Community STEAM: Exploring our Places

- Where did all the caterpillars go?
- What am I doing here? Exploring my place
- National Park Advisory Advisory Board
- Appreciating the power of hyperlocal
Where Did All the Caterpillars Go?
Why Do We Love to Love Parks?

- Nature
- Degrees of Freedom
- Independence
- Smells, sights & sounds
- Mischief
Community STEAM: Exploring our Places

✓ Where did all the caterpillars go?
  ▪ So, what’s my story? Exploring my place
  ▪ National Park Advisory Advisory Board
  ▪ Appreciating the power of hyperlocal
Exploring My Place
# Why Do I Love Parks?

## Best of Times
- Learned how to negotiate & compete
- Safety
- First kiss
- Learned to dance
- Learned to swim
- Learned how to play checkers and chess

## Worst of Times
- Kids could be mean to each other
- Fights
- Rumbles
- Murder
- Gang initiations
- Random violence
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Jon Jarvis appointed Milton Chen to gather committee (circa 2012).

NPS advisory board goes back 75 years. Met once or twice a year. Largely ceremonial.

Jarvis came as part of the 2nd Century Commission to rethink NPS & system.

Goals of the Advisory Board: give expert guidance and advice to NPS staff, build collaboration and partnerships, seek lifelong learning agenda, sharpen research and evaluation effort.

Group had quarterly calls and met once a year in a national park.
NPS Advisory Board
Education Committee

- 28 members
- Leading Academics, Practitioners, National Association Directors
- Representatives from formal and informal education institutions
- Leading academics, Practitioners, National Association Directors
- Learning exerts: Dr. John Falk, Oregon State & Dr. Ana Houseal, U Wyoming
- Technology: Dr. Allison Druin, U Maryland, Keith Krueger, Consortium for School Networking (CoSN)
- Partnerships: Dr. Yandala, Cuyahoga Valley & Lois Adams-Rogers, CCSSO
- Research: Martin Storksdieck, National Academies of Science & Jessica Thompson, Colorado State Univ.
- Professional Development: Carol Stapp, George Washington, Univ
NPS Advisory Board
Why is it needed? Context?

- Changing world of Education
  - Higher Bar for Career and College Readiness
  - Global Competition
  - Changing Demographics
  - Technology and the Internet changing the way we work

- Scientific and Civic Illiteracy
  - Only 28% of U.S. adults are scientifically literate
  - 83% of U.S. Citizens failed a basic test on the Nation’s Founding
NPS Advisory Board
Why? Context?

- Out of School Time
  - Americans spend less than 5% of time in classrooms
  - Out-of-school opportunities are predictors of children’s educational achievement

- New Ecosystems for Learning
  - Museum & Libraries
  - Blended learning: face-to-face and online learning
  - Schools & homes
  - National Parks
National Parks are Critical to the Redesign of American Educational System

- Authentic Science and History
- Create a variety of programs with a variety of audiences
- Delivering content through a variety of partners
- Learning in and through Parks using technologies
- And Parks have REACH:
  - > 280,000,00 visitors
  - > 2,929,30 students reached on site
  - > 57,062 school programs
  - > 75% of NPS Sites are within 50 Miles of Students
Signed MOU between the Department of Interior and Education

Implementing recommendations from Committee’s Technology White Paper

Organized presentations and NPS field trips at national conferences, Teaching and Learning Conference, George Wright Society, and the Consortium for School Networking

Participated in producing 50th Anniversary of the March on Washing mobile app

Engaged elementary school kids to help design digital elements for “Every Kids in a Park” initiative

Along with National Geographic held a national Learning Summit to build connections and coordination among formal and informal institutions (museums, libraries, public radio, public television and other not-for-profits)
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Appreciating Hyperlocal: Queens 20/20 – A Community Anchored STEM Ecosystem
Queens 20/20 – A Community Anchored STEM Ecosystem

- Demonstrate value of investing in high needs & highly aspirational immigrant communities
- Deepen relationships with community stakeholders
  - Create a continuum of learning experiences, in-school, afterschool, and in-between
- Empower and support educators through professional development and by building communities of practice
- Inspire middle & high school students through invention, making, and creative learning
- Develop extensive parent and family engagement
Corona Queens, 11368
Corona, Queens

- Poverty rates higher than in the rest of the Queens, with more than 22% of households below the poverty line
- First stop for newly arrived immigrants.
  > 2/3 of Corona residents are foreign born
  > 90% speak a language other than English
  > Diversity of Hispanic groups from: Mexico, Columbia, and Ecuador with smaller numbers from other countries in Central and South America.
Queens School District 24

- 56 Schools, 40,000 students
- Densely populated section of Queens that is home to many new immigrants.
- Neighborhoods include Corona, Glendale, Ridgewood, Elmhurst, Long Island City, Maspeth and Middle Village.
- Overcrowding persists across the district despite the opening of several new schools in recent years.
- Represents one of the highest number of UPK seats and has the greatest need citywide.
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Creating New Forms of Engagement in STEM Learning
Playful core — It all starts with engagement
Problems worth solving — to you
Divergent solutions — Not just one right answer
Thinking with your hands
Learning from the work of others
Low barrier to entry — High ceiling of complexity
Learning everywhere
Sophisticated scientific reasoning can emerge even at very young ages when it is elicited and supported (Gelman, & Brenneman, 2004; Gopnik, Meltzoff, & Kuhl, 1999).

Environments rich in materials and language invite exploration, observation, question-asking, and discussion, all of which are critical contributors to future learning (Hawkins, 1969; Nager, & Shapiro, 2000).

Understanding difficult concepts requires multiple and varied opportunities to ask questions, try out solutions, and reflect on emergent knowledge (Bruner, 1990; Duschl, & Osborne, 2002; Kuhn; 2005).

Interaction with skilled facilitators who ask good questions and provide feedback and guidance enriches learning (Robertson, Atkins, Levin, & Richards, 2015; Windschitl, 2002).
<table>
<thead>
<tr>
<th>AUDIENCES</th>
<th>OUTCOMES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visiting public</td>
<td>Grow loyal fans and promoters and have a positive impact on their engagement with science</td>
</tr>
<tr>
<td>Educators</td>
<td>Cultivate teachers who encourage intellectual curiosity, adaptability and a passion for learning in their students</td>
</tr>
<tr>
<td>Students</td>
<td>Help create scientifically literate citizens and get more students onto STEM career tracks</td>
</tr>
<tr>
<td>COMMUNITY</td>
<td>Be an indispensable resource for our local communities</td>
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Queens 20/20 Progress to Date

- Conducted Landscape Analysis and Stakeholder Discussions
  - Parents, teachers, district leaders, community advocates, religious leaders
  - Department of education at the state and the city levels
  - Federal agencies and policymakers: White House Office of Science Technology Policy, US Department of Education, National Science Foundation, Institute for Museum and Library Services
  - Higher education and business partners

- Established and convened Queens 20/20 National Advisory Board and Community Advisory Board

- Hosted community events to engage local stakeholders and gathered focus groups
What We Have Learned

- **Universal Pre-K/Early Childhood**: Need for enhanced PD and support in UPK
- **Afterschool Programs**: Community need for creative and STEM rich array of afterschool programs
- **Getting Students up to Grade Level**: Large number of children attending summer school for middle school math. Only 15% of ELL students are proficient in middle school math.
- **Literacy**: Elementary school students are struggling with literacy. Only 33% of 3 – 8 grade students are proficient in ELA. This drops to 5% to for ELLs.
- **High Schools**: Need from International Schools to develop skills and competencies around creative STEM Learning
- **Family Engagement and Parent Support**: Parents are challenged by NYC school system and pathways for their children
LOCAL EXCELLENCE to GLOBAL INFLUENCE
Queens 20/20 Goals

- Deploy STEM programs that privilege creativity, hands-on exploration, problem solving and deeper learning
- Create a two-generation approach—children AND families—in providing resources, awareness and access to STEM-career pathways
- Empower and support teachers with creative approaches to STEM learning at the center
- Leverage strategic community partnerships (district, schools, PTA’s, community organizations, churches, etc.)
- Build a national network to inform public policy and private and government investments
- Conduct research to determine the effectiveness of programmatic investments on students’ learning and interest in STEM, family engagement, and teacher development
School Partnerships

PS 14 (Kindergarten-5th grade)
PS 16 (Kindergarten-5th grade)
PS 19 (Kindergarten-5th grade)
PS 28 (Kindergarten-2nd grade)
PS 143 (Kindergarten-5th grade)
PS 307 (Kindergarten-5th grade)
PS 330 (Kindergarten-4th grade)
IS 61 (6th Grade-8th grade)
Our Lady of Sorrows (Pre-K-8th grade)
Father Billini Association (After-school program)
Theresa Cervini Headstart (Nursery and Pre-K)

Also in discussions with:
International High Schools (Pan American High School, International High for Health Sciences, Flushing International School)
Queens College
LaGuardia Community College
Scope of Work

Family Engagement and Parent Support
- Parent University
- Family engagement workshops
- Signature community-wide Event, ¡Feria de Ciencia!

Universal Pre-K/Early Childhood
- Establishing early childhood learning center and training facility at NYSCI
- Educator professional development and support
- Programming inside Universal Pre-K Centers

Out of School Programming Involving Students, Teachers and Parents
- Make and Creative Coding Academy
- Design Engineering
- Playground Physics
- Teacher partnerships – Paid positions to co-teach

High Schools
- “Making” programs at local International Schools for immigrant students
- Educator professional development and support
- Youth development, college & career preparation

Literacy and Creative STEM
- “DMP in a Box” - Integrated approach to design engineering and literacy in libraries and schools
- Multi-lingual digital tools for literacy and STEM learning

Getting Students up to Grade Level
- Alternative models of summer school
- Targeted afterschool initiatives
- Educator professional development and classroom support

National Network & Research
- Research, evaluation, and adaptation

Core Staff Leadership
- Coordination, Program development, Network support, Local and national policy efforts, Research

RAISED FOR FY17 (July 1) — $600,000
Key Conversations with National Funders

- **Simons Foundation**: Planning phase (funding secured) and leadership support (proposal pending)
- **Carnegie Corporation of New York**: Parent university and family engagement (funding secured)
- **Kupferberg Family Support**: Community and parent engagement (funding secured)
- **100Kin10**: K-2 literacy and science learning in collaboration with District 24 (funding secured)
- **Richmond County Savings Foundation**: UPK/ Early childhood support for new local UPK centers (funding secured)
- **Ford Foundation**: A national network of hyper-local, creative STEM organizations serving immigrant communities (proposal pending)
- **Tiger Foundation**: Building a new model for middle school mathematics learning
- **Telemundo**: Novela Maker, a platform for community storytelling around STEM
Competitive Federal Grants

- Institute of Museum and Library Services: STEMeX
- National Science Foundation: STEM+C
- National Science Foundation: INCLUDES
NEXT STEPS

- Going local means could be deep and meaningful
- Working in collaboration with schools and not for profits to establish an ecosystem can be a useful way to leverage resources and apply for grants
- National Park Foundation is receiving a grant from the Bechtel Foundation to organize a National Park Alliance of park educational partner. Hudson River Valley Group should join.