Partners and Collaborators

External Evaluation

Development & Dissemination

- Association of Science-Technology Centers
- California State University
- McAuliffe Center / Framingham State University
- National Girls Collaborative Project
- National Science Olympiad
- Smithsonian Affiliations
- Space Science Institute
- University of Hawaii / Project PANOPTES
- University of Texas – San Antonio

We also collaborate with several members of the Science Activation Collective.
**SMD’s Desired Outcome:** Enable NASA science experts and content into the learning environment more effectively and efficiently with learners of all ages.

**SMD Objectives:**
- Enable STEM Education
- Improve U.S. Scientific Literacy
- Advance National Education Goals
- Leverage Efforts Through Partnerships
We Create and Deliver
NASA Astrophysics-Themed Products and Experiences

Data Tools & Participatory Experiences

Exhibits & Community Programs

Star Birth
Lagoon Nebula (M8)

Multimedia & Immersive Experiences

Professional Learning Experiences

Accessible Learning Resources

NASA'S UNIVERSE OF LEARNING
NASA’s Universe of Learning: Key Factors Enabling Impact

Direct connection to science and Subject Matter Experts

Co-location with communications teams

Rapid response to new discoveries and results

External evaluation and assessment*

Audit Focus
- informal education
- pre-service
- underserved / underrepresented

Framework of informal learning strands and science content themes

Grounded in research/best practices

* External Evaluators:
  Goodman Research Group
  Cornerstone Evaluation Assoc.
We aim to advance NASA SMD’s Desired Outcome and Objectives on a national scale by:

- Increasing educators’ use of NASA Astrophysics *science content* and experts to facilitate STEM learning, and their capacity to do so

- Increasing learners’ understanding of the *process of science*, and key topics in astronomy and space science

- Increasing role of NASA Astrophysics *science experts* as partners

- Creating an integrated, coherent, flexible, and *effective partnership* and program that uniquely leverages our direct connection to the science

NASA’S UNIVERSE OF LEARNING
Subject Matter Expert (SME) Engagement

• Direct connection to SMEs involved with **full range of NASA Astrophysics missions and programs**

• SME involvement is *carefully designed*
  • Goodman Research Group conducted focus group and survey work to assess SME needs and interests
  • Continuum of SME involvement opportunities based on evaluation results

• Leveraging institutional SME database to enable **efficiency and diversity** in SME participation

NASA’S UNIVERSE OF LEARNING
We provide *science content and expertise* to other SciAct cooperative agreements (a few examples):

- NISE Network
- NASA@MyLibrary
- WGBH
- Girl Scouts: Reach for the Stars

We serve on *SciAct Working Groups /Affinity Groups*:

- Visualization
- Maker
- Women in STEM
- American Indian/Alaskan Native
- EdTech
Partnership with NISEnet

Advising on and providing science content

Using and disseminating each other’s products

NASA’S UNIVERSE OF LEARNING
## Conceptual Framework for NASA’s Universe of Learning (UoL) Evaluation

<table>
<thead>
<tr>
<th>Stage of Development</th>
<th>Developmental Evaluation</th>
<th>Formative Evaluation</th>
<th>Summative Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key Strategic Question</td>
<td>What needs to happen?</td>
<td>How well is it working?</td>
<td>What difference did it make?</td>
</tr>
</tbody>
</table>
| Select Findings | • SMEs need different options for involvement.  
• Librarians are interested in astrophysics VR content.  
• The public holds misconceptions about universe beginnings. | • Interacting with a SME results in better outcomes for girls participating in STEAM programs.  
• Science briefings and materials are most useful when content is timely. | • ViewSpace viewers better understand the electromagnetic spectrum.  
• NASA’s Astrophoto Challenge participants learn how astronomers collect and create images. |
• NASA’s UoL has grown increasingly cohesive, consistent, and strategic.

• NASA’s UoL partnership continues to:
  • demonstrate effectiveness on key research-tested criteria of successful collaborations
  • expand its connections with the rest of SciAct.

• NASA’s UoL has defined metrics for success in partnership with SMD and has begun implementing them.

• A set of evaluation studies suggests NASA’s UoL is meeting the needs of SMD’s audiences and is making progress toward SMD objectives/metrics.
External Evaluation: NASA’s UoL projects are aligned with NASA SMD top-level objectives

We use Project Charters and visual databases to track project alignment to SciAct objectives.
Reach of NASA’s Universe of Learning

More than 700 venues

NASA’s Universes of Learning
- Girls STEAM Ahead with NASA
- Discover Exoplanets Host Sites
- Science Briefings
- Informal Learning Network Participants
- ViewSpace

NASA’s UoL Reach Map can be explored at https://tinyurl.com/NASAUoL-Reach

More than 700 venues
Thank You!

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