KSC Visitor Center Funds
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Congressionally Directed Funding
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PROJECT DESCRIPTION

The KSC Visitor Center project strengthens the partnership between the KSC Education Office, including its Educator Resource Center, and the KSC Visitor Complex to provide NASA-related educational activities, exhibits and events that highlight Science, Technology, Engineering, and Math (STEM) for both formal and informal visitors. All funded components of this project align specifically with NASA educational outcomes, as well as national and state education standards. Below is a brief overview of the nine components funded through this project:

(a) **Science on a Sphere (SOS)**

The Science on a Sphere is a room sized global display system that shows dynamic, animated images of the atmosphere, oceans, and much more. This digital exhibit for formal/informal educational activities will increase awareness of NASA missions and support NASA STEM content. NASA's KSC External Relations Directorate and Delaware North Park Services will jointly utilize this new exhibit located at the KSC Astronaut Hall of Fame.

Support staff from KSC's Education Office, Educator Resource Center and the Kennedy Visitor's Complex have received numerous training sessions regarding formal/informal instructional use, as well as operating procedures and care. The grand opening for this exhibit is scheduled for February 27, 2010.

(b) **Fostering Relationships**

KSC's Education Office purchased five (5) new mobile video-conferencing units to strengthen and enrich partnerships with the Challenger Learning Centers and the Regional Educator Resource Centers in KSC's geographical outreach region. Education specialists at KSC utilize this equipment to expand e-learning capabilities (e.g., workshops, engineering panels, professional development, follow-up enrichment sessions, and create an easy vehicle for support and sustainability. The educational partners who received this equipment were:

- Challenger Learning Center – Columbus, Georgia
- Challenger Learning Center – Tallahassee, Florida
- KSC Regional Educator Resource Center – Warner Robbins, Georgia
- KSC Regional Educator Resource Center – Mayaguez, Puerto Rico
- KSC Educator Resource Center – KSC, Florida

The equipment has been tested with great success through numerous collaborations with the Digital Learning Network, as well as KSC's Educator Resource Center and Penn State University's Aerospace Education Services Project.

(c) **Digital Learning Network (DLN)**

This component provided funds to update our Digital Learning Network equipment, increase connectivity, portability, and provide the addition of live launch webcasts at KSC. These improvements increased the capability to link students and educators with NASA experts and NASA STEM content. In order to provide a high quality and professional webcast, digital video and audio equipment such as a Tricaster unit, audio mixer and lavaliere microphones were purchased, as well as production materials to transport and protect the equipment. May 31st, 2008 for STS-124, KSC provided the first real-time live webcast. November 16th, 2009 for STS-129, KSC used the new portable equipment funded by this project for the launch day webcast. This new equipment enables us to do more frequent outside venues and will allow us to support the remaining Shuttle launches as well as Expendable Launch Vehicle webcasts.

(d) **Educator Resource Center (ERC)**

This component provided funding for the KSC ERC to develop and sustain strategic partnerships with new and current STEM formal and informal education providers through the increase of educational resources, workshops,

and materials available. In addition, funds were used to create an e-education classroom with technology such as a SmartBoard to enhance capabilities for professional development workshops.

Numerous educational materials and supplies were purchased for the implementation of NASA educational activities. The EYECLICK Infrared Activity Station provides interactive educational activities and games for students and members of the general public that visit the Exploration Station at the ERC. In addition, digital and electronic equipment was purchased to enhance events and presentations including projectors, laptops, computer software, flash drives, external drives, telescopes and much more.

These items will enhance the ERC's capability to provide professional development workshops and events for organizations including the Department of State (DOS), Historically Black Colleges and Universities (HBCU), Boy & Girl Scouts of America and many more.

(e) **Aerospace Education Services Project (AESP)**

"Launch Mission Activity Stations" were established through a partnership with Penn State University, the AESP Program, KSC Education and the Kennedy Visitor Complex. These activities were initiated to provide educational resources during the remaining Space Shuttle missions and other potential high profile launches. These partners meet as a team to pre-select appropriate educational activities for each launch and coordinate staffing and locations of the "stations" throughout the Visitor Complex and launch viewing sites. The funds were used to procure mission unique items and instructional materials needed for the informal education of the public attending the remaining launches.

(f) **Brevard Connection**

Funds were used to pilot a project to provide on-location STEM workshops to underserved and underrepresented students in Brevard County middle schools. Four Brevard County School District high minority and Title 1 schools were selected. KSC Education Information Specialists conducted one visit to each school per month to provide STEM workshops for 8th grade teachers and students at their school campuses. Bringing the Information Specialist to the schools ensured access to NASA content and activities as the schools did not need to incur travel expenses, a cost which often limits Title 1 schools from being able to visit KSC's ERC. Necessary supplies to support the appropriate educational activities were purchased. The teachers participated in content workshops at the Educator Resource Center. In addition, the schools participated in discussion panels, crew return presentations and launch opportunities.

(g) **Professional Development**

KSC was pleased to see suggested priority for Visitor Complex fund dispersal was placed on professional development. In keeping with this recommendation selected KSC education staff and the KSC Regional ERC staff will attend a variety of professional development opportunities to ensure they continue to:

- Provide quality instruction for K-12 students, Pre-Service students and Professional Educators
- Sustain a multi-disciplinary team of employees skilled in NASA content
- Provide all 4 categories of Involvement in the Education Strategic Framework
- Ensure activities and programs are aligned with NASA's Educational Outcomes

KSC will host a workshop for Regional Educator Resource Centers (RERC's) from Puerto Rico, Georgia and the U.S. Virgin Islands. Funds will be used to support travel, logistics and supportive materials toward hosting the workshop at the Kennedy Space Center on February 24th – 27th, 2010. This workshop ensures the KSC RERC's are equipped with the latest knowledge in educational strategies, STEM material and resources to support NASA's Education Strategic Framework.

The educational information specialists at the KSC ERC will attend professional development workshops, educational conferences and site visits to other NASA centers. This will include professional enrichment visits to the National Science Teacher's Association (NSTA), Space Educators Exploration Conference (SEEC), as well as visits to various NASA centers such as Marshall Space Flight Center and Goddard Space Flight Center.

(h) **Ares 1-X Educator Rocketry Workshop**

This STEM based workshop was held on October 24th, 2009 at the Kennedy Space Center Educator Resource Center. Forty (40) K-12 formal/informal educators from several local school districts were competitively selected. The purpose of the workshop was to integrate STEM activities from NASA's Rockets Educator Guide, highlight the

launch of Ares 1-X, and inform educators about the Constellation Program, NASA educational and multimedia resources.

Educators received two educational kits to supplement Ares 1-X rocket activities in the classroom. The Ares 1-X Rocket Kit included all of the necessary components needed to build an individual pressurized rocket launcher as well as a printed copy of the new Rockets Educator Guide. The Educator Kit included publication materials, lithographs, and fact sheets highlighting NASA missions.

(i) **Education Support Contractor**

This funding provided for a 0.4 WYE contract support position hired to ensure success of the KSC Visitor Complex project initiatives. The WYE ensures the KSC Education Office fulfills numerous aspects of the Outcomes 2 and 3 PART measures, provides expertise in national and state standards of education, educational content development and implementation of the KSC Visitor Complex components.

This position required a skill set including extensive educational background with STEM concepts, NASA content development experience, public speaking, audio/video technology experience and a high familiarity of NASA educational programs and strategic framework.

PROJECT GOALS

The KSC Education Office strives to attract and retain students in STEM through a variety of educational opportunities afforded both in and outside of the classroom. We aim to inspire the next generation of future explorers while engaging Americans in NASA missions through the components of this project. This will be achieved through developing partnerships and working toward long-term component sustainability. Our project will meet and exceed the following goals:

- Increase collaboration between the Kennedy Education Office and the KSC Visitor Complex
- Create a strategic partnership to promote STEM awareness of NASA missions with the Challenger Learning Centers and Regional Educator Resource Centers in the KSC geographical region
- Increase KSC educational outreach through digital connectivity via webcasts and video conferencing
- Improve KSC's local community and school involvement through educational outreach events
- Develop educational opportunities for students, teachers and education providers outside of the KSC geographical region
- Develop new and improve current enrichment experiences for the KSC Visitor Complex

PROJECT BENEFIT TO OUTCOME

The full scope of the project's benefit to Outcomes 2 or 3 will not be known until all data is collected and analyzed. When applicable, evaluation data will be collected by utilizing NASA's Office of Education Performance Measures database. KSC Education, the Educator Resource Center, and the KSC Visitor Complex provide the avenue for supporting each outcome with the necessary content, resources, opportunities, and instruction to inspire, engage, and educate. Evaluation of each activity centers on one or more of the Outcomes. The projects contribute to the following outcomes:

Science on a Sphere - Outcomes 2 & 3
Digital Learning Network (DLN) - Outcomes 2 & 3
Fostering Relationships - Outcomes 2 & 3
Educator Resource Center (ERC) - Outcomes 2 & 3
Aerospace Education Services Project (AESP) - Outcomes 2 & 3
Brevard Connection - Outcome 2
Professional Development - Outcome 2
Ares 1-X Educator Rocketry Workshop – Outcome 2
Educational Support Contractor - Outcome 2

PROJECT ACCOMPLISHMENTS

The full scope of the project accomplishments will not be known until all data is collected and analyzed. All of the components outlined above align to one or more of NASA's Program Performance Measures, as well as matching numerous national and state standards of education. The project expects to increase the percentage of elementary and secondary educators using NASA content-based STEM resources in the classroom. These investments will pay off over time and have not yet been realized. Examples of the expected accomplishments are listed below:

- Partnership sustainability between the Kennedy Education Office and the Kennedy Space Center Visitor Complex by funding and developing new educational opportunities and exhibits that promote NASA missions

- Collaborate within the network of NASA departments including the NASA Launch Service Program, KSC Press Site, Digital Learning Network and various NASA centers

- Developing a partnership with formal/informal education providers such as the Department of State (DOS), Pre-Service Teacher's Institute (PSTI), Historically Black Colleges and Universities (HBCU) and The Boy & Girl Scouts of America

- Production of live webcasts that communicate information about NASA missions: The webcasts are conducted by the KSC- DLN webcast team. The length of each webcast is 60 – 90 minutes and each is aired live via the internet on the Digital Learning Network Info-channel. The main objective is to highlight mission science and information, present STEM educational topics and allow NASA scientists and engineers to speak directly to the classroom, as well as answer questions submitted via email.

- The creation of the E-Education Room at the Kennedy Educator Resource Center increases opportunity and enrichment activities. Used in cooperation with NASA civil service employees and contractors, this room communicates NASA themed activities and mission information directly to students and teachers via IP video-conferencing.

- These investments continue to enable the KSC Education Office to increase the number of participants receiving NASA information. We are able to track this number through digital monitoring and electronic surveys. To date, our funded educational components have provided the following numbers.

    - Brevard Connections: Four Title 1 & high minority schools with nearly 400 8th grade students and 20 educators
    - Fostering Relationships: 60 educators from Puerto Rico and staff from the University of Puerto Rico-Mayaguez Campus
    - Launch-day Webcasts: Two webcasts with nearly 400 IP addresses registered including several classrooms
    - Ares 1-X Workshop: Forty (40) educators in cooperation with 3 NASA centers

PROJECT CONTRIBUTIONS TO PART MEASURES

Science on a Sphere (SOS)- The SOS is a multimedia exhibit that provides short and long-term professional development to educators and enrichment activities for students involving NASA-themed presentations. The SOS was installed in a public museum, which supports and/or contributes to the following PART measures.

a) 2.1.1 Percentage of elementary and secondary educators who obtain NASA content-based education resources or participate in short-duration NASA education activities and use NASA resources in their classroom instruction.

b) 2.4.1 Number of elementary and secondary student participants in NASA instructional and enrichment activities.

c) 3.1.1 Number of museums and science centers across the country that actively engages the public in major NASA events.

d) 3.1.2 Outcome measure: Increase in the use of NASA or NASA affiliate-produced informal educational resources or tools in programs or exhibits serving public audiences.

Fostering Relationships – This component increases the use of video conferencing to communicate information regarding NASA missions. This partnership was implemented with the KSC Regional ERC's as well as public museums and science centers. It also increases the availability of short and long duration, NASA-themed workshops for students and teachers.

a) 2.1.1 Percentage of elementary and secondary educators who obtain NASA content-based education resources or participate in short-duration NASA education activities and use NASA resources in their classroom instruction.
b) 2.4.1 Number of elementary and secondary student participants in NASA instructional and enrichment activities.
c) 3.1.1 Number of museums and science centers across the country that actively engages the public in major NASA events.

Digital Learning Network (DLN) – Provides launch day webcasts that communicate information regarding NASA missions and allows students, teachers and the general public access to STEM engineers and scientists. This component also highlights NASA STEM careers available for students.

a) 2.3.1 Percentage of elementary and secondary educators who obtain NASA content-based education resources or participate in short-duration NASA education activities and use NASA resources in their classroom instruction.
b) 2.3.2 Percentage of students expressing interest in science, technology, engineering and math (STEM) careers following their involvement in NASA elementary and secondary education programs.
c) 2.4.1 Number of elementary and secondary student participants in NASA instructional and enrichment activities.
d) 2.4.2 Percentage of students expressing interest in science, technology, engineering and math (STEM) careers following their involvement in NASA elementary and secondary education programs.

Educator Resource Center (ERC) - Engages students and teachers in mission-specific content while highlighting skilled and diverse careers with NASA. The ERC also provides short and long term, professional development and distributes curricular resources to support NASA education in the classroom.

a) 2.1.1 Percentage of elementary and secondary educators who obtain NASA content-based education resources or participate in short-duration NASA education activities and use NASA resources in their classroom instruction.
b) 2.3.1 Percentage of elementary and secondary educators who obtain NASA content-based education resources or participate in short-duration NASA education activities and use NASA resources in their classroom instruction.
c) 2.4.1 Number of elementary and secondary student participants in NASA instructional and enrichment activities.

Aerospace Education Services Project (AESP) – Provides informal educational opportunities and informs the public and students about STEM career opportunities. This component previews NASA missions through a partnership with the Visitor's Complex This project is held at the KSC Visitor Complex for the general public and is scheduled in support of the remaining space shuttle launches and future Expendable Launch Vehicle missions.

a) 2.4.1 Number of elementary and secondary student participants in NASA instructional and enrichment activities.
b) 3.1.1 Number of museums and science centers across the country that actively engages the public in major NASA events.
c) 3.1.2 Outcome measure: Increase in the use of NASA or NASA affiliate-produced informal educational resources or tools in programs or exhibits serving public audiences.

Brevard Connection – Professional Development workshops are provided while curricular support materials are distributed to the title 1 and high minority schools participating. Students are presented with information regarding NASA missions and informed about STEM career opportunities.

a) 2.1.1 Percentage of elementary and secondary educators who obtain NASA content-based education resources or participate in short-duration NASA education activities and use NASA resources in their classroom instruction.

b) 2.3.1 Percentage of elementary and secondary educators who obtain NASA content-based education resources or participate in short-duration NASA education activities and use NASA resources in their classroom instruction.

c) 2.4.1 Number of elementary and secondary student participants in NASA instructional and enrichment activities.

d) 2.2.1 Percentage of elementary and secondary educators who participate in NASA training programs and use NASA resources in their classroom instruction.

Professional Development – KSC Education Staff will attend various workshops designed to improve and increase the KSC Education Office's ability to provide formal/informal events.

a) 2.1.1 Percentage of elementary and secondary educators who obtain NASA content-based education resources or participate in short-duration NASA education activities and use NASA resources in their classroom instruction.

b) 2.2.1 Percentage of elementary and secondary educators who participate in NASA training programs and use NASA resources in their classroom instruction.

Ares 1-X Educator Rocketry Workshop – The workshop date was October 24th, 2009 and had nearly 40 educators participate. The workshop highlighted Ares 1-X educational material and was held at the KSC Educator Resource Center. The workshop was planned and conducted by the WYE.

a) 2.1.1 Percentage of elementary and secondary educators who obtain NASA content-based education resources or participate in short-duration NASA education activities and use NASA resources in their classroom instruction.

b) 2.3.1 Percentage of elementary and secondary educators who obtain NASA content-based education resources or participate in short-duration NASA education activities and use NASA resources in their classroom instruction.

Educational Support Contractor - Develop, implement and monitor formal / informal educational outreach projects that contribute to PART measures. The contractor also provides professional development opportunities; inform students about STEM career opportunities and helps educators obtain NASA content-based education resources.

a) 2.1.1 Percentage of elementary and secondary educators who obtain NASA content-based education resources or participate in short-duration NASA education activities and use NASA resources in their classroom instruction.

b) 2.2.1 Percentage of elementary and secondary educators who participate in NASA training programs and use NASA resources in their classroom instruction.

c) 2.3.1 Percentage of elementary and secondary educators who obtain NASA content-based education resources or participate in short-duration NASA education activities and use NASA resources in their classroom instruction.

IMPROVEMENTS MADE IN THE PAST YEAR

This is the second year of this congressionally funded awarded to the KSC Education Office. This project affords us an opportunity to strengthen the relationship between NASA, the Kennedy Visitor Complex and other formal/informal education partners. These relationships enable us to expand our reach and further NASA's education goals.

During FY2008, KSC used the Visitor Complex funds to enhance our capabilities and offers to our immediate community (Brevard and Orange counties). This year, we expanded our reach through partnerships in Georgia, Puerto Rico, and the US Virgin Islands. The digital connectivity enhancements and the addition of Science on a Sphere to the Astronaut Hall of Fame, part of our KSC Visitor Complex, will reach students and educators throughout our nation and from around the world.

PROJECT PARTNERS AND ROLE OF PARTNERS IN PROJECT EXECUTION

Aerospace Education Services Project –

- Providing personnel and logistics to support "Launch Mission Activity Stations"
- Contractor providing educational staff in support of several Visitor Center Fund Components

Brevard County School System –

- Participate in the Brevard Connections Project
- Active collaboration for providing formal/informal Professional Development
- Participation in the KSC ERC Exploration Station student enrichment events

Challenger Learning Centers –

- Utilization of mobile Digital Learning Network units
- Increase connectivity between NASA centers and formal/informal institutions
- Provide outreach to higher education providers, students and teachers

Digital Learning Network –

- Develop collaboration within various KSC organizations
- Improve Launch Day webcasts with essential and professional equipment
- Provide outreach to higher education providers, students and teachers

Delaware North Parks and Resorts at KSC, Inc –

- Support for the "Launch Mission Activity Stations"
- Contract support for the installation, development & utilization of the Science on a Sphere Project

Educator Resource Center (ERC) –

- Schedule, host and present the NASA KSC Regional ERC Workshop
- Provide specialist and materials to support the Brevard Connections program
- Provide personnel to support "Launch Mission Activity Stations"
- Establish the "E-Education Room" using a mobile Digital Learning Network unit
- Collaboration within various KSC organizations
- Development and installation of the EYECLICK activity

Girl & Boy Scouts of America –

- Provide development toward educational workshops in support of the Aerospace Badge
- Participate in the planning and implementation of NASA enrichment

KSC WYE –

- Draft supporting documents for the 09-10 Visitor Center Fund Components
- Provide technical, multimedia support and content development for the following components funded through Visitor Center Funds
    - Science on the Sphere
    - E-Education Room
    - Launch day webcasts
    - KSC ERC educational workshops, events and materials

KSC Press Site –

- Production assistance for the Space Shuttle and ELV webcasts
- Production assistance for video packages used during launch webcasts

KSC Regional ERC's –

- Participation in the Regional ERC Conference
- Utilization of the Digital Learning Network units
- Increase connectivity between NASA centers and formal/informal institutions

NOAA –

- Development and Training for the Science on a Sphere

Oklahoma State University –

- Contractor providing educational staff in support of several Visitor Center Fund Components
- Provides Technical Support of the Launch Day Webcasts
- Provides staff to support Launch day webcasts and Digital learning events

Penn State University –

- Provide personnel to support "Launch Mission Activity Stations"
- Contractor providing educational staff in support of several Visitor Center Fund Components

University of Central Florida –

- Contractor providing Kennedy ERC Education Specialists to conduct the educational outreach involved with several Visitor Center Fund Components
- Participation in planning numerous professional development workshops for Pre Service students in education fields of study

Various NASA Centers –

- Provide personnel to support "Launch Mission Activity Stations"
- Technical Support of the Launch Day Webcasts
- Provide staff to support Launch day webcasts and digital learning events
- Outreach strategies and "lessons learned" for the Science on a Sphere exhibit