

EDUCATION FLIGHT PROJECTS (EFP)

Administered by Oklahoma State University (OSU)
Type of Agreement: Teaching From Space Cooperative Agreement

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PROJECT DESCRIPTION

Education Flight Projects (EFP) involves K-12 students and educators in hands-on experiences and research applications on-board a variety of NASA flight platforms. The project is national in scope and involves both formal and informal education communities and other NASA Education projects.

EFP offers opportunities to actively participate in NASA missions on the Space Shuttle, the International Space Station (ISS), and other NASA flight platforms. These diverse flight related experiences are intended to inspire, engage, and educate K-12 students and their teachers and to offer them unique NASA-related science, technology, engineering, and mathematics (STEM) content and resources. EFP activities connect students and educators real time to the Agency's missions and to future space exploration. For the Agency, the project has primary responsibility for the coordination of all on-orbit education activities on both the Space Shuttle and the ISS. Major project activities include: ISS Downlinks, Amateur Radio on the ISS (ARISS); ISS EarthKAM; Education Payload Operations (EPO); and on-orbit Education Demonstration Activities (EDA).

EFP looks for opportunities to increase its portfolio of ground-based and on-orbit education activities. In FY08, the project began to update a 2004 inventory of the Agency's education flight activities. Working with EFP Center points of contact, Mission Directorates, and other NASA Education projects, EFP seeks to identify all existing NASA K-12 (expanding to K-16 in FY09) education flight activities and to develop a working relationship with activity management. EFP recognizes that the multiple diverse NASA education flight activities, many managed at the Center level, are often difficult for students and educators to find. The project has developed a comprehensive education web site that has the potential to highlight all agency flight activities. The site, scheduled to launch in FY09, will provide educators and students access to multiple flight opportunities, allowing them to participate in the pipeline of NASA education activities.

EFP can offer support to new and existing education flight activities. In FY08, EFP issued a limited call for proposals that resulted in funding for a new flight project, SOPHIA (Stratospheric Observatory for Infrared Astronomy) based at Dryden Research Center. The project also explored potential collaboration with the Student Launch Initiative (SLI) and University Launch Initiative (ULI) based at Marshall Spaceflight Center.

In FY08, EFP participated in the development of the ISS National Laboratory Concept and anticipates supporting the National Laboratory implementation. As NASA develops the next generation of space vehicles, EFP works with Program Offices to ensure that there are opportunities to continue to develop new and implement existing education flight activities.

PROJECT GOALS

EFP is designed to increase K-12 student interest and achievement in STEM. Recognizing that hands-on, interactive experiences are effective learning tools, EFP provides the Agency with rich opportunities to inspire, engage, and educate students. Student participation in NASA-unique education flight activities directly contributes to NASA Education efforts to inspire "the next generation of explorers and innovators" and to build the "highly educated and well-prepared workforce" necessary to continue future space exploration. Education flight projects directly connect students and educators to NASA missions, Centers, facilities, and people.

EFP activities offer NASA Education outstanding opportunities to implement recommendations from the National Research Council's Review and Evaluation of NASA's Precollege Education Program. Project activities are NASA unique and "capitalize on NASA's primary strengths and resources" including "the agency's scientific discoveries; its technology and aeronautical developments; its space exploration activities; the scientists,

engineers, and other technical staff (both internal and external) who carry out NASA's work; and the unique excitement generated by space flight and space exploration." (Reference – 2008 NRC Report)

In FY08, EFP was managed with Educator Astronaut Project (EAP) and shared an integrated vision and objectives. The vision for the projects is to:

Facilitate education opportunities that use the unique environment of spaceflight and other flight platforms.

EFP and EAP work to meet the following objectives:

1. Develop and provide NASA-unique experiences, opportunities, content, and resources to educators to increase K-12 student interest in STEM disciplines.
2. Develop and facilitate NEAT-like group of highly motivated educators.
3. Build internal and external partnerships with NASA Program Offices and formal and informal education communities to create unique learning opportunities and professional development experiences.

PROJECT BENEFITS TO OUTCOME 2

EFP directly contributes to: *Outcome 2 – Attract and retain students in STEM disciplines through a progression of educational opportunities for students, teachers, and faculty.*

EFP reaches K–12 students and their teachers through hands-on and interactive education flight activities. The project offers students and educators experiences that focus on STEM disciplines and highlight NASA missions and content. The project collaborates with other NASA Education projects, Mission Directorates, Center Education offices, and external partners to increase the value and scope of these activities. Because many EFP activities are dependent on mission operational requirements, the total number of participants may vary each fiscal year.

In FY08, EFP significantly contributed to Outcome 2 by promoting increased educator and student involvement in education flight activities. The project encourages participants to use these high visibility experiences to engage large numbers of educators and students, the media, the community, families, and legislators and in NASA missions. The project continues to be innovative, continually seeking new ways to improve and enhance project activities. In FY08, EFP responded to current trends in student use of multi-media technology. The project worked with the NASA education web team to develop a "do it yourself" podcast site that uses existing on-orbit education video. The site will launch in FY09.

In FY08, EFP consistently worked with project activities to improve their contributions to Outcome 2. EFP provided guidance on requirements, expectations, and data collection, which resulted in increased benefits to Outcome 2.

PROJECT ACCOMPLISHMENTS

EFP contributes to two annual performance goals:

APG8ED04 -- *Increase by 5 percent the number of elementary and secondary student participants in NASA instructional and enrichment activities.*

In FY07, EFP had 34,602 students involved in its activities. In FY08, the number of students was 71,083. See the section on *Project Contributions to PART Measures* for specific information on the breakdown of the total number.

APG8ED05 -- *Increase by 5 percent elementary and secondary educators' use of NASA resources in their classroom instruction.*

In FY07, baseline numbers did not include EFP numbers. New baselines for the project will be established using the FY08 numbers. For specific information on the EAP FY08 numbers see the section on *Project Contributions to PART Measures*.

The integrated EAP and EFP FY08 plan listed expected project milestones for the year. The project accomplished the following tasks, as listed in the project plan:

- Investigate existing Elementary and Secondary and Outcome 2 projects and activities to identify and explore possible synergy/continuity
- Evaluate and define role of Centers in support of specific activities and projected future FTEs by Center
- Communicate and work with Performing Centers on project direction and collaboration opportunities
- Evaluate project and activity assessment tools (i.e. NEEIS)
- Develop a strategy to implement National Research Council (NRC) recommendations
- Develop a plan for an internal partnership call
- Explore opportunities to collaborate with existing NASA education flight projects
- Issue a Cooperative Agreement Notice for Teaching from Space (TFS)
- Complete development and begin implementation of a TFS web strategy
- Develop a strategy to continue funding for ISS EarthKAM cooperative agreement
- Begin to improve ARISS education content and resources
- Lead the Agency efforts to design education activities for STS-119
- Coordinate two face to face meeting with Center Leads
- Establish partnerships with other NASA education flight projects that offer student involvement
- Investigate partnerships with external education organizations, private industry, and other federal agencies

In addition, EFP had the following significant accomplishments during FY08:

- Development of a plan to increase the education value of ARISS in FY09 by: scheduling an ARISS contact as part of the US Department of Education International Education Week; promoting ARISS to informal education audiences; facilitating development of a Digital Learning Network (DLN) module on amateur radio; and showcasing ARISS at the national International Technology Education Association (ITEA) conference
- Development with SEMAA management of a defined strategy to increase SEMAA participation in education flight projects by introducing SEMAA sites to ISS Downlinks, ARISS contacts, and ISS EarthKAM in FY09
- Facilitation of seven education downlinks, including the first "coast to coast" ISS downlink that involved students in both New York and California and the first downlink hosted by a public library system
- Coordination of ARISS contacts at major venues, including Smithsonian National Air and Space Museum, Delta Researchers Schools, Smithsonian Folk Life Festival, European Space Camp, and Challenger Centers
- Facilitation of five on-orbit education demonstrations, including one on the International Polar Year
- Development of the first ISS EarthKAM Earth Klimate Analysis Mission student competition that utilized the extensive ISS EarthKAM image collection to investigate climate change
- Facilitated on-orbit activities with Buzz Lightyear and Richard Garriott in support of Space Act Agreements

For its support of the STS-118 mission, including three ISS downlinks, an ARISS contact, and Education Payload Operations, the Teaching From Space office received a NASA Johnson Space Center Group Achievement Award.

PROJECT CONTRIBUTIONS TO PART MEASURES

PART Measure 7 – Percentage of elementary and secondary educators "who haven't participated in intensive NASA training programs and use" NASA content based resources in their classroom instruction.

In FY08, EFP reached a total of 1,442 educators. Although primarily designed as student involvement project, EFP serves educators through their participation in ISS downlinks, ARISS contacts, and EarthKAM missions. 100% of the educators participated in short duration professional development associated with these activities.

PART Measure 9 – Percentage increase in number of elementary and secondary student participants in NASA instructional and enrichment activities.

In FY08, EFP reached 71,083 students. This total includes both 30,007 direct participants and 41,076 indirect participants. This total number includes an overlap with the following projects: NES – 1650, and AESP – 1,100.

Overlap numbers are for ISS downlinks only. No specific overlap data was reported by ARISS and ISS EarthKAM.

IMPROVEMENTS MADE IN THE PAST YEAR

In FY08, EFP management continued the integration of EAP and EFP. Management structure, processes, and budget were fully integrated by the start of FY09. This complete integration will provide a more efficient and effective approach to project management, budget oversight, and evaluation. In FY09, traditional EAP activities will be incorporated into EFP, resulting in increased opportunities for educators and students to become involved in NASA missions and flight projects. The EAP project name will no longer be used.

EFP successfully involved NASA Center Education Offices in project management. EFP established regular communication with project points of contact at each Center and held two face-to-face meetings. EFP management worked with other Elementary-Secondary project managers to hold EFP meetings in conjunction with other project meetings, minimizing travel costs. Center points of contact contributed to project tasks, promoted project activities, and provided input to mid-year and year-end data collection.

In FY08, EFP began development of a NASA web site to promote project activities. The website is scheduled to launch in FY09. The site will showcase the integration of EAP and EFP activities, highlighting student flight projects, mission-related education resources, and educator professional development opportunities. The web site is intended to provide "one stop shopping" for educators and students. In addition, the project began development of a "do it yourself" podcast site that will showcase on-orbit education video.

EFP worked with Center POCs and to issue an internal call for education flight project proposals. The project received three proposals from Center Education Offices for new education flight projects. EFP management selected Dryden Research Center (DRC) and the SOPHIA project as the first new flight project to receive EFP funding. EFP management and Center POCs collaborated on the development of a standard proposal form for use in FY09. Internal education activities seeking support from the project will be required to submit the proposal form to EFP management. Support can be, but not limited to, funding, promotion, web site presence, and education consultation.

PROJECT PARTNERS AND ROLE OF PARTNERS IN PROJECT EXECUTION

EFP recognizes that partnering with other NASA Education projects and activities is often mutually beneficial and has the potential to increase the worth and reach of all associated projects and to result in enhanced continuity between NASA Education portfolio elements. The project also seeks opportunities to work with NASA Center Education offices and Mission Directorates to develop and deliver EFP activities. The project works closely with appropriate NASA Program and Project Offices, including Space Shuttle, International Space Station (ISS), ARES, and Extravehicular Activity (EVA), to identify flight opportunities, and content for and subject matter experts to participate in the project's activities. EFP also collaborates with external education organizations to expand the scope and value of its activities.

In FY08, EFP activities that utilized strategic partnerships included:

- "Do It Yourself Podcast" Web Site – NASA Education Technology Services (NETS); ISS Program Office
- ISS Education Demonstration Activities – ISS Program Office; Astronaut Office
- ISS Education Payload Operations – ISS Program Office; Astronaut Office
- ARISS – ISS Program Office; ISS International Partners; Digital Learning Network (DLN); International Technology Education Association (ITEA); US Department of Education; Network of Educator Astronaut Teachers (NEAT); Delta Researchers Schools; Challenger Centers; Center Education Offices
- ISS Downlinks – NASA Explorer Schools (NES); Center Education Offices; Aerospace Education Services Project (AESP); DLN
- ISS EarthKAM – University of California – San Diego (UCSD); Sally Ride Science
- Challenger Center On-Orbit Videoconference – ISS Program Office; DLN
- Integrated Project Web Site – NETS; ARISS; EarthKAM
- SOFIA – Dryden Research Center Education Office
- STS-119 Web Site - SOMD; NETS; Center Education Offices; EVA Project Office; Space Shuttle Program Office