

**Understanding the Needs of Space Scientists in Education, Public Engagement, and Communications: Implications for Practice.** J.A. Grier<sup>1</sup>, S.A. Buxner<sup>1</sup>, and N.M. Schneider<sup>2</sup>, <sup>1</sup>Planetary Science Institute, Tucson, Arizona, jgrier@psi.edu, <sup>2</sup>University of Colorado, LASP.

**Introduction:** The need for a scientifically literate public has never been more critical [1,2], and scientists play an indispensable role as they model STEM careers, provide the latest science content, and engender the basics of critical thinking in learners. Regarding scientists in education, a BSCS report concludes, “The parallels between the way scientists learn new information through research and the way students learn through inquiry-based teaching are striking. Scientists’ knowledge of the scientific process makes them invaluable in facilitating student education.” [3]

We have conducted a study of the needs of a cadre of space scientists in Education and Communications. Our study was done in partnership with the American Astronomical Society’s Division of Planetary Sciences. Our team members are all current or former Education Officers for the DPS. All scientists from whom we collected information were members of the DPS at the time we interacted with them.

As we finalize our study for publication, we present here the results of scientists’ opinions, needs, challenges, barriers, and requests/desires in relation to their involvement with Education, Public Engagement, and Communications. Our work suggests concrete strategies and ideas for how to mitigate the barriers that impede scientists, how to characterize their needs and requirements, and how to provide motivation and incentives for them. These results are consistent with past work, but build into new and more concrete directions as society and science have changed, and as our data has improved. [4,5]

**Methods and Process:** We collected data from 2011 to 2018 through a variety of means including informal, individual interviews (both in person and remotely), during focus groups at professional science conferences and science education meetings, and in informal discussion sessions. All data was collected in accordance with an approved human subjects protocol. Verbal consent was granted by all participants to anonymously document their views about the topics.

Each individual and focus group interview was documented through note taking by the interviewer. Each set of notes was iteratively reviewed and analyzed to look for themes that were used in subsequent interviews. Focus group interviews were also used to vet emergent themes, ask for validity and solicit missing information and themes of the related topics.

**Recommendations for Professional Societies:** As our primary partner, our recommendations for the DPS

(and other professional societies working with space scientists in STEM education and engagement) form an important piece of our final conclusions. Some of these recommendations are as follows:

1) Recognize and share the importance of your scientists to engage in education and outreach to improve literacy and the perceived face of science overall.

2) Open pathways to keep scientists informed and connected regarding education and communications activities; websites should be regularly updated, social media should be used regularly and effectively, etc.

3) Promote the value of this work from within by holding public engagement oral sessions, providing statements from officers, and including information from high-profile society members in E&C.

4) Continue to reach out to ‘first-timers’ by offering targeted professional development and by directing them to appropriate resources.

5) The more established scientists have a responsibility to step forward and do E&C – they are taking less of a career risk than junior scientists, and they serve as role models. They also have more power to create cultural change.

6) Encourage all scientists to collect evaluation data, even if of a simple nature, for all their E/PO efforts.

7) Connect members who are teaching classes at universities, etc. so they can share tools and resources, and so they can find support.

8) Provide professional development to scientists in how to use and access the press and other media to promote E/PO efforts.

**References:** [1] NAEP. 2006. Science 2005: NAEP at Grades 4, 8, and 12. Retrieved from <http://nces.ed.gov/nationsreportcard/pubs/main2005/2006466.asp> [2] NAEP. 2011. Science 2009: NAEP at Grades 4, 8, and 12. Retrieved from <http://nces.ed.gov/nationsreportcard/pubs/main2009/2011451.asp> [3] Biological Sciences Curriculum Study, <http://www.BSCS.com>, 2008 report on Scientists in Science Education. [4] Morrow 1999. Scientists’ Involvement in EPO: Making the Case. Retrieved from [http://www.spacescience.org/education/extra/resources\\_scientists\\_cd/](http://www.spacescience.org/education/extra/resources_scientists_cd/) [5] Grier et al, Understanding and Meeting the Needs of Space Scientists in E/PO. ASP Proc. 2014

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