ENHANCING PUBLIC ENGAGEMENT THROUGH THE LUNAR AND PLANETARY INSTITUTE'S PORTABLE PLANETARIUM. P.I. Craig[1], C. Shupla[1], A. Hackler-Smith[1], A. Shaner[1], G. Kramer[1], Y. Ballard[1], [1]Lunar and Planetary Institute, Houston TX 77058 (craig@lpi.usra.edu).

Introduction: Stargazing in any metropolitan area can be challenging given the amount of light pollution that drowns out star light in the night sky. Besides light pollution, several other factors can restrict observations of the night sky, including clouds, trees, hazyness, and moon light. Educators will often use planetariums to demonstrate phenomena of the night sky but this can prove to be problematic. Educators might be unfamiliar with planetarium software and hardware or may have problems reserving planetarium time.

The Lunar and Planetary Institute (LPI) looks to resolve some of these issues by providing educators access to a portable planetarium. This portable planetarium is loaned freely to educational institutions by LPI who will train the educator's staff in its use and operation. The portable planetarium allows students and the public to view and study the night sky regardless of the time of year, location or sky conditions outside.

The Portable Planetarium: The planetarium is inflated by a small floor fan (takes about 15-20 minutes to fully inflate) and visitors enter through a tunnel (56 inches in diameter) on the side of the dome (Fig. 1). The projector sits in the middle while the presenter can sit next to it or walk around the dome while presenting. The planetarium is 16 feet in diameter and 10.5 feet tall. Fully inflated, it fits 30 children or 20-25 adults/teens inside the dome.

Demonstration of the Planetarium at TLA: Scientists and Education and Public Engagement staff from LPI demonstrated the portable planetarium to approximately 100 librarians in the Texas Innovation Lab Group's Makerspace / STEM area at the Texas Library Association (TLA) annual conference in April 2016 in Houston (Fig. 2). As a result, the planetarium was loaned to public libraries and schools resulting in planetarium shows being given to ~1,300 visitors.

Planetarium shows were given to urban and rural audiences in the following cities in Texas, including events at public libraries and schools:

- Buda
- Laredo
- Bryan
- Llano
- Robstown
- Hutto
- Harker Heights
- Angleton
- Houston
- Friendswood
- Pasadena
- Baytown
- Alvin
- Goose Creek

Figure 1: The planetarium set up in the children's area of the Pasadena Public Library in Pasadena, TX.

Figure 2: Lunar scientist Dr. George Kramer of the LPI helped demonstrate the planetarium at the TLA conference in Houston, TX.

Importance of Scientists Engaging Audiences: AAAS recommends scientist participation in education to broaden science learning opportunities within and beyond the classroom [1]. Scientists can increase STEM literacy by helping learners of all ages build personal connections to science and engineering practices through the scientist's own experience with planetary science and exploration [2]. When learners develop a connection, they see science and engineering as personally meaningful, and they are inspired to explore further [3,4]. However, scientists face challenges in effectively interacting with audiences, such as limited time/funding and competing priorities, the need for preparation and tools to engage diverse audiences, and incomplete knowledge of pathways to participate [5-8].

A portable planetarium is a storytelling tool that can be used by scientists as well as educators to share stories about the night sky as well as planetary exploration, allowing scientists to convey their own wonder and excitement. Sharing science within a planetarium creates an informal setting that makes scientists and their research more approachable. LPI has been using a portable planetarium to engage audiences for decades, and is now training interested scientists in using it with various audiences.

The authors have seen this situation first hand. When demonstrating the portable planetarium at TLA, most of the visitors who viewed the planetarium were doing so for the first time. Children and adults alike were excited and intrigued by the planetarium and being able to see the night sky as they'd never seen it before. Not only did we show the visitors the stars in the night sky, but the planetarium allowed us to show them the locations of planets and moon phases.

Planetarium User Feedback: Users of the planetarium are asked to give feedback of how the planetarium was used, how many visitors attended, and what the visitors thought of the presentation. Those who responded gave nothing but positive feedback and most showed interest in using the planetarium again in the future. The aspect that seemed to get the biggest reaction from people was showing them the shapes and background stories of all the constellations.

"*Everyone loved the planetarium. People from 50 miles away came just to attend. The planetarium presentation blended well with other night sky activities for the children as part of our summer reading program*." – Ann R., Children's Librarian, Llano Public Library, Llano TX.

"*Seeing the planetarium at TLA 2016 gave us the idea for the Star Party. We had a great turnout, and people were lined up to see the shows. It was really wonderful to be able to provide such an incredible resource for our community*." –Angela B., Houston TX.

"*Everyone had a great time in the tent and walked away talking about the constellations they had learned about. Without having the planetarium, we would not have been able to provide such a meaningful program*." – Caitlin F., Youth Coordinator, Buda Public Library, Buda TX.

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