASA STEM careers.
- This Artemis themed series has engaged over **4,000** teachers.

**Girl Scouts**
- NASA supported the Girls Scouts in their first virtual STEM summit:
  - Utilized **17** NASA speakers
  - Reached **7,000** girls during the 5-hour event.
  - Collaborated on an Artemis I essay contest which recently announced 90 national winners.

**Discovery Education**
- Collaboration to equip students and educators with access to resources and events.
  - Create NASA Themed Channel and playlists resulting in **4.5 million** uses of NASA created or inspired products in the platform.
Upcoming "Connected" Experiences

Lights on for Afterschool (Oct 20, 2022)

Lights On is an annual celebration of the importance of afterschool programs across the country. NASA is leading an effort to raise the awareness of STEM careers.

NASA will work with multiple partners to:
• Host virtual and in-person events and connected watch parties
• Release supporting activities and career profiles

Hour of Code (Week of Dec 5, 2022)- The Hour of Code occurs each year around the birthday of Admiral Grace Hooper, a pioneer in computer programming with the US Navy. This year Hour of Code will feature space exploration as a Central Theme.

NASA is working with Code.org and multiple partners to:
• Share NASA Themed Coding Activities with Students
• Offer NASA Roles models in live and pre-recorded student engagements
• Raise Awareness of Coding and related Computer and Data Science Careers

Introduce a Girl to Engineering Day (Feb 23, 2023)

This day encourages volunteers, educators, and others to act as role models and facilitate engineering activities to show girls how engineers change our world.

NASA will connect with multiple partners to host national virtual events and local opportunities.
SAMPLING OF PARTNERSHIP REACH (SY20-21)

<table>
<thead>
<tr>
<th>Org</th>
<th>Digital Reach</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discovery Education</td>
<td>4,700,000</td>
<td>Products and Videos Used</td>
</tr>
<tr>
<td>NOGGIN</td>
<td>859,756</td>
<td>Video Views</td>
</tr>
<tr>
<td>Microsoft Learn</td>
<td>70,000</td>
<td>Product Usage</td>
</tr>
<tr>
<td>Ryan’s World</td>
<td>1,500,000</td>
<td>Video Views</td>
</tr>
<tr>
<td>Frito-Lay</td>
<td>71,000</td>
<td>Product Downloads</td>
</tr>
<tr>
<td>Girls Scouts</td>
<td>7,000</td>
<td>Presentation Attendees</td>
</tr>
<tr>
<td>Tynker</td>
<td>15,000</td>
<td>Video Views</td>
</tr>
<tr>
<td>Peanuts</td>
<td>92,000</td>
<td>Product Downloads</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>7,314,756</strong></td>
<td></td>
</tr>
</tbody>
</table>
## Partnership Trend 1: STEM Career Pathways (Focus on D&I)

<table>
<thead>
<tr>
<th>Trend Overview</th>
<th>Almost all external organizations seek support in identifying NASA role models to share their career journey and specifics of a STEM job. The primary request is for video content that demonstrates the diversity of NASA’s scientific and technical workforce. Most partners prefer leveraging existing video for products, but a small percentage have resources to create their own.</th>
</tr>
</thead>
</table>
| NASA Contribution Summary | • Many organizations were able to leverage existing videos or information under Agency Media Usage Guidelines. NASA had to provide significant support in identifying videos as NASA does not have a common location for these resources.  
• OSTEM worked with Mission Offices and Centers to identify SME’s when new content creation was requested. |
| Discussion Question: | How might we better leverage and position video profiles for outside groups? |
## Partnership Trend 2: Internships

<table>
<thead>
<tr>
<th>Topic</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Trend Overview</strong></td>
<td>Outside organizations seek agreements that place students in NASA internships or research experiences. In some instances, organizations provide stipends for students. The current NASA internship program is over-subscribed and the Agency has limitations on available mentors. Outside agreements place an unfunded burden on OSTEM coordinators who assist with mentor recruitment and onboarding.</td>
</tr>
</tbody>
</table>
| **NASA Contribution Summary** | • NASA points organizations without funding to the internship portal and encourages them to have their students apply.  
• NASA has an inconsistent approach to organizations who offer funding for students. OSTEM, Centers and Missions pursue individual agreements. |
| **Discussion Question**       | What criteria might NASA consider for externally supported interns working in Centers and Missions?                                         |
## Partnership Trend 3: STEM+

<table>
<thead>
<tr>
<th>Trend Overview</th>
<th>Outside organizations request NASA support for content that cuts across many disciplines. The most frequent examples include Computer Science, Coding, Data Science and the Arts.</th>
</tr>
</thead>
</table>
| NASA Contribution Summary | • NASA supported external request, were possible, by providing access to technical experts and role models to help modify existing content or review new content for accuracy.  
• Access to NASA data sets for educational purposes represents a potential area of growth. My NASA Data (SMD) is one of few opportunities responsive to these request and is very well-regarded by partners who review materials. |
| Discussion Question | How might NASA better support topics like Data Science, Computer Science and the Arts (particularly with K-12 student audiences)? |

The Next Generation of Explorers
AGENDA

Opening Remarks by Chair

Office of STEM Engagement Back-to-School Campaign

NAC Topics of Interest

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Discussion