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SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)
Interactive Presentations (IP)

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A NEW INSTRUMENT TO ASSESS SCIENTIFIC LITERACY FOR SPACE OUTREACH

Abstract

To date, the standard quantitative questionnaire has been the 'go to' instrument for measuring public scientific literacy and impacts of science education and outreach, including space science. For example, the National Science Board's Science and Engineering Indicators have been used for decades by the U.S. and internationally to measure public science and engineering performance for industry research and education policy [1]. Although these instruments are well established, easy and inexpensive ways to measure large samples, researchers in the field of science communication and outreach are increasingly pointing to the need for more sensitive instruments to measure scientific literacy [2] [3].

This interactive presentation will be a hands-on demonstration of a new instrument — a digital game — developed to measure public scientific literacy and the effectiveness of space science education and outreach activities in achieving their scientific literacy objectives.

We report on the development and implementation of this new instrument, which uses choice-based assessment and Teachable Agents (TA) in a game-like interactive digital application. Developed by the Stanford Graduate School of Education, a Teachable Agent (TA) is a learning technology that uses the social metaphor of teaching a computer agent by creating a concept map that serves as the agent's 'brain'[4].

This game-like instrument measures the choices (concept maps) that participants make in 'teaching' their TA about the nature of science and scientific process. We can then use it to measure any changes in participant choices after participating in the project.

This interactive presentation will offer Congress attendees an opportunity to play the game and offer advice and feedback to the authors.

References: [1] National Science Board 2016) Science and Engineering Indicators 2016. Arlington, VA: National Sci-ence Foundation (NSB-2016-1). [2] Cronje, R., Rohlinger, S., Crall, A. and Newman, G. (2011) Applied Environmental Education Communication, 10, 135-145. [3] Crall, A. W., Jordan, R., Holfelder, K., Newman, G. J., Graham, J. Waller, D. M. 2013. Pub-lic Understanding of Science, 22, 745-764. [4] Schartz, D. L., and Arena, D. (2009) Choise-based assessments for the digital age. Palo Alto, Stanford University.