INSPIRE - ENGAGE - EDUCATE - EMPLOY
The Next Generation of Explorers

NASA ADVISORY COUNCIL STEM ENGAGEMENT COMMITTEE:
STEM PARTNERSHIPS | APOLLO’S 50TH | NEXT GEN STEM

October 29, 2019

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NASA’S OFFICE OF STEM ENGAGEMENT
IMPORTANCE OF STRATEGIC PARTNERSHIPS

One of Three Focus Areas From Business Services Assessment:

2. Build a diverse future STEM workforce by engaging students in authentic learning experiences with NASA’s people, content and facilities.
   - Provide learning opportunities to attract and engage all students in STEM, including those historically underrepresented and underserved.
   - Enhance capabilities of institutions and support educators to position them to better serve students, including those in underserved communities.
   - Cultivate strategic partnerships with state-based regional and federal public, academic and private institutions to magnify NASA’s efforts and investments.
### Summary of NASA STEM Engagement Partnerships

<table>
<thead>
<tr>
<th>Agreement(s)</th>
<th>Number</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agreements tagged in PAM system as “Education”</td>
<td>132</td>
<td>Education identified as an affected office.</td>
</tr>
<tr>
<td>Agreements confirmed as having STEM Engagement component</td>
<td>71</td>
<td>Includes 30 CRADAs for CubeSats managed by HEO.</td>
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<tr>
<td>STEM Engagement Agreements minus CRADAs</td>
<td>41</td>
<td>71 minus 30 CRADAs managed by HEO</td>
</tr>
<tr>
<td>Number agreements managed by a NASA STEM Engagement Office (not including CRADAs)</td>
<td>34</td>
<td>17 Space Act Agreements, 12 Umbrella Agreements, 4 Interagency Agreements, 1 International Agreement</td>
</tr>
<tr>
<td>Number agreements managed by office other than a NASA STEM Engagement Office (not including CRADAs)</td>
<td>7</td>
<td>1 Space Act Agreement, 6 Umbrella Agreements</td>
</tr>
</tbody>
</table>
NOTABLE ACHIEVEMENTS IN FY2019: PARTNERSHIPS

- **Hacking STEM Lessons**
  - 8 Lessons for middle & high school
  - Address challenges of living in space
  - Astro Socks featured on ISS Instagram

- **Department of Education**
  - 100K Students partake in engineering design challenges
  - Partnership with NASA & 21st Century community Learning Centers
  - 25 States help expand STEM opportunities for students

- **Mission Patch Coding Challenge**
  - 10K Entries in a week!
  - 5 Won Class Chat with NASA SME
  - Global Challenge in Partnership with Tynker Coding for Kids

- **STEM & Peanuts Partnership**
  - STEM Curriculum for K-8 Students
  - Developed STEM Content for McDonald's Happy Meal

- **Challenger Center**
  - Completion of Christa's Lost Lessons
  - Ricky Arnold debuts effervescence for students
**NOTABLE MILESTONES: SPACE STEM FORUM & APOLLO 50TH ANNIVERSARY**

**Spacestem.NASA.gov**
- 1M Attendees at listed events
- Over 300 events at 240+ sites on July 19 - 20

**Development & Distribution: STEM Content in Partnership with National Park Service**
- Spaceflight Explorer, Junior Ranger Activity Guide
- 50K+ distributed to 50+ National Parks

**Forward to the Moon with Artemis**
- 100K distributed to NASA Centers, libraries, Challenger Learning Centers, museums and Solar System Ambassadors.
- 74 organizations in 28 states

**13 STEM Webinars for Apollo Anniversary & Artemis**
- Live Attendance 1000+
- 4000+ downloads of archived recordings and materials

**STEM Forward to the Moon Broadcast**
- 27,165 combined social media engagement
- 30K+ views on YouTube with 1,299 live streams

**#VirtualMoonshot**
- 18 host centers; 560K social media following
- Total reach: 6,108
- Total engagement: 4,303

**STEM Apollo Watch Party/Media Kit**
- Resources & draft media advisory to publicize Apollo events
- Over 2,300 page views

**Apollo Anniversary STEM on National Mall**
- Cosmosphere’s Apollo Redux exhibit
- 10 STEM activities and over 21K NASA items distributed
- Over 2K participated in scavenger hunt & over 10K interactions with general public
Next Gen STEM Pilot Themes

- Evidence-based pilot activities to engage middle school students in mission content:
  - Hands-on, Inquiry Based Experiences
  - Educator Support Materials
  - Digital Resources and Social Media
  - Partner-Driven Collaborations for Implementation
  - Leverage existing Agency STEM Engagement resources
**Next Gen STEM Connection to Sphere 1 Activities**

- **Artemis STEM Challenges**
- **ISS 20th Anniversary**
- **Commercial Crew**
- **Mars 2020**
- **Earth Day**

**STEM Engagement Sphere 1 Activities**

- **Middle School/High School components of two challenges (Student Launch and Human Rover)**
- **STEM on Station**
- **Suite of NGS opportunities**
STEM Forward to the Moon Educators Guide includes hands-on science activities may be done at home with family, at summer camp or in a classroom.

The guide and supporting activities supplemented the STEM Education segment of the Apollo Anniversary broadcast first aired on NASA TV July 19, 2019.
STEM on Station Partnership: Hacking STEM Lessons in Collaboration with Microsoft

Hacking STEM Lessons: https://aka.ms/20yrsinspace
Next Gen STEM Pilot Themes

Expert Review Panel
• July, 2019
• STEM educators, supervisors, directors, and specialists

Solicited Feedback and Recommendations on Next Gen STEM Products and Opportunities
• Mission Themes and Product Structures
• Recommendations for Improvement
• Changes necessary for Implementation

* Incorporating Recommendations *
NEXT GEN STEM PILOT THEMES

Evaluation -- Multiple-Case Study Report
  • Completed August, 2019
  • 6 Evaluation Questions
  • Included literature review
  • Government shutdown impacted ability to fully conduct original plan per timeline
  • Findings and Recommendations: Cross-case and by individual theme

* Incorporating Recommendations *