

PREPARING PLANETARY SCIENTISTS TO ENGAGE AUDIENCES. C. Shupla¹, A. Shaner¹, G. Kramer¹, H. Newsom², P. Schenk¹, A. Smith Hackler¹, G.J. Taylor³, K.E. Vander Kaaden⁴, ¹Lunar and Planetary Institute (3600 Bay Area Blvd., Houston, TX 77058, shupla@lpi.usra.edu), ²Institute of Meteoritics and Dept. of Earth and Planetary Sciences (1 University of New Mexico, Albuquerque, NM 87131-0001), ³Hawai'i Institute of Geophysics and Planetology, University of Hawai'i (1680 East-West Rd., Honolulu, HI 96822), ⁴Jacobs, NASA Johnson Space Center (Mail Code XI3, Houston, TX 77058).

Introduction: Planetary scientists play a critical role in engaging audiences in Solar System science and exploration. Given their subject area expertise, planetary scientists have the ability to connect audiences to science content by sharing their research and personal experiences. However, planetary scientists face challenges in effectively interacting with audiences, such as difficulty remaining motivated, limited time/funding and competing priorities, the need for preparation and tools to engage diverse audiences, and incomplete knowledge of ways to participate [1–4].

To help address some of these needs, the Lunar and Planetary Institute (LPI) is providing resources and trainings to support planetary scientists in their communication efforts. LPI has developed activities and a methodology of supporting planetary scientists in their efforts to engage audiences, guided by input from an advisory board of planetary scientists.

Professional Development Sessions: LPI's Education and Public Engagement team has conducted trainings for planetary scientists, alone and in partnership with colleagues. Trainings include resources and guidance and also incorporate the participants' own knowledge, experiences, and objectives, through guided activities and facilitated discussions. This methodology values and builds upon participants' own insight, allowing greater ownership of the professional development experience.

Based on input from planetary scientists and its Education and Public Engagement advisory board, LPI conducts short professional development sessions and intends to make them available for others to join online. Each session focuses on a particular topic, such as:

- Understanding and meeting audience goals,
- Common public understanding of and misconceptions about planets and the Solar System,
- Addressing sensitive topics such as Solar System formation and evolution,
- Speaking with the press,
- Strategies to gather useful audience feedback, and
- Strategies to increase audience engagement during planetary science presentations.

Sessions include interactive activities and demonstrations to allow participants to share their insights. For instance, the Traxoline education activity opens discussion on the need for clear communication. Other

activities have been used to help define “jargon,” to describe what makes a story newsworthy, and to demonstrate key issues to avoid during presentations.



LPI has led sessions for planetary scientists at the LPSC on communicating with the press, the public, and on giving clear conference presentations. LPI has also worked for several years in partnership with education specialists from NASA Goddard and from Planetary Science Institute to conduct conference sessions at LPSC and at the Division for Planetary Science for students and early career scientists, including opportunities for participants to practice their conference presentations and receive feedback, panel sessions with information about planetary science careers and career preparation, and mixers connecting students with mentors. Each of these activities relies heavily upon experienced planetary scientists to provide feedback and insights into ways to communicate effectively at a professional science conference.



Coaching and Making Connections: LPI connects requests for speakers to planetary scientists, and regularly hosts public presentations, which are both livestreamed and recorded. LPI provides coaching to its scientists in advance of their public presentations: scientists practice their presentations and receive feedback from education specialists, members of the target audience, and from other scientists.



Resources: Scientists have been key contributors in conducting activities during LPI public events. LPI works with scientists to identify planetary science activities for their use with different audiences. For example, scientists conducted activities at LPI's solar eclipse events in August 2017, which drew over 5,000 people, and they regularly conduct activities at LPI's SkyFest family events. LPI plans to determine which excellent activities are easiest to modify and conduct with in a variety of settings to recommend broadly to those scientists in search of activities to conduct on their own. The activities will be tied to fundamental planetary science concepts, with basic materials and simple modifications to engage different ages, audience sizes, and backgrounds.



Best Practices in Engaging Audiences [5–8]:

Make It Personal. Most audiences are interested in personal stories, which can capture the excitement, joy, and challenges that planetary scientists experience in their research. Hearing how planetary scientists conduct research can increase the audiences' understanding of how and why science is done. In particular for younger audiences, learning about the scientists' education and career path is important for connecting with the audience and becoming more relateable.

Share Relevant Connections. Most audiences have a limited understanding of the Solar System and the features and compositions of planetary bodies, but still enjoy learning about those factors that they can see in person, or that connect to their culture or local community. The best way to prepare to share relevant con-

nections is to understand your audience prior to a scheduled event.

Demonstrate Concepts. Some concepts can be clarified with analogies, but others can be demonstrated or modeled with materials. Demonstrations that are messy, loud, or that yield surprising results are particularly good at capturing an audience's attention, but if they don't directly relate to the key concept, they can serve as a distraction.

Give Them a Role. Audience participation is an important engagement technique. Inviting audience participation should start early in a presentation, so that the change in flow isn't too abrupt for the audience, particularly for those unaccustomed to different styles of presentations.

Facilitate an Activity. Enable the audience to conduct an activity. People learn best by doing and by teaching others; simple hands-on activities in which the audience is discovering something themselves can be extremely effective at engaging audiences.

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Additional Information: For more information or to provide suggestions, please contact Christine Shupla (shupla@lpi.usra.edu).