Virginia Air and Space Center Education Programs and Outreach
NASA Langley Visitors Center
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PROJECT DESCRIPTION

The Virginia Air & Space Center (VASC) provides a quality aerospace public education effort to engage students, teachers, and the general public through NASA-inspired programs, demonstrations, science camps, public lectures, family activities, teacher workshops, tours, and exhibits skillfully crafted to pique the audience's interest in STEM subjects and NASA missions. K-12 programs are aligned with NASA education objectives, National Science Education Standards (NSES) and Virginia's Standards of Learning (SOL) guidelines. As NASA LaRC's Visitor Center, the Virginia Air & Space Center extends NASA's mission to "inspire the next generation", serving a total of over 400,000 admissions each year, 240,000 of which are children.

One of the highlights of the VASC education program this year was to provide a very aggressive education campaign to support NASA's Summer of Innovation initiative. VASC education staff, consisting of the Director of Education (DE), Richard Byles, the NASA Educator in Residence (EIR), Bonnie Murray, and 20 Museum Educators, focused their efforts on engaging middle school students throughout the region to deliver a combination of camps, field trips, museum visits, outreaches and special events. Through these efforts, VASC exposed over 14,000 middle school students to NASA content. VASC also reached out to home school students and school groups during the Fall of Innovation.

Plans are underway to start a 12 week afterschool program for middle school age children in collaboration with the Big Brothers and Big Sisters organization. The children's mentors will also attend the after school program, providing additional opportunities for reinforcement of content.

This year VASC was also successful in inspiring students and the general public through a record number of attendees at a series of joint NASA/VASC public events. In June, middle school students and their families attended the VASC free of charge at the kick-off event for the Summer of Innovation initiative. Other activities include, "Sports, Space and Sprockit" with Leland Melvin as the special guest. The target group for this event is underserved middle school age students and their families. Other events included NASA Engineering Day, Entry, Descent and Landing Egg Drop Competition, Space Day and Homeschool Appreciation Day.

VASC infuses NASA content into all programs and in all areas of the museum as a way to provide experiences that are integral components of a broad-based science, technology, engineering and math (STEM) education. The DE and the NASA EIR liaison with NASA Langley Research Center's (LaRC's) Office of Education to include NASA Education content from all four Mission Directorates into all aspects of Museum

Education Programming. The NASA EIR also works with LaRC's Informal Education Manager to disseminate current NASA mission information and newly approved NASA educational content to other informal education venues throughout LaRC's five state region (VA, WV, NC, SC and KY). The VASC also hosts Professional Development for other NASA Centers to bring the latest and best in professional development to our region.

A comprehensive series of education programs is being implemented in collaboration with LaRC's Science Directorate to raise awareness of the science of climate change and NASA's unique role in the acquisition and analysis of data. These education programs include a teacher professional development workshop, which was offered multiple times throughout the year for formal and informal educators. This series also includes an after-school and summer camp component, and a museum presentation included in K-12 field trips and outreaches to schools. This demonstration will be presented at other museums and informal settings throughout LaRC's five-state region.

A pilot program is being created in conjunction with NASA DLN featuring the DE reprising the role of "Mr. Wizard" with modern twists. The first series of shows will feature ARMD themes starting with the forces of flight. Titled "Do It Again!", each show will include interactive demonstrations, hands-on activities, and will be shot with live student audiences. An interview with a NASA scientist or engineer will also be included to involve the students in current NASA research. The first segment is scripted and will be shot in the DLN Studio at LaRC in February, 2011. NASA ARMD content is also highlighted in a new exhibit, The Future of Flight kiosk, which has been added to our Aviation Gallery, providing the public with an overview of NASA's current and future contributions to aviation.

VASC also incorporates engineering challenges into their programming challenges related to NASA's current and future exploration missions to build experiences that demonstrate the relevancy of engineering to math and science, and to develop creative and critical thinking skills. By drawing from the development of the Launch Abort System, Inflatable Reentry Vehicle Experiment and other NASA projects, the VASC provides students and the general public with a comprehensive understanding of the engineering challenges and teamwork required in developing these missions. Content is also derived from NASA-developed educator resource guides such as the Suited for Spacewalking, Lunarnautics, Rocket Guide, the Teaching from Space Robotics web site, and the Robotics Kit. By using NASA engineering design challenges, students, teachers and the general public are exposed to NASA mission and education content from all four NASA mission directorates.

The VASC also hosted TEDxYouth@NASA for Langley's Strategic Relationships Office in the main gallery of the VASC. The beautiful venue with the Apollo 12 Command Module on the main floor and airplanes suspended from the 90-foot ceiling made a great video backdrop for the world-wide event. Three hours of live internet streaming and loads of interactive exhibits for the 375 middle school guests were hugely effective. Millions were impacted by this NASA LaRC event, and VASC was proud to be a part of it. Following other presentations and NASA's Jim Green's Solar System, the DE presented a live hands-on demonstration, crafting a pseudo comet nucleus with the help of participants as part of his "Cometary" presentation.

The NASA EIR coordinated a series of professional development workshops for formal, informal, in-service and pre-service educators. These included content from the Sun-Earth Team from Goddard Space Flight Center, who presented their Space Weather Action Center (SWAC) workshop; Rocketry, presented by Marshall Space Flight Center; two Museum Educator training sessions, one of which was conducted by Jenay Sharp Leach representing HQ ARMD; and three workshops on Global Climate Change, in collaboration with the LaRC Science Mission Directorate. An Apollo workshop highlighted the contributions of the Apollo

program to our understanding of the moon. All workshops focused on increasing teachers' content knowledge and their use of NASA content within their curricular area.

VASC has reorganized the structure of the ERC to enhance our ability to reach teachers. The hours of operation have been increased, allowing educators to visit twice a week in the late afternoon and evenings. VASC has trained more of its staff and volunteers to use the ERC to its fullest capacity. They are restructuring the webpage for easier access to NASA material and activities, with an emphasis on teacher orientation to the material as well as upcoming NASA mission events. The VASC also added on opportunity for teachers to visit the museum and view IMAX Hubble 3D for free during Teacher Tuesdays in August.

PROJECT GOALS

1. Expand the Visitor Center mission as a world-class facility devoted to education in science, aviation, space and technology through development of new educational programs, a closer relationship with NASA and resulting greater impact of VASC's robust education efforts.

2. Increase the numbers of students and the public exposed to NASA's missions and education content.

3. Improve the science, technology, engineering and math literacy of students, families and the public through hands-on, engaging activities that focus on STEM.

4. Increase the number of students seeking pathways to college through STEM subjects early in their academic lives. Encourage students to pursue career paths critical to NASA's future engineering, scientific and technical missions.

5. Give teachers, informal educators and home educators professional development predominantly focused on NASA content and the latest missions/education products.

6. Better integrate VASC programs with NASA LaRC education and public outreach efforts. Become a full partner in NASA events hosted at VASC or at public venues.

PROJECT BENEFIT TO OUTCOME (1, 2, OR 3)

Outcomes 2 and 3:

The exploratory, hands-on nature of VASC's programs and exhibits encourage a curiosity and a deeper understanding that strengthens the connection between real-world and classroom lessons.

PROJECT ACCOMPLISHMENTS

Goal 1. VASC has expanded the Visitor Center mission as a world-class facility devoted to education in science, aviation, space and technology. This was or will be accomplished through development of new educational programs, a closer relationship with NASA and resulting greater impact of VASC's robust education efforts.

Expansion of Education Programs

The IMAX Theater was upgraded in September 2010 with a new 3D digital projection system, seats and carpeting were replaced. VASC was the first museum in the world to take advantage of this new IMAX technology. We are providing/will provide school groups opportunities to see *Hubble 3D*, *Walking on the Moon 3D*, *Space Station 3D*, *Legends of Flight*, *Everest*, *Born to be Wild 3D*, and other education films yet to be received. We can also show some very popular (with teachers) older films, including *Mysteries of Egypt*,

Stormchasers, *Ring of Fire* and *Thrill Ride*, via a high resolution projector on the screen. We are exploring showing NASA animation and programs as well.

VASC education staff, consisting of 20 Museum Educators, four senior staff and 200 volunteers, provided a high quality aerospace Public Education Program that engaged students, teachers and the general public through NASA-inspired programming. This was accomplished through a comprehensive offering of age-specific education programs, science camps, public lectures (including NASA LaRC's Sigma Series), family activities, teacher workshops, tours, exhibits and science demonstrations aligned with Virginia's Standards of Learning guidelines (SOL), National Science Education Standards (NSES) and NASA education objectives. VASC strives to infuse NASA content into programs as a way to provide experiences that are integral components of a broad-based science, technology, engineering and math (STEM) education. VASC's NASA Educator in Residence (EIR) serves as liaison with NASA LaRC's Office of Education to facilitate this process. The NASA EIR works with NASA LaRC's Informal Education Manager to disseminate current NASA mission information and newly-approved NASA education content to Education staff at the VASC and at other informal education venues in LaRC's five-state region including VA, WV, NC, SC and KY. The NASA EIR works closely with the NASA ERC Manager to coordinate efforts to provide formal and informal educators with NASA content.

VASC delivered or will deliver hands-on science programs and demonstrations to over 18,000 students at VASC. We performed or will perform similar programs and demonstrations in outreaches to schools for approximately 12,000 students. An additional 20,000 students are reached by self-directed tours of exhibits and are often assisted by the knowledgeable VASC docent staff.

VASC invited and will invite NASA Langley personnel to participate in public programs including:

- Home School Family Appreciation Day (October 6, 2010)
- Virginia Association of Science Teachers Conference event at which Center Director Lesa Roe addressed the teachers and a wide variety of NASA content was presented to the teachers (November 19, 2010)
- *Sports, Space and Sprockit* with Leland Melvin, former astronaut and Associate Administrator for Education (February 12, 2011)
- NASA Engineering Day with NASA Astronaut Susan Kilrain (Planned March 2011)
- Girl Scout Luncheon with Astronaut Susan Kilrain (Planned March 2011)
- Family Learning Project event for Hampton Title I families (Planned April 2011)
- Space Day (Planned May 2011)
- NASA summer intern event will occur in June 2011. VASC will invite 300 NASA summer interns to view the Hubble 3D IMAX film free of charge. The event will include a visit to the Space Quest gallery and the rest of the museum

As an extension of VASC's on-site education programs, Museum Educators delivered Science on the Move outreach programs to schools across the state and in North Carolina that could not visit VASC. All of VASC's education programs are available as Science on the Move outreaches and included hands-on activities designed to meet Virginia's SOL guidelines (adjusted to meet North Carolina curriculum guidelines as necessary).

VASC employed comprehensive public information campaigns to inform the public about services and programs offered by the Virginia Air & Space Center. Multi-media marketing efforts included print, television, radio and billboards, CenterLine newsletters, targeted mailings, and an up-to-date website (www.vasc.org) featuring links to NASA and other constituents. VASC's website includes a virtual museum

tour which enables Internet visitors to explore an interactive floor plan of VASC and view videos of several exhibit areas. VASC communicates electronically to a large e-mail database and promotes programs and activities and via social media services including text messaging, Twitter, and Facebook.

Space Quest Phase II

A new kiosk featuring winning entries from the 2009-2010 NASA Langley Children's Art Contest was installed in the Space Quest gallery. This complements ViewSpace, which is continuously exhibiting Hubble Space Telescope imagery and facts, and a near live feed of AMNH/NASA Astrobulletin.

The Virginia Air & Space Center serves over 400,000 admissions per year. Over 240,000 of those are school-aged children who participate in NASA-inspired education.

Forty-four education programs and demonstrations were developed or revised and presented or will be presented to over 40,000 students in formal classroom settings on field trips or through outreaches to their schools.

Twenty-five thousand underserved students (Title 1) will receive free or reduced admission to the museum through our Opportunity Fund. This fund is supported through corporate and private donations that qualify for Virginia state income tax credits.

VASC conducted or will conduct 38 teacher professional development workshops in this timeframe on NASA-related content. Over 500 formal and informal educators are served through these workshops. VASC often invites educators from other NASA centers to conduct workshops, providing center-specific content to be shared with teachers within LaRC's region.

VASC has or will see more than 1800 girl and boy scouts for specially designed programs and over 1,400 home schooled children have and will be participating in NASA-themed activities.

Goal 2. Increase the numbers of students and the public exposed to NASA's missions and education content.

Summer Camps

During Summer 2010, VASC conducted 34 STEM camps, including:

- Giants and Dragons, where students in grades K-1 learned by play about the mysteries of a giant planet and launched a giant rocket. The campers learned about Hercules and Draco the Dragon Star Constellations as they made a Star-Scope and listened to stories of giants and dragons in folklore and mythology as separated from science.
- Spatial Cadets: Implemented by the EIR to immerse middle school students in spatial technologies. They worked with GPS units and Landsat images, went outside to measure a single Landsat pixel so they could visually see how big a 30m by 30m square is, spent some time experience the many simulators at the VASC (including the Altair Lander) and discussed the difference between models and simulations. Throughout the week, campers used Google Earth to increase their spatial awareness and create personal tours with various themes, with a goal of stimulating thinking about why and where things are happening throughout the Earth and understanding how NASA collects information about Earth through satellites. The campers analyzed NASA data sets, sea surface temperatures, and created animations to display them. This helped them to understand what data patterns might indicate for future events, and how important modeling and simulation are in the scientific process. They explored the GSFC Science Visualization Studio (SVS) website. At the end of the week campers created a data layer of GPS points, displayed using GIS, creating 3D images in

Image J software, and presented their Google Earth tours to the group.

- Exploring with NASA: Geared toward middle school students, this camp included education content from all four NASA mission directorates, hands-on educational activities related to NASA's new robotics education content and information on NASA's new missions. Students learned about Hubble Space Telescope and its successor James Webb and the discoveries about the universe NASA has made and wants to pursue. They investigated the challenges of landing on Mars, including the challenges of landing heavy payloads such as the Mars Science Laboratory. Campers designed a mission to another body, such as an asteroid or a planet.
- Aerospace Adventure: A NASA engineering camp for middle school students featuring hands-on educational activities and special projects designed to interest kids in the engineering challenges of aerospace. This camp included content from all mission directorates with special emphasis on aeronautics, space operations and exploration. The students were asked to come up with science experiments for the ISS and learned about the international nature of the ISS. Immersion in study of the ISS included human physiology developments such as COLBERT, experimental research developments such as the racks delivered by STS-131, and a focus on development of robotic technologies using educational materials developed by TFS at JSC for STS-131. The camp included spacewalking games developed by the Space Operations Mission Directorate.

VASC created dynamic programs for lifelong learners, senior centers and retirement facilities, such as the Lunar Sample Presentation. Outreach presentations to groups at senior centers about the Apollo era used lunar samples, enabling individuals to hold a piece of the moon. Since June 2010 and through June 2011, staff and volunteers conducted or will conduct NASA Lunar Sample presentations in-house for 3,500 students and adults and on outreaches will reach approximately 3,000 additional people.

VASC partnered with NASA LaRC Informal Education to provide opportunities for high school students to learn about NASA's missions from LaRC scientists and engineers. Dubbed "NASA Aerospace Ambassadors," the students served as interns in the Education Department and as mentors for middle school children during VASC's NASA Exploration summer science camps. Most of our Ambassadors are now in college pursuing STEM careers.

In order to maximize broad exposure to NASA's aerospace mission and programs and to encourage visitation by persons of all ages and socio-economic backgrounds, VASC maintained general admission fees at a reasonable level comparable to or lower than other museums in the region.

Free or reduced rate education programs were or will be provided to over 25,000 underprivileged students through the Virginia Air & Space Center Opportunity Program, which is supported by private donations. VASC will host a special annual Family Learning Project event for Hampton Title I families including free exhibit admission for approximately 1,100 guests (April 2011). The Opportunity Program will provide 500 free admissions for this event and Hampton City Schools' Title I will fund the balance.

Goal 3. Improve the science, technology, engineering and math literacy of students, families and the public through hands-on, engaging activities that focus on STEM.

VASC hosted special programs each month from January through November for Cosmic Kids Club members (ages 6-10). Members received a Cosmic Kids Club Card signed by Apollo 11 astronaut Buzz Aldrin, free exhibit admission (for one year), and discounts on other museum programs. Cosmic Kids members participated in hands-on activities, met special guests, and conducted experiments. Cosmic Kids Club programs included *Hubble Telescope, NASA Spinoffs, Explore the planets with NASA's Fun Facts Wheel Game, What's Grosser than Gross?, Military Transport, All About Balloons, Optical Illusions, Planes, Planes*

and More Planes, Pathways to Space and *Brainiacs.*

Girl Scouts, Boy Scouts, home schooled students and public school students experienced overnight camp-ins at VASC. They were given programs (merit badges, try-its and similar tailored STEM content) by our Museum Educators, allowed sufficient time to explore the museum, and in many cases completed a project like building and launching a rocket. Approximately 1,700 youth completed or will complete camp-ins in this timeframe.

VASC staff took exhibits and materials promoting the museum, ERC and NASA Langley to numerous off-site fairs and festivals including Hampton Bay Days and Newport News Children's Festival and the Children's Engineering Conference.

VASC also hosts free monthly science lectures in collaboration with LaRC – the Sigma Series and numerous visits by astronauts for our visitors.

Goal 4. Increase the number of students seeing pathways to college through STEM subjects early in their academic lives. Encourage students to pursue educational disciplines critical to NASA's future engineering, scientific and technical missions.

VASC often invites NASA scientists and engineers to inspire students and increase student awareness of STEM careers that relate to NASA's programs. VASC's use of LaRC engineers and scientists in programs and special events (such as Space Day, Engineering Day, etc.) encourages students to pursue careers in STEM fields. The school field trips, after-school programs, and camps include a career component.

VASC hosts two engineering design challenges for students and teachers related to NASA's current and future missions that help develop creative and critical thinking skills. Utilizing NASA content in engineering design challenges exposes the public to an understanding of NASA's overall mission. VASC hosted the annual "Entry, Descent and Landing" egg drop challenge. We hope to reach 250 people in February 2011 at the annual egg drop event. Medals are awarded to four age group winners with first, second, and third place winners and a special medal for best design in each age class.

A new afterschool engineering challenge was implemented in 2010 to interest regional middle and high school students in aeronautic engineering. We supported the Zenith Challenge Student Unmanned Autonomous Systems Competition. Only two teams of high school students rose to the level to compete against 41 of the best international engineering universities from as far away as India. Our Zenith Challenge team consisted of middle and high school students from across the Hampton Roads area. We are proud to say that our team came in 20th of the 42 total, having only worked together for five months prior to the competition and being at a disadvantage competing with more experienced college teams.

VASC has several afterschool programs lined up for spring implementation. We are working with Big Brothers, Big Sisters to offer STEM programming to their mentorship program in east Newport News, VA. We are also instituting robotics programs with home school children and our EIR is beginning a VEX robotics team. We annually host a Regional FIRST Robotics Competition kickoff event and distribute the kits of robotics parts in January. Sixteen teams of 20 middle and high school students will participate in this event and workshops in January 2011. All teams are invited to learn team-building "NASA style" in the Lunar /Mars Lander mission experience. We also invite the FIRST Lego League (FLL) to participate in events at VASC and specifically targeted their use of the Lunar /Mars Lander.

Goal 5. Give teachers, informal educators and home educators professional development predominantly focused on NASA content and the latest missions/education products.

Since June, VASC hosted an Educator Resource Center 2-day training workshop for the Langley regional ERCs. We also included a presentation of the NASA Langley ERC in all of our on-site workshops and took brochures to all our off-site workshops and events.

VASC also hosted five mini 2-hour teacher workshops on the *Introduction to the ERC*, *Rockets, Planetary Geology*, and *Planet Earth*, specifically utilizing the NASA Educator Guides in summer and fall of 2010. At least 10 more mini workshops will be conducted in the winter and spring 2011.

VASC hosted a lunar/ meteorite sample certification workshop in Aug. for 15 teachers and will host others in December 2010 and Spring 2011.

VASC operated the NASA Langley Educator Resource Center (ERC), helping educators access and use NASA science, mathematics, technology and instructional products and providing educators with in-service and pre-service training and demonstrations of NASA educational technologies on site and at numerous off-site events. Approximately 600 educators have visited or will visit the ERC from June 2010 to June 2011. The ERC distributed copies of NASA instructional materials from the ERC to informal and formal educators on a walk-in basis or in response to telephone, e-mail and post mail requests. The ERC serves as the primary interface for NASA Regional Educator Resource Centers located in five states (KY, NC, SC, VA and WV). VASC provides a monthly report of Educator Resource Center activities. VASC posts ERC workshops and information on the local Hampton and Newport News Schools' TV channels, and also started a Twitter account as another way to send news and updates to teachers.

VASC informed teachers of new educational program offerings and IMAX films through publication and notification of the 2010-11 Online Educational Programs Guide delivered to all regional schools. In an effort to promote education programs to a larger number of teachers, the staff hosted *Teacher Tuesdays* in August 2010 (in lieu of a single Educator Open House). A total of 457 people attended *Teacher Tuesdays*, including 171 teachers and 286 guests. VASC also hosted Home School Family Appreciation Day for 1,020 guests (October 6, 2010) and provides free IMAX film opportunities for teachers through the IMAX Educators' Connection. IMAX Educator's Connection members receive personal invitations to IMAX film screenings to help determine which films to bring to VASC. This teacher input is invaluable since school groups form a large part of the IMAX audience.

Goal 6. Better integrate VASC programs with NASA LaRC education and public outreach efforts. Become a full partner in NASA events hosted at VASC or at public venues.

VASC will assist the Langley's legislative liaison (SRO) in support of NASA at Aerospace Day for the Virginia General Assembly (February 2, 2011) and other state and local support functions as requested.

In support of NASA LaRC's Informal Education Manager, VASC assisted community outreach efforts:

- NASA Exploration Days at Busch Gardens (August 13-14, 2010)
- Various Celebrations by the Bay community events series which have or will attract 101,000 persons to downtown Hampton
- NASA Take Your Children to Work Day (August 20, 2010)
- NASA Diversity Day (2010)
- VASC Director of Education gave a presentation with the NASA Informal Education Manager to the

new Virginia Secretary of Education at NASA LaRC in late May 2010 which led to an invitation to the (Virginia) Governor's Education Summit on October 27, 2010
- Assisted with NASA Summer of Innovation, reaching over 14,000 middle school students with camps, museum visits, outreaches and special events

VASC hosted or will host several NASA special events:
- The first LaRC Yuri's night for 1,574 guests in spring 2010 and will again in 2011 with a expectation of 2,000 attendees
- NASA Inventions & Contributions Awards (June 3, 2010).
- NASA SRO creativity retreat and gave museum tour and informal science presentation (June 9-10, 2010)
- Gave museum tours to NASA dignitaries on multiple occasions
- NASA's Summer of Innovation Day with Astronaut Susan Kilrain (6/26/10).
- Dynamic programs for life-long learners, including a free monthly evening lecture program called the Sigma Series organized jointly with NASA LaRC
- The first TEDxYouth@NASA for middle school students' event with live internet streaming and worldwide participation (November 20, 2010).

VASC will provide free exhibit admission and discount opportunities for NASA LaRC staff members, retirees, and their families during the "NASA Days" (multiple days) open house in May 2011. The NASA Days open house attracted 486 last year.

VASC collaborated with NASA LaRC to offer a tour of NASA for VASC's members, volunteers and staff members (June 17, 2010) and coordinated a tour for participants in the Exploring with NASA summer science camp, which was held August 9 –13, 2010. VASC, in coordination with LaRC's Aerospace Ambassadors, provided a weekly presentation to campers at LaRC's summer camp, enriching the camp experience with exciting NASA content and hands on activities. This effort was coordinated by the EIR. As part of this effort, Astronaut Susan Kilrain visited campers, both at LaRC and at the VASC, on June 24th.

VASC staff presented science demonstrations or made presentations at conferences and events, including:
- Coleman Place (June 4, 2010)
- Armstrong Elementary Young Astronaut's Club (June 9, 2010)
- NASA LaRC summer camps (several presentations summer 2010)
- Math Science Innovation Center (July 10, 2010)
- Girl Scout Adult Kick-Off (August 7, 2010)
- NASA Education Summit at Chantilly, VA (September 13, 2010)
- NASA Earthfest (October 23, 2010)
- VSELA (November 17, 2010)
- Virginia Association of Science Teachers annual meeting (November 18-20, 2010)
- The EIR will attend the National Science Teachers Association Conference to support the efforts of the AESP at that conference. She will also be a presenter at the upcoming SEEC conference to be held at JSC in February. The VASC Director of Education/ERC Manager will attend SEEC and the annual ERCN meeting.

All of the accomplishments outlined above were completed successfully through maintaining a close partnership and working relationship with the NASA LaRC SRO, the Informal Education Manager, and NASA Langley staff members. Careful coordination with NASA Langley of all aspects of the visitor center, ERC and public education program resulted in wide exposure to Langley's and NASA contributions to exploration

and science, technology, engineering and mathematics.

PROJECT CONTRIBUTIONS TO PART MEASURES

1. VASC has total admissions of 400,000 annually.
   - 240,000 are K-12 students
   - Approximately 163,000 admissions are part of self-directed family groups
2. 50,000 students are reached through school field trips and outreaches
3. 25,000 underserved students (Title I) are given free admission to the museum through our Opportunity Fund
4. 1,000 Girl Scouts and 800 Boy Scouts participate in VASC camps and education activities
5. Over 400 formal and informal educators participate in NASA professional development workshops at VASC.
6. Over 1,400 home schooled students and their parents attend VASC education events.
7. Approximately 800 lifelong learners are served through VASC education events.
8. Over 14,000 middle school students were reached during the Summer and Fall of Innovation.

IMPROVEMENTS MADE IN THE PAST YEAR

The NASA Educator in Residence position has resulted in an increase in activities based on NASA content. The incumbent has many years of teaching experience and is leading many of the museum's special events, outreach activities and professional development workshops. Her main focus is to keep abreast of NASA's education content and to coordinate activities and events at the museum with NASA LaRC's Informal Education Manager. This extension of LaRC's SRO has resulted in much greater NASA presence in the museum's programs. The NASA LaRC Informal Education Manager, the EIR and the DE/ERC Manager have become a cohesive team.

Consolidating the ERC Manager position under the scope of duties of the Director of Education has resulted in a more efficient operation of the facility. Assisted by the Education Program Analyst, Museum Educators and volunteers, the processes for getting educators the resources they need have been streamlined to take much less time. The NASA EIR, the LaRC ERC Manager, Program Analyst and select Museum Educators have proactively promoted the ERC by increasing the number of presentations at teacher conferences and at in-service training. The ERC has also been reorganized by content area, making it more user-friendly, and the hours of operation have been extended to make the facility more accessible to classroom teachers. These actions have resulted in an increased number of visits by educators.

The NASA Educator in Residence, in partnership with educators at the Virginia Space Grant Consortium, developed an engaging presentation on the science of climate change using the Magic Planet. This presentation was first used at the World Modeling and Simulation Conference held in Virginia Beach, VA. NASA Associate Director, Christopher Scolese, explored the exhibit during his visit to the MODSIM conference, and showed appreciation for the high level of engagement the presentation offers. This Magic Planet presentation is used at the museum to engage K-12 students in the science of climate change. This presentation will also be used in museum outreach events and in the after school program.

The Lunar Sample Presentation continues to increase museum visitation and requests for outreach visits.

PROJECT PARTNERS AND ROLE OF PARTNERS IN PROJECT EXECUTION

- Virginia Association of Science Teachers – presentation at annual Professional Development

Institute and booth in exhibit hall to introduce teachers to NASA resources and classroom activities. Teachers were hosted at VASC during the 2010 PDI where Lesa Roe was a popular keynote speaker

- Virginia Junior Academy of Science – VASC educators help judge student papers and mentor students
- Girl Scout Council Of Colonial Coast – many activities
- BSA Colonial Virginia Council – numerous activities
- Virginia Society of Technology Educators (VSTE) – workshop
- FIRST Robotics – VASC hosts annual kick-off event for area teams and further supports FIRST Robotics through VASC programming and outreach activities
- Home school Educators Association of Virginia – we have a long-term mutual relationship, they advertising our home school events and participation in same
- Home School Out-of-the-Box – we created and delivered to their students a 15-week course on robotics
- Southside Educational Escapades Home School Group – we created and delivered to their students a 15-week course on robotics
- Contracts with the following schools for outreach programs and field trips to VASC:
- Hampton Roads Academy Lower School
- Nansemond-Suffolk Academy
- York Elementary School
- Hampton City Schools – school programming – fourth grade, eighth grade & pre-K
- Newport News Public Schools – school programming – sixth grade & pre-K
- Beazley Foundation – submitted proposal for education programs for Portsmouth Public Schools
- VuBay Foundation – funding for education programs for Hampton Roads Schools' at risk students (Title 1 and Head Start)
- National Institute of Aerospace – NASA eClips and Virtual Worlds – advisory capacity - coordination to participate in VASC events
- Virginia Space Grant Consortium – GAITE and Gear-up programs, member of Advisory Board and coordination of Global Climate Change education program
- Langley Federal Credit Union – Corporate sponsorships for education programs
- The STEM Education Alliance at The College of William and Mary NSF grant proposed
- Old Dominion University (ODU), Department of Psychology – grant proposed, Education and Public Outreach