

Inspiring the Next Generation of NASA Engineers and Scientist through
Educational Outreach

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To Inspire the Next Generation of Explorers

Abstract

Enhancing the knowledge of the community about the National Aeronautics Space Administration (NASA) through outreach programs and workshop participation; reaching the youth, home school parents and their students.

This summer, as a Langley Aeronautics Research Summer Scholar (LARSS), I was given the assignment of setting up outreach programs in the community where I would present NASA information and opportunities; providing different options in advancing in the NASA arena.

The most rewarding method of reaching out to the community was through setting up site visitations and presenting NASA information in a fun and exciting way. To be more precise, a point of contact was made to all site supervisors and staff members of different community centers and summer camp programs to arrange a time to come out and present the NASA information to the summer camp students and staff. After doing so, there were meetings held with my supervisor, Dollie M. McCown and Aerospace Education Specialists Rudo Kashiri and Dynae Fullwood to analyze beneficial activities to implement during the presentations.

Furthermore, materials had to be collected including NASA trinkets that would be given at the end of each presentation to leave a lasting impression on the audience. In order for this to become possible, I had to advance in networking with other NASA employees to locate the things that I needed to be successful. Kimberly Land played a major role in assisting me with all NASA valuable, fun and exciting materials.

Not only did I go out into the community and present information about NASA, I had the opportunity to present the problem of the day at the National Institute of Aerospace workshop. This really excited and pleased me to be given such a rewarding task that will be a great asset for my future career in teaching. The problem of the day was to have the different teams design a robotic arm using the craft materials given and have them perform the task of picking up a rubber toy astronaut symbolizing a payload and dropping it into a cup symbolizing a cargo bank. This was a very instrumental task because this provided an idea of one of Barbara Morgan's task that she will be performing on the STS 118.

The overall outcome of this project was that information about NASA was presented to the community in a way that they would want to engage in NASA activities and become a part of the NASA team. Everything I expected to happen happened. There were no real difficulties faced; the majority of the activities designed went according to plan. All of the students that were a part of the informal outreach programs really enjoyed themselves and left with a broader mindset about NASA. Mission Accomplished!

This project contributed to NASA's missions and goals by revealing past, present and future information and allowing the community, particularly the children, to analyze why NASA does what it does and how they can better each mission when they get older. I found that there were a lot of potential scientists, engineers, mathematicians and educators that could contribute a lot to NASA's mission especially space exploration.

Inspiring the next generation of explorers allows one the opportunity to present important information in a fun and exciting way. This summer my project was to inspire, engage, and

motivate the community about NASA opportunities and its overall environment both on center and off center. This opportunity allowed me to go out into the community and reach students from a wide variety of socio-economic backgrounds. The work I was involved in could be classified as “Informal Education”. Different educational lessons were taught, but there was a relaxed school-like environment that allowed more flexibility, and time to execute each activity. At NASA Langley, this type of work is done on a consistent basis by many different people on center, as well as in the community. This was a useful internship, as I gained experience in my field of study, preparing me for my future career in education, and enhancing my communication and people skills.

Approaching this project seemed to be very easy at first. However, as time progressed, I realized that there was more preparation required in order to have great success. In order to make a beneficial presentation certain steps were taken before executing the activity. I had to first make contact with various facilities (community centers, day cares, summer camps, school age programs) in the Hampton Roads area to see which ones would allow me the opportunity to come out and make a presentation to their students. After the dates, locations and times had been set I had to find out the different age groups of the students, how many there were going to be in each class setting and the activities that they had already done so that my activity could be tailored to their level of study. There was a lot of research and team collaboration done in order to put these activities into action. The activities executed were as followed:

On Thursday, June 28, 2007, an outreach project was conducted at the Doris Miller Community Center. The facilitators of this event were TreAsia Fields, Nokomis McCaskill and AES-Dynae Fullwood. Considering the fact that this center conducts a lunch program; the idea of this activity was to have the students compare and contrast earth food versus space food. There was a worksheet created of two food pyramids; the front labeled earth food and the back labeled space food. The children’s tasks was to first list and label the food groups on the pyramid and then categorize their lunch on the earth food pyramid and categorized the space food provided on the space food pyramid. For a lunch program in its infancy, the turn out was better than expected. There were 33 energetic children from grades K-8 engaged in this activity. Although the children knew there was a reward for completing the activity, they seemed to enjoy the challenge and they methodically took the time to complete the activity in its entirety with accuracy and without haste.

On Tuesday, July 3, 2007, an outreach project was conducted at North Hampton Community Center. The facilitators of this program- TreAsia Fields, Nokomis McCaskill, and AES-Rudo Kashiri, first made sure that the students had an understanding of what the acronym “NASA” meant. Then we proceeded to show clips and discuss with them the future of air and space travel, and how they can strive to be a prominent force in the future. Thereafter we presented them with a design challenge, and allowed them the opportunity to be engineers. They were to design an airplane or airplanes, to achieve four goals: longest distance, straightest flight, most air time, and precision. Afterwards, the children viewed a presentation on the four forces of flight and the facilitators helped them understand why certain airplanes did better on certain activities. We finished with a question and answer session and encouraged everyone to pursue STEM fields.

On Friday, July 6, 2007, an outreach project was conducted at Y. H. Thomas Community Center. The facilitators of this program- TreAsia Fields, Nokomis McCaskill, and Aerospace Education Specialist, Rudo Kashiri. The first action of the activity was to make sure that the students had an understanding of what the acronym “NASA” meant. Then we proceeded to show

clips and discuss with them on the future of air and space travel, and how they can strive to be a prominent force in the future. Thereafter we presented them with a design challenge, and allowed them the opportunity to be engineers. They were to design an airplane or airplanes, to achieve four goals: longest distance, straightest flight, longest air time, and precision. Afterwards, the children viewed a presentation on the four forces of flight and the facilitators helped them understand why certain airplanes did better in certain challenges. We finished with a question and answer session, encouraged everyone to pursue STEM fields, and giving out NASA items so that would remember NASA in a special way.

On Monday, July 9, 2007, an outreach project was conducted at Midtown Community Center-Teen School Age Program. Also on the same day, an activity was conducted at Mary Passage Middle School-Teen School Age Program. The facilitators of this program were TreAsia Fields, and Nokomis McCaskill. The first action of the activity was to make sure that the students had an understanding of what the acronym "NASA" meant. Then we proceeded by enhancing the teens knowledge on how to be successful and different career paths that they could choose besides being a professional athlete. Thereafter we presented them with a design challenge, and allowed them the opportunity to be engineers. They were to design an airplane or airplanes, to achieve four goals: longest distance, straightest flight, longest air time, and precision. Afterwards, the children tested their airplanes and realized that all did not fly the same way. This allowed the facilitators the opportunity to explain why all of the airplanes did not meet all of the challenges that were set. We finished with a question and answer session, encouraged everyone to pursue STEM fields, and we gave out NASA items so that they would remember NASA in a special way.

Langley Provides NASA Content to Home Educators: On July 13-14, 2007, Becky Jaramillo (Educator in Residence for Informal Education), Nokomis McCaskill, and TreAsia Fields (LARSS) provided NASA content to home educators through a NASA booth and two scheduled demonstrations at the Northern Virginia Home Educators Conference. Conference organizers reported a record attendance of nearly 1500 participants. Ms. Jaramillo also met with leaders of several home educator organizations in an informal focus group to determine how NASA might support the needs of home educators for STEM subjects. While doing so, the LARSS interns executed various activities from the NASA SciFiles at the booth, which provided easy educational visuals that the home school educators could try out at home.

Langley also provides NASA content to Yorktown YMCA Space Camp: On July 27, 2007, Becky Jaramillo, Denise Dublin (Informal Educators), TreAsia Fields and Nokomis McCaskill both (LARSS) engaged the students in a "Mapping the Moon" activity using play dough and "The Inflatable Habitat". Both activities allowed the students to engage in space exploration gaining knowledge on our past, present and future space missions. This activity was also conducted on July 30, 2007 at the NASA Langley day care program "Camp Lunar".

To gather information to conduct these various activities, a variety of sources that were used. These included the NASA SciFiles Guide, NASA website, and mypyramid.gov website. Materials also had to be gathered. The majority of our supplies came from the supply closet in the Office of Education. The play dough, paper plates, toothpicks, disposable camera, tape and other items came from the local Dollar Tree. There also was some technical equipment that was used that NASA Langley provided such as the digital camera, computers, copier machine, magic globe and a projector. Lastly, Ms. Kimberly Land provided all of the NASA trinkets and tokens of appreciation that were given out at each event to leave a lasting impression on the audience.

The expectations for this project were set very high but still reachable. In my eyes, all of the goals were met, which were to reach over 500 students, to implement various activities from which all the students could benefit, to visit at least 5 facilities, to teach adults as well as children, to enhance everyone's knowledge about NASA as a whole, to continue in the NASA pipeline, to share my experiences at NASA with others, and to target at least 1 of NASA Headquarters' missions. This pleased me to know that in such a short amount of time, everything that I set out to do was accomplished. I personally feel that these goals were accomplished because there was a great staff in place to assist in each activity as well as all the materials that were needed were at hand with no difficulty in place as a hindrance. The audience was also willing to learn and be amazed by what was brought to the table with each activity.

In the future, the only recommendation that I would have to better enhance this project would be to reach out to even more students in the other regions (North Carolina, South Carolina, West Virginia and Kentucky). I believe that the more people you inspire, the better the NASA team will be, providing a diverse work force, bring out new missions, and developing creative designs.

References:

Fargo, M., Jaramillio, B., Ricles, S. (2004). The Case of the Great Space Exploration. Virginia: The NASA SciFiles.

Casaburri, A., Gardner, C., (1999). *Space Food and Nutrition*. Retrieved June 26, 2007 from the NASA Website:

<http://virtualastronaut.jsc.nasa.gov/teacherportal/pdfs/Space.Food.and.Nutrition.pdf>

Forgotten Inventors. (2007). MyPyramid Online. Retrieved June 26, 2007 from

http://teamnutrition.usda.gov/resources/mpk_coloring.pdf