

ENGAGING SCIENTISTS IN MEANINGFUL EDUCATION AND PUBLIC OUTREACH PARTNERSHIPS: EXAMPLES FROM THE PLANETARY SCIENCE INSTITUTE. S. R. Buxner, Planetary Science Institute, 1700 E. Fort Lowell Rd., Suite 106, Tucson, AZ 85719 (buxner@psi.edu).

Introduction: Successful Education and Public Outreach (E/PO) programs require collaboration between professional educators and professional scientists. In addition, working with community partners and external evaluators in the planning phase ensures that project outcomes meet the needs of both the intended audience and the program goals. Over the past several years, the Planetary Science Institute has developed a portfolio of education and public outreach activities that effectively merges these aspects and gives scientists meaningful roles working with teachers, students, and the public.

Project WISER: *Workshops in Science Education and Resources (WISER): Planetary Perspectives* is a program designed to increase elementary and middle school science teachers' knowledge of planetary science and increase their confidence in teaching about science topics in the classroom. The program is composed of the following elements: 1) a professional development workshop series on a variety of topics in planetary science, 2) online, and downloadable, science visualizations to support teaching elementary and middle school science topics, 3) an online *Ask-an-Expert* tool that teachers, students and the public can use to gain insights into new topics in planetary science, and 4) instructional rock kits that are used both in the professional development workshops and can be checked out for use in the classroom or in other educational settings (see Croft et al. at this meeting for more information about PSI instructional rock kits).

The overall program is a partnership between the Planetary Science Institute and the Tucson Regional Science Center (TSRC). The TSRC provides materials and professional development support for district science K-8 science classrooms. PSI scientists partner with education specialists to design and implement each workshop around current best-practice pedagogical principles and with the TSRC to ensure that workshops fit into the state science standards and district-wide science curriculum. Additionally, PSI scientists answer questions asked through the *Ask-an-Expert* online tool and create materials to support use of the instructional rock kits.

Laurel Clark Earth Camp: *The Laurel Clark Earth Camp* program includes *Middle School Earth Camp*, *High School Earth Camp*, and *Earth Camp for Educators* (see Buxner et al. this meeting for a full description of the program). Each camp is designed to let participants learn about global change by conduct-

ing field-work, working with experts, and using satellite images to view change at a variety of scales.

The overall program is a partnership between the Arizona-Sonora Desert Museum, the Planetary Science Institute, and Arizona Project WET at the University of Arizona. PSI scientists engage in the program through participation in the professional development workshops for teachers, training educators from our partners about remote sensing and how to use satellite images, and by developing a library of images for students and teachers to use for ongoing investigations of global change.

Out of This World Museum Programming: *Out of This World: Bringing Space Rocks that Hit the Earth to Children and Families* is a program targeting young students and their families to engage in planetary science activities. The program includes supporting public science events at the Children's Museum Tucson, co-developing classroom outreach materials to be used in local schools by museum staff, developing rock kits for museum exhibit interpretation, and developing and co-teaching a pre-K summer camp around topics in planetary science.

The project is a partnership between the Planetary Science Institute and the Children's Museum Tucson. PSI scientists are involved in public outreach events, developing rock kits for use in classrooms and museum interpretation, and professional development of museum staff and volunteers.

Small Bodies, Big Concepts: *The Small Bodies, Big Concepts* program is a multi-disciplinary professional development program for 5th – 8th grade teachers that focuses on comets and asteroids (see Cobb et al. at this meeting for a full description). Teachers participate in a two-week summer workshop engaging them in working with scientists, artists, and educators to learn more about planetary science, current missions to small bodies in the solar system, and the research-based pedagogical framework Designing Effective Science Instruction (DESI). The team communicates with the teachers throughout the year and holds a follow-up workshop in the winter during which teachers report on their lesson implementation designed during the workshop.

This program is a partnership between the Mid-continent Regional Educational Laboratory (McREL) and the Planetary Science Institute. PSI scientists are engaged in providing topical lectures for the profes-

sional development program, creating content, and facilitating activities for teachers.

Conclusion: Each of these programs provide partnerships that engage scientists in meaningful work to communicate with students, teachers, and the public. Through partnering with educators and education specialists from PSI and our partner institutions, scientists learn more about formal science standards, best practices in education, how people learn and how to best assess learning. Additionally, having scientists working directly with students, teachers and the public breaks down potential barriers so that scientists are seen as part of the community.

Three of these projects (except for the collaboration with the Children's Museum Tucson) employ an external evaluator. Feedback from all of these programs emphasizes the importance of having scientist involvement in all aspects of the projects including giving participants access into current topics in planetary science and working with scientists side-by-side to learn about how science is actually done.

Additional Information: You can learn more about education and outreach programs at PSI at our website: <http://www.psi.edu/epo>.

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