What NASA content did you address and what museum components did it consist of?

**NASA Content:** Science Mission Directorate science is interconnected; discoveries in one science discipline have a direct route to other areas of study.

**Project components and target audience:**
- Star parties, hands-on activities, space news emails, and an exhibition for families with children (special focus on rural, Hispanic, African American, and Native American families)
- An educator guide for Informal and formal educators Libraries of Eastern Oregon

What community relationship/partnership(s) did you start up/develop as an integral part of your project?

OMSI aimed to both strengthen existing and create new partnerships through our project. We collaborated with:
- Rosa Parks Elementary School
- Rose City Astronomers
- Confederated Tribes of Grand Ronde
- Portland Public Schools Indian Ed
- METRO Regional Government
- + Several local cultural organizations

How did you envision the partnership would benefit your organization and benefit the partners?

**Benefits to OMSI**
- Allowed us to create more inclusive and engaging programs and exhibits
- Engaged new audiences in culturally responsive ways
- Built relationships with key communities and experts in our region
- Enhanced our planetarium hallway with up to date space science content.

**Benefits to Project Partners**
- Opportunities to participate in and co-develop OMSI programs such as:
  - Observational astronomy events
  - Hands-on activities
  - Bilingual exhibit components
- Enhanced capacity for teachers to incorporate NASA and culturally responsive STEM content in their curriculum
- Opportunities to share the relevance and value of cultural knowledge in STEM subjects

What worked well in your partnership/relationship? How did it end benefit your organization and your partners?

Working with local cultural partners and national experts has been wonderful! We were able to co-develop and co-host programs and add diverse voices and stories to the project while also inviting new audiences to the museum. These partnerships required flexibility and patience, but the effort more than paid off in stronger relationships and more meaningful products.
What challenges did you have? Did you overcome them? What did you do to adapt?
There is never enough money to do everything that we want to do. To address this, we had to be creative and collaborate. For example, to offer more star parties and educator professional development opportunities, we partnered with another NASA funded project with different, but complimentary, goals. This allowed us to share the cost of travel and staff time for trips and events. Similarly, to provide material needed for the exhibition, we collaborated with our Development team to get in-kind donations from industry partners.

How will you sustain these activities or adapt them with the changing priorities of the partner(s)?

- Continue to co-host Star Parties with community based organizations, such as Libraries, in rural areas through our Traveling Programs
- Exhibition and activities were developed in a way that is easy to update content overtime and will be on display for up to 8 years
- Educator guide will be disseminated through the OMSI Marketing, Teacher Education, and Outreach teams

Contact Information:
Kyrie Thompson Kellett, 
Senior Learning and Community Engagement Specialist

Oregon Museum of Science and Industry
www.OMSI.edu
Conceptual Lead and Project Manager
503.797.4633
kkellett@omsi.edu
From our Town to Outer Space: Bringing NASA Science and Engineering to Underserved Communities through a National Public Library Exhibition Program

NASA CP4SMPVC grant NNX15AB02G (Completed)
Paul Dusenbery (PI)
Space Science Institute  October 21, 2017

What NASA content did you address and what museum components did it consist of?
This exhibit and its related programming spanned all of NASA, with a special focus on Aeronautics and library patrons personal connection to NASA history.

What community relationship/partnership(s) did you start up/develop as an integral part of your project?
The libraries that participated in this program developed and strengthened many new and existing partnerships. The following list includes the organizations our libraries listed as “High Impact Partners”:

• Local schools/school district
• NASA Solar System Ambassadors
• NASA Night Sky Network groups
• NASA Centers (Glenn and Johnson, specifically)
• Local Maker spaces

How did you envision the partnership would benefit your organization and benefit the partners?
With a dispersed group, it was key that each library had local partners that could assist in programming, and artifact acquisition (many libraries hosted NASA artifacts separate from our exhibit, including a giant Orion capsule model!). We envisioned that libraries would step outside their comfort zone and contact new groups whom they would hopefully continue to work with, and so far, they did!

What worked well in your partnership/relationship? How did it end benefit your organization, and your partners?

• Realizing that partnerships were 2-way streets was key. Organizations that partnered with the libraries needed to see a benefit to themselves as well. This encouraged the libraries to work more closely on planning with the organizations rather than just scheduling them for a program.

• For our organization (Space Science Institute manages the effort) it helped us see how many groups were really invested in helping their public libraries, and how eager the libraries were to do more in STEM! This has led to additional funding from other agencies for us, which is huge.

What challenges did you have? Did you overcome them? What did you do to adapt?

• Our biggest challenges were ones of timing. Helping the libraries understand that just because someone said no (like the NASA Speaker’s Bureau) didn’t mean all hope was lost. Ask again!

• Likewise, potential partners didn’t understand just how far ahead libraries plan events! They thought if they waited until a week before a requested event to reply, that it would work (it will not).
How will you sustain these activities or adapt them with the changing priorities of the partner(s)?

Our major goal was to help libraries feel comfortable pursuing new partnerships expanding their offerings to their patrons through these partnerships. For our existing sites, they’ve all shown that they can continue the work we’ve started. More difficult will be getting other libraries to follow this same model. A little hand-holding is necessary (whether by us or by the potential partners) for libraries to see the potential, but they’ve shown that once started these types of activities are sustainable. Patrons see new activities as the “new normal” for the library, and the libraries continue the work.

Contact Information:
Anne Holland, CP4 project manager
Community Engagement and Exhibits Manager
Space Science Institute
4750 Walnut St, Suite 205
Boulder, CO, 80301
aholland@spacescience.org
(www.starnetlibraries.org)
What NASA content did you address and what museum components did it consist of?

- Within the Science Mission Directorate Orlando Science Center (OSC) and University of Central Florida (UCF) will be addressing content around the topics of Mars, Origins of the Universe, and The Stars & Beyond. Each content area has mission focused activities around Mars2020, OSIRIS-REx, and James Webb Telescope. Robotics, mathematics, and physics concepts will be important subject areas investigated in each of the content areas.

- All activities will be developed as “carts” that will live at each hospital. For free exploration of the activities by the patients themselves.

What community relationship/partnership(s) did you start up/develop as an integral part of your project?

- University partnership with UCF will design unique activity curriculum for chronically and terminally ill children.
- OSC prototypes and redesigns these activities based on all feedback from patients. OSC will design the storage and mobility system for all the activities at each hospital site.
- Hospital partners provide access to patients and manage the activity supplies and materials while onsite.
- OSC and Hospital partners will collaborate to train volunteers on material to support the learning efforts of the patients.
- This project is the only project offering these patients and students with hands-on STEM content while being hospitalized. This is with an intent to help prevent the students from being too far behind their peers when/if they are able to return to standard schooling.

How did you envision the partnership would benefit your organization and benefit the partners?

- Expanded the reach of OSC to a previously unidentified underserved audience.
- In collaborating with the hospitals and having to become official volunteers, OSC has learned some additional best practices in on-boarding volunteers.
- Hospitals state that engaging the patients in meaningful activities provide for a better mental welfare. The engaged mind recovers faster from illness than an unengaged one.
- Hospitals have been “forced” to collaborate. Typically looked at as competition, the child life specialists have met, under the roof of OSC, to talk about similarities and differences for the program to best understand how to address the hospital and patient needs.
UCF team is building a body of research on best practices in teaching hospital bound children mathematics.

What worked well in your partnership/relationship? How did it end benefit your organization and your partners?
- Curriculum development was a wonderful collaborative effort between the UCF team of scientists and the informal education team of OSC. Learning to embrace the ideas of those outside our walls, when it comes to content ideas, was valuable.
- Working with all partners in a round table scenario, was a great way to discuss potential challenges and commonalities when it came to the acquisition of what can be in a patients rooms, plugged into the walls, and what can withstand proper sanitation. This was invaluable as individual challenges could be addressed with all hospitals present and agreeing to a solution.

What challenges did you have? Did you overcome them? What did you do to adapt?
- Partners were reluctant to work with one another. Hospitals compete for patients, and there was fear of providing competition too much information about one another.
- One partner was not reliable enough to serve as part of the program. The organization which was originally meant to help deliver the content, found to have financial issues and staffing challenges. This forced OSC to re-evaluate how they would be delivering content within the hospitals.
- Prototyping the content within the hospital and getting set up within each hospital as a volunteer was tedious and time consuming for the staffing team attempting to gather data on the effectiveness of the activities with the children.
- Our original evaluator was switched in year 2, to provide a more conducive working partnership amongst all parties. New evaluation is being provided by Illinois State University.

How will you sustain these activities or adapt them with the changing priorities of the partner(s)?
- Through the strong partnerships that grew from working together. All partners have shared an interest in working together to solidify a sustainable way to continue providing rich content to its long term patients, especially those who are missing schooling due to illness. To manage this, we are attempting to include a digital guide that will help patients move through content, without help from hospital staff or volunteers.
What NASA content did you address and what museum components did it consist of?

NASA Content:
- Aeronautics Research Mission Directorate (ARMD)
- COSTEM Strategic Priority Education Investment Areas
- Design Build Fly exhibit, and education programs for multi-generational and multi-ethnic families, current and retired aviation professionals, children grades 3-8 on field trips, and out of school time adolescents.

What community relationship/partnership(s) did you start up/develop as an integral part of your project?

Partnerships With:
- Aviation companies – both major and supply chain
- Aviation Research Institution – one of the nation’s largest
- Community College – aviation technical training
- University – engineering
- Youth Serving Organizations – testing the programs

Partnership Support:
- Cash donations
- In-kind support of plane parts
- Repair work on plane parts and on-going maintenance
- Volunteers in the exhibit
- Content experts
- Project advisory committee

How did you envision the partnership would benefit your organization and benefit the partners?
- Ultimately to help grow the workforce for the aviation industry in the region.
- Project astonishes visitors with the range of STEM jobs in the diverse professional positions available in the industry.
- Reposition how the science center is perceived by the community.
  - It is for more than just young children.
  - It is a true player in workforce development.
- Align with community needs rather than developing exhibits that are intriguing to the staff.
- Rebuild community pride that has waffled since the downturn in 2008.
- Enhance and expand educational program offerings.
- Provide new experiences for underserved audiences.

What worked well in your partnership/relationship? How did it end benefit your organization, and your partners?
- We are in the final stages for the exhibit, but more formative for education programs that are still being tested.
- It is a bit too early to have indicators of how this has benefited the partners.
For the museum, it is creating renewed interest by many members of the business community.

Museum staff are being sought to participate in a variety of community initiatives.

What challenges did you have? Did you overcome them? What did you do to adapt?

- How to create an exhibit in a community that has 40,000 content experts?
  - An exhibit advisory committee assisted every step of the way and additional content experts were sought for specific details.

- How to create an exhibit that is brand neutral in a community with over 300 companies in this industry?
  - Articulate the difference between a trade show, and a science center exhibit.
  - Focus on creating a community exhibit to advance the aviation industry and not any one company.

- How to meet community expectations for an exhibit that provides an overview of a complex multi-dimensional industry?
  - Respond to all questions about other content that could have been included by explaining that the exhibit is comparable to a 101 class in college – it is an overview.
  - Provide greater depth on specific topics in the many education programs.
  - Address it lightly in the exhibit introduction sign.

How will you sustain these activities or adapt them with the changing priorities of the partner(s)?

- The aviation industry is dynamic and ever-changing. Many of the advisory committee agreed to continue to meet annually to review the project, and suggest updates for both the exhibit and education programs.

- The museum raised endowment funds to enable changes to be made over the next 10 years to keep the exhibit and education programs up to date.

Contact Information:
Jan Luth, President
Exploration Place
300 North McLean Boulevard
Wichita, KS  67203
jan.luth@exploration.org
What NASA content did you address, and what museum components did it consist of?  
Girlstart used NASA-rich content; areas included satellite creation, communicating in space, drilling core samples, robotics, augmented and virtual reality, and more to create meaningful and relevant camp themes to provide immersive experiences our girls couldn’t pass up. 

Girls channeled their inner astronaut by:

- Completing tasks wearing heavy gloves.
- Got a taste for life on the International Space Station by exploring what it takes to grow vegetables in space.
- Designed, and launched a satellite equipped with gravity probes and heat sensors.
- Explored augmented and virtual reality apps, including Google Expeditions – NASA’s Modern Figures and Spacecraft 3D, Mars Curiosity, and GRAIL Exploration (designed by NASA’s Jet Propulsion Laboratory).
- Experimented with different bioplastics developed by NASA’s engineers, and explored how these NASA technologies are not only used for space exploration, but also in everyday life.

What community relationship/partnership(s) did you start up/develop as an integral part of your project?  
Girlstart Summer Camps
- Camps included a balance of hands-on STEM activities, relevant technology, collaborative team building and informal camp fun!
- Worked with schools, community centers and Boys & Girls Clubs to host week-long (40 hour) day camps for girls entering the 4th through 8th grades.
- Partnerships are fostered in several different ways:
  - Our after-school partner locations are invited to host a camp for their respective girls. We already know the campus, administration, etc.
  - Our Boys & Girls connections were introduced to their national office, however, we typically have had to ‘cold call’ Clubs to ask if they would be interested.
- Community STEM Programming:
  - Free, family-friendly programming involves hands-on STEM learning activities for thousands of girls, families, and community members across Central Texas, and beyond, each year by offering a wide variety of free programming at many sites throughout the community; we are able to reach a broad cross-section of our population.
  - Grew partnership with local history museum to add STEM programming that aligned with museum exhibits.
  - Started new partnership with a city park (open green space) to be their STEM partner. We added STEM content to their permanent park structures and delivered hands-on STEM programming.
How did you envision the partnership would benefit your organization and benefit the partners?

- Expanding our mission reach.
- Reaching new audiences to increase STEM interest.
- Partners didn’t have to reinvent the wheel or provide programming they were uncomfortable with.
- Opportunity to grow existing partnerships, but also create new ones.

What worked well in your partnership/relationship? How did it end benefit your organization, and your partners?

- Asked questions to help clarify roles and expectations. Provide, in writing, the expectations for both partners helped everyone be on the same page.
- Scheduling regular check-ins. Everyone has a lot going on, and your partnership probably isn’t the only one they are thinking about.
- Debrief afterwards. This can sometimes be challenging since everyone is moving on to the next thing, and receiving feedback can be difficult, but this helped strengthen our current partnership, and provided insight for future opportunities with other partners.

What challenges did you have? Did you overcome them? What did you do to adapt?

- Camp’s physical spaces change from week to week, but still have to provide a program that draws them in.
- Leadership creates the partnership, however, frontline staff are the ones to implement.
- We’ve learned that who we communicate with during the year may not be the same during the summer. For example, when creating a partnership with a school, we typically work with the principal, however, during the summer the principal is most likely NOT on-site, so taking time to meet the summer office staff is key to our success. Make sure to take time to introduce your program, staff, etc., to the key staff of your partnership.
- Focus on training for frontline staff to address implementation concerns. Training is geared toward model, curriculum, and specific partner/site logistics. It helps build frontline staff confidence to implement programming.
- Continually improve, and update communication with partners, including tailoring communication per partner.
- Be mindful when you take your program into someone else's 'home' (facility). Even though you may be providing all the programming, it is still important to make sure everyone within the facility understands the purpose/reason you are there.

How will you sustain these activities or adapt them with the changing priorities of the partner(s)?

Every year we do a curriculum audit to determine which activities were most successful in regard to implementation, content, and engagement. Girlstart is committed to sustaining our programs, and as possible, expanding the reach of the programs that we were able to implement thanks to the CP4 program.

Contact Information:
Katelyn Wamsted
Director of Programs
katelyn@girlstart.org
Girlstart, www.girlstart.org
1400 W Anderson Lane
Austin, TX 78757