SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)
Calling Planet Earth - Space Outreach to the General Public (6)

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SPACEFLIGHT-RELEVANT STEM EDUCATION AND OUTREACH: SOCIAL GOALS AND PRIORITIES

Abstract

This paper expands on two elements of the author's experience in education and outreach of spaceflight and its role in science, technology, engineering, and mathematics (STEM) outreach. Since 2001, the author has served as the Director of a statewide Space Grant Consortium, with responsibilities to coordinate funding for university scholarships, graduate fellowships, and program awards. Space Grant is a NASA-funded national network of STEM education and outreach programs including over 1000 higher education, outreach center, science museum, local government, and corporate partners. As a Space Grant Director, the author experiences a variety of levels of STEM literacy and sophistication among members of the public. A number of those discussions highlight the need for STEM education and outreach leaders to speak directly to a variety of social goals and priorities. Although spaceflight is largely seen as an appealing and potentially desirable STEM application, members of the public are often unclear and ill-informed regarding relative expense, relative benefit, and relative breadth domains of expertise that are relevant to the spaceflight enterprise. In response (and resulting in further disconnects between STEM specialists and the public), focused STEM professionals frequently over-emphasize their own technical specialty and its priority in general because it is a priority to that professional. These potential divides in the attempt to share and connect STEM-related social goals and priorities relate to a second perspective in the author's experience. This perspective is an elaboration of an invitation to the author to discuss spacefaring in a "futures forum" discussion. Within this context, spaceflight can be seen as addressing a combination of "actualization" and "aspirational" goals at social and societal levels. Many are familiar with Maslow's hierarchy of needs, and the distinction between "basic needs" and "actualization" as a higher-order need. Another aspect of spaceflight is aspirational—it speaks to hopes and desires for levels of affluence and flexibility of capability. One analogy is that of the marketing of premium brand luxury items, at lower cost and larger volumes, to larger segments of the population. STEM literacy and education are not directed solely at the "rocket science" application of technology and engineering capabilities. Additional effort is needed to connect spaceflight experiences and examples to broader STEM needs, social priorities, and local contexts.