

ENGAGING SCIENTISTS FROM THE TOP DOWN (PRACTICING SCIENTISTS) AND BOTTOM UP (GRADUATE AND UNDERGRADUATE SCIENCE STUDENTS): CREATING A RICH CULTURE OF STEM LEARNING TO BENEFIT MULTIPLE STAKEHOLDERS IN THE MIDDLE. S. K. Klug Boonstra¹ and P. R. Christensen², ^{1,2}Arizona State University, Mars Space Flight Facility, Moer Bldg. Rm. 131, 201 E. Orange, Tempe, AZ 85287-6305; sklug@asu.edu

Introduction: We are fortunate to live in a time where scientists are in demand and welcomed as speakers in many venues across the U.S. Rising interest in science translated for the masses is creating excellent pathways to infuse STEM into formal and informal education settings. However, science and education, in many cases, speak different languages and have different needs and scientists are not always comfortable and/or prepared to address these audiences effectively. This presents the opportunity for a translator – the Education and Public Outreach (E/PO) professional to help bridge the two cultures. The E/PO professional can help inform and coach the scientist about the needs of education and help mold the scientist’s presentation so that both entities (the scientist and audience) come away happy and satisfied that the intersection between their worlds were successful. Again, there has to be recognition of professional knowledge and trust between the scientist and E/PO specialist to have this dialogue and have a successful outcome.

The ASU Mars Education Program has been providing venues for educators that feature opportunities for practicing scientists (and engineers) to engage STEM K-20 educators. ASU Mars works with prospective speakers to help guide them in creating the right mix of ingredients that will be appropriate for the audience attending. Long-term relationships with Mars Community Scientists have created a trusted partnership and open dialogues that help craft especially impactful presentations. The ASU Mars team recognizes that the scientists are busy with their own research and duties and we treat them as the “talent”, providing the logistics and infrastructure to prepare the venue and make their role as our “star” keynote as painless as possible. Through these relationships, many of our scientists come to welcome “helpful hints” to make their presentations and interaction with educators more successful. This pre-planning and dialogue makes for a great win-win for both the scientist and educators attending. The vast majority of evaluations from our events call out the keynotes or presenters as the highlight of the event. This doesn’t often happen by accident and is more often a carefully crafted result of teamwork between the E/PO professional and the science presenter. The feedback from the evaluation is also fed back to the presenter as professional development for them and also helps reinforce the value of the time and effort they spent for the presentation.

The up-and-coming pre-professional scientists offer yet another fertile pool of talent to be tapped. As a pilot program, the ASU Mars Education Program has worked with the ASU Space Grant Office and provided training opportunities for their STEM student interns to help the Space Grant students learn how to be effective in STEM E/PO. By reaching these students early in their career pathway and providing hands-on training, the hope is that the upcoming generation of scientists will be even more interested in reaching out and sharing the excitement of their scientific endeavors.

Examples of success will be shared and key ingredients for successful partnerships with scientists (and engineers) and formal/informal educators will be discussed. Impacts for stakeholders that have gone beyond E/PO events be and implications for new STEM opportunities for scientists that will arise in the future relating to the new science framework and standards will also be highlighted.