

**IMPACT OF PLANETARIUMS IN EDUCATION, COMMUNITY ENGAGEMENT, AND STEM RELATED FIELDS.** E. Maldonado<sup>1</sup>, J.G. Olgin<sup>2</sup>, and O. De La O<sup>2</sup> <sup>1</sup>El Paso Independent School District, 6531 Boeing Dr., El Paso, TX 79925, <sup>2</sup>El Paso Community College, 919 Hunter Dr., El Paso, TX 79915

**Introduction:** The Gene Roddenberry Planetarium, part of the El Paso Independent School District, seeks to raise awareness of the impact planetariums have in the worlds of education, community engagement and STEM fields.

Planetariums all over the world provide a unique experience that makes learning memorable because of their capability to demonstrate scientific concepts in a three dimensional setting; with an always clear sky and the ability to zoom in and look at the unique features of the planets of our solar system. It facilitates the understanding of otherwise challenging concepts with the unique and immersive experience it provides (fig 1).

**Educational Strategies for the planetarium:** In the world of education, planetariums are key to facilitate and expand the subject of astronomy; aligning presentations to the curriculum standards that students are to learn in accordance to their grade level. In a study conducted by Türk, C. & Kalkan, a group of students were taught an astronomy concept in a planetarium setting vs students learning the same concept in a classroom setting. The study concluded that “teaching astronomical concepts in a planetarium environment was more effective than in a classroom environment. The study also revealed that students in the planetarium-assisted group were more successful in comprehending subjects that require 3D thinking...”[1] Planetariums can also be valuable in teaching other subjects such as mathematics, social studies, language arts & foreign language.



*Fig 1: Members of the community of El Paso gather to learn and explore the night sky.*

**Community Engagement:** Planetariums aim to develop community engagement by creating an all-inclusive and accessible environment. In order to accomplish that, shows are offered frequently in different languages and maybe modified for special needs audi-

ences. Planetariums often are nonprofit entities and are free of charge for the public. Additionally, most provide a setting for community lead astronomy clubs. They often develop ongoing educational outreach opportunities such as star parties, sky watching sessions, telescope workshops, etc. Therefore, the community unites, gets involved and networks under one common interest. Educational outreach then leads to more opportunities to help inspire people to develop a love for the STEM careers which are key to better our world.

**STEM (Science, Technology, and Engineering & Mathematics):** Now more than ever planetariums help expose students from an early age to careers in the STEM fields. According to the U.S. Department of Commerce, those already in STEM careers “...drive our nation’s innovation and competitiveness by generating new ideas, new companies, and new industries.”[2]. It is through these fields that new discoveries are being made; from the possibility to travel to a different planet, to finding life outside of Earth. The future of our world will one day be in the hands of the young students whom might be inspired by their one planetarium visit.



*Fig 2: Middle School students visit The Roddenberry Planetarium.*

**The Roddenberry Planetarium:** Here at The Roddenberry Planetarium, we reach our audience, from primary education students to the general public, through educational and interactive engagement. The programs for the students are all aligned to the Texas Essential Knowledge and Skills (TEKS) standard to help students succeed on the standardized test given by the state. The Roddenberry Planetarium provides free of charge school field trips. They are requested by the

schools are always aligned to the science curriculum and tackle the concepts that are harder to understand in a formal educational setting. During the program, the students are always encouraged to ask questions. At the end of each show, students participate in a small competition by answering questions about the program; allowing students to remain engaged and reinforce all of the information that was learned that day. Additionally, the planetarium offers special seating with a red light for interpreters that are servicing deaf or hard of hearing students.

In regards to community engagement, the planetarium is the setting for the Sun City Astronomers Club, where people from all over the city join us monthly to learn about astronomy. Volunteerism is always encouraged at The Gene Roddenberry Planetarium, and thus pursues collaborations with El Paso Community College – service learning program, The University of Texas at El Paso and the El Paso Herald Post to help provide students and the community with the opportunity to participate in public showings and special events. These events help expose and inspire students to consider STEM careers. Inspiration is a key component of the planetarium because it is its main goal. Once the inspiration and curiosity of a kid has been sparked the possibilities are endless.

**References:**

- [1] Türk, C. and Kalkan, H. *J Sci Educ Technol* (2015) 24: 1.
- [2] Langdon, D., McKittrick, G., Beede, D., Khan B., and Doms, M. (2011) *STEM: Good Jobs Now and for the Future*, 1-10.
- [3] IPS Official Statement on the Role of Planetariums in Education. *Position Statement: the Role of Planetariums in Education - International Planetarium Society, Inc.*
- [4] Plummer, J. Schmoll, S. Chun Yu, K. Ghent, C. (2015) *A Guide to Conducting Educational Research in the Planetarium*.