

EAA Space Week – Lab for Exploring Teachers Space Grant 2011/2012 Aerospace Outreach

Jeffrey Skiles

Youth Education, EAA, Oshkosh, Aviation¹

Project Background

Founded in 1953 in Milwaukee, WI, by a small group of enthusiastic aviators interested in building their own aircraft, the Experimental Aircraft Association (EAA) now brings together hundreds of thousands of people each year at the EAA AirVenture, the world's largest aviation event. This international celebration recreates, on a grand scale, the atmosphere of challenge, anticipation, and accomplishment that inspired its founders. Over the decades, the organization's mission has expanded to include other aircraft types including antiques, classics, warbirds, aerobatic aircraft, ultralights, helicopters, contemporary manufactured aircraft, and the continuing, expanding frontier of aerospace. AirVenture features educational workshops that promote personal achievement, hundreds of exhibitors who share state-of-the-art technology related to the science of flight, and a daily air show that celebrates the beauty and thrill of flight past, present, and future. Other EAA programs and resources include the EAA AirVenture Museum, the Young Eagles, SportAir Workshops, Timeless Voices, the Air Academy, Women Soar, and Space Week. These EAA programs are designed to serve all ages – from school-age children to adults – with an organizational effort to reach out to those demographic groups that are under-represented in aviation including women and minorities.

Part of EAA's many educational offerings includes EAA Space Week. EAA Space Week events provide educators with the opportunity to introduce students to the wonders of space exploration during EAA Space Week at the EAA AirVenture Museum in Oshkosh. Daily educational activities throughout the week are designed to introduce students in Grades 3-8 to the science and wonder of space exploration. Each year, EAA and its educational partners strive to introduce enhancements to the Space Week programming, last year for example, Interactive Applets, an exceptional inquiry-based tool was incorporated into the program. EAA's integrated educational programs offer a continuum of learning for all ages providing students with academic reinforcement that combine standards-based curricula with web-based resources, and challenges that amplify learning in the classroom, at home, in the library, or wherever Internet access is available.

Space Week is a joint effort between the EAA Education Staff, EAA AirVenture Museum docents, and the Space Explorers Staff. The experience for students and teachers occurs in the EAA AirVenture Museum, Oshkosh, Wisconsin. This accredited museum facility encourages student's interest in science and space. In addition to this the museums many exhibits demonstrate the scientific principles of flight, as well as the history of aviation. These exhibits include the Space Ship One exhibit that was the winner of the X-prize and was the first private flight into outer space. This exhibit is a fully active exhibit demonstrating the principles of flight into near earth orbit and the subsequent return to earth.

¹ The EAA Women Soar – Expanding Horizons program was funded by a grant from the NASA Wisconsin Space Grant Consortium.

Program Goals and Objectives

This year, EAA partnered with Space Explorers, Inc. to provide the EAA Space Week experience. Space Explorers, Inc. has established itself within the educational community as an innovative, leading-edge company with the vision to connect students with space exploration. Space Explorers is committed to bringing the excitement and rewards of space exploration into classrooms throughout the community. Discovery, inquiry, and analysis are integrated into standards-based curricula, experiments, and online mission simulations that incorporate actual NASA data. Through this programming enhancement collaboration with Space Explorers, EAA increases its capacity to meet the following student-centered program goals:

- To enable students to gain a better understanding of the universe through hands-on interactive activities, including space exploration exercises and research into such areas as planetary data, the history and future of space exploration, astro-chemistry, and more.
- To assist students in developing and enhancing research skills and critical-thinking skills.
- To enhance the learning experience, in the classroom, at home, or elsewhere, by providing students with as-needed access to space knowledge resources.
- To provide educators with the resources and support needed to integrate the EAA experience with classroom learning objectives.
- To combine the technology resources of NASA, EAA, and Space Explorers, Inc., in ways that kindle and renew the level of interest among youth in space travel and exploration.
- To provide a multi-faceted experience in which youth participate in events and learning experiences with their classmates at an off-campus school field trip, and where both students and educators experiment and become comfortable during Space Week with an increasing variety of resources that can continue to be used at home, in the classroom, and in other learning venues.

Anticipated Program Outcomes

EAA collaborator Space Explorers, Inc. will be present to provide a hands-on introduction to its enhanced programming for both educators and students attending the events. Space Week will run for a full week to ensure full availability to students and educators.

Children participating in programming throughout the week will benefit from exposure to numerous hands-on challenges and activities that will help them understand and appreciate the scope of our national space efforts, and will encourage them to consider their future with this perspective in mind. Invitations will be issued to all visiting youths and educators to encourage them to re-visit EAA AirVenture Museum with their families to talk about and share what they learned with their parents and siblings. The encouragement of a “return” trip with family members greatly alters the learning environment creating a teaching situation in which the participating children can, in fact, be the “learning guide” for their parents, brothers, and sisters. Planned activities include, but are not limited to: workshops; museum tours; movies; hands-on workstations; rocket launches; simulations; and, take-home challenges.

Results and Findings

Over 500 children, 3rd through 8th grade, participated in this year's Space Week activities. Attendance was down over previous years due to the lack of transportation funds for many school districts. The majority of students arrived from the Fond du Lac and Green Bay areas of Wisconsin. The younger children, grades 3 through 5, participated in the EAA activity, Houston We May have an Omelet, and the Space Explorers sponsored activity Space Odyssey. The older children, grades 6 thru 8, participated in the EAA activity Stomp Rockets, and the Space Explorers sponsored activity Strange New Planet. All students received a guided tour of the EAA AirVenture Museum facility and also had the opportunity to spend time in EAA KidVenture's aircraft simulators and interactive exhibits.

The programming provided by Space Explorers included opportunities for students and teachers online activities to extend space learning for a full year beyond the museum visit. These activities included online NASA Missions, Mars Explorer Simulations, activities focused on STEM content, Orbital Laboratory, and a K-3 Space Program. This ability to continue this learning throughout the school year through the support of the Space Explorers is an attractive and appreciated component of EAA Space Week.

Conclusions

Space Week has generated consistently positive feedback from participating educators, particularly among those teachers from schools with a large minority and/or low-income population. The EAA/Space Week provides an across-the-board opportunity to introduce youth unfamiliar with advanced technology to the computer, simulation, and other educational challenges found at the EAA AirVenture Museum. Using the constantly changing equipment and other resources available through EAA and its programming, as well as meeting professionals who have attained careers that most feel are out of reach, provides students participating in Space Week with a sense that they can achieve their dreams.

EAA's programming and outcomes reflect and provide research proving that hands-on, aviation-related activities advance achievement and performance to meet state standards in the key subject areas of math, science and technology. Interactive learning and guided research activities introduced during Space Week, and extended into the classroom, at home, and in the community, will further enhance those achievement gains. The continued success of the Space Week events are evidence of its sustainability, and of the responsiveness of EAA and its educational partners to changes in the aviation and aerospace industries, as well as in the educational arena. As a case in point, the expanded Space Explorers' programming will be incorporated into 2012 Space Week activities. This includes team-based simulations that can be conducted from schools.

This project directly aligns with the goals of the NASA Directorates, as well as with the mission of the National Space Grant College and Fellowship program. Both EAA and Space Explorers strive to inspire a new generation of explorers to pursue careers in science, technology, engineering, and mathematics (STEM). Research opportunities and interactive exercises will support and enhance science and engineering education with program outreach particularly

directed toward schools with significant minority populations. Broad participation will provide a network for educators and students where they can share in the excitement of scientific discovery, and will help to ensure a future workforce of ethnically diverse professionals in the fields of science, math, engineering, and technology. Special thanks and acknowledgement go to the NASA Wisconsin Space Grant Consortium for their generous support of \$3,833 that helped make this annual event possible.