

SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)  
Hands-on Space Education and Outreach (8)

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SCIENCE SHOW PERFORMANCE AS A TOOL FOR SPACE OUTREACH: LESSONS LEARNED  
FROM THE SHELL QUESTACON SCIENCE CIRCUS**Abstract**

Traditionally, space outreach is performed by space agencies (such as NASA and ESA), universities and specialist space education centers e.g. Space Camp USA. This outreach is delivered in multiple formats, such as museum exhibitions, multimedia content (e.g. television, online video, podcasts and planetarium scripts), public events (e.g. lectures, workshops or expert panels) and, in the case of specialist space education centers, science shows and immersive simulation experiences. The aims of these activities are usually to engage the audience in science, technology, engineering and mathematics (STEM), present information and develop the next generation of the space industry workforce. Outreach delivered via exhibition, multimedia and lecture formats usually require passive participation by the audience. Workshops, science shows, simulations and other activities that require active participation, are more likely to achieve the aim of long lasting, career-spanning engagement in STEM.

A science show is a structured performance that includes scientific experiments and audience interaction. Science shows require active participation through the use of whole-audience interactive demonstrations, call and response techniques, and the incorporation of volunteers. Science show performance has the potential, like all theatre performance, to manipulate the emotions of the audience. Thoughts, ideas and memories linked to emotion are more easily remembered by the human brain. 'Interest' is the critical emotion for learning. When interest is generated by engaging the audience physically and mentally (through hands-on methods), and emotionally (through performance) the experiences, key communication messages, and scientific principles demonstrated in a science show are more likely to be remembered.

Since 1985, the Australian National Science and Technology Centre (Questacon), has conducted annual auditions for the Shell Questacon Science Circus. The Science Circus programme is the most travelled and farthest-reaching programme of its kind in the world, reaching over 500 towns, 5000 teachers and 2.2 million people since its inception. Successful applicants are trained to perform science shows, while concurrently studying a Master of Science Communication Outreach at the Australian National University. The cohort tours regional Australia to present science shows to high school, primary school and general public audiences.

This paper will present the live science show performance 'Flight' that was developed for the Shell Questacon Science Circus, to demonstrate the power of emotive, hands-on space outreach for a variety of audiences.