

SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)  
Education Outreach (3)

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## ENGAGING FUTURE ASTRONAUTS WITH INQUIRY-BASED ACTIVITIES

**Abstract**

Today's youth are becoming less and less inclined to pursue careers as scientists and engineers. Astronomy and space share the fortunate position of being able to spur interest in math and science. Alongside the "pretty pictures" of galaxies, the beauty of a mathematical proof can be shown. The adrenaline rush from seeing a shuttle launch can be used as a springboard to teach an appreciation for the scientific method.

Space pedagogy is of utmost importance, not only in training future astronomers, aerospace engineers and astronauts, but in raising awareness amongst the general public and future policy makers. Inquiry-based learning can be used in conjunction with hands-on space experiments to maximize the educational impact.

"Inquiry-based learning" was first developed during the 1960s. It is a pedagogical philosophy that stresses the importance of first-hand experience. An example will be given of a concept to be taught, and three different hands-on styles of teaching it. The styles will be compared and contrasted. It will be shown that the inquiry-based hands-on style resulted in the most creative solutions to the problems posed. By allowing students to pose their own questions, they also gained a sense of ownership over their learning.

Over the course of four months, as a practical application of the methods we learned at the Center for Adaptive Optics' Professional Development Program, three astronomy-related activities were designed for the California State Summer School for Mathematics and Science (COSMOS) 2007, a state-wide program designed to nurture high school students' interests in science and math. I will present the design process, describe the actual event, and follow up with how the hands-on experiments used here can be used to excite the next generation of space experts. In addition, I will suggest additional space inquiries that can be implemented at the elementary, junior high, and even university level.