Makerspace Playbook Site Survey: New York Hall of Science
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CONTACT INFORMATION

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ORGANIZATION

Organization Name: New York Hall of Science

How would you describe your organization type (library, museum, school, community organization, etc.)? Museum

Organization website: http://nysci.org/

Organization social media links:
https://instagram.com/nysci
https://twitter.com/nysci
https://www.youtube.com/user/nyhallofscience
https://www.facebook.com/nysci

Blog and/or site most related to programming, making:
http://nysci.org/little-makers/

Location (city, state): Queens, N.Y.

Is your organization rural, urban, or suburban? Urban

Is your space and/or elements of your programming mobile? Elaborate, if necessary.
No.

Target audience(s): Little Makers invites young children, ages 18 months to 8 years old, and their families to tinker, design, and make together.

Access: Is your organization open to public, age restricted (elaborate below), membership-based, free, and/or admission required? Are there specific groups that you serve?
Admission required. Materials Fee: $8 per family with general admission, $5 per member family. Scholarships are available upon request.

Tell us about your organization. What distinguishes you from others?
New York Hall of Science (NYSCI) is New York City's only hands-on science and technology center, with a mission to bring the excitement and understanding of science to children, families, and teachers by galvanizing their curiosity and providing creative, participatory ways to learn. Located in Queens, the most diverse county in the U.S. and a first-stop for many immigrant families, NYSCI welcomes 500,000 visitors annually. NYSCI has longstanding partnerships (nearly two decades) with New York public schools and the Department of Education. We support more than 200,000 students and are among the largest providers of professional development in STEM in New York City with more than 4,000 teachers engaging in on-site, distance, and blended learning programs.

NYSCI is deeply committed to serving students and families from culturally and linguistically diverse communities; targeting underserved and under-resourced neighborhoods such as Corona, East Elmhurst, and Flushing in Queens. In 2010 we developed NYSCI Neighbors — a program designed to work with area schools and community-based organizations to directly engage our surrounding neighborhoods on how best to tailor our outreach efforts, exhibits, and programs to meet the needs of local families. A key part of this process included connecting with neighborhood teachers, principals, and parent coordinators, where we learned of an acute shortage of quality STEM education in the community's public schools, despite the vital importance of STEM learning in the 21st-century workplace. As a result, today the NYSCI Neighbors program includes more than 400 family members, a network of 15 local school partners, and 16,000 annual program participants who reside within a two-mile radius of the institution.

MAKING AND CORE VALUES

What is your mission statement?
Bring the excitement and understanding of science to children, families, and teachers by galvanizing their curiosity and providing creative, participatory ways to learn.

What does it mean to "make" in your space/organization?
A key institutional focus at NYSCI is on strategies of engagement called Design-Make-Play (DMP). The defining characteristics of DMP include deep engagement, personal relevance, open-ended exploration, imaginative learning, and self-efficacy. Design emphasizes problem solving, intentionality, and helps you see the possibilities in the world; Make invites you to be hands-on with materials, tools, and processes, and nurtures the development of skills and confidence; and Play promotes intrinsic motivation and deep engagement. All of these elements privilege delight and allow for open-ended exploration, innovation, imaginative learning, and self-efficacy — ingredients that inspire passionate learners, critical thinkers, and active citizens.

How does the above relate (or not relate) to your core values?
NYSCI's commitment to transforming STEM learning through Design-Make-Play is brought to life through myriad initiatives, programs, and exhibit experiences, including Little Makers workshops, where our youngest visitors, 18 months to 8 years old, and their families tinker, make, and play together. Little Makers is an amalgamation of best practices and core values from across the institution, taking inspiration from Maker Space, Design Lab, our research arm, SciPlay, and Education programs, complimented by best practices in Early STEM education and whole family engagement.

Rooted in noticing and discovery, Little Makers workshops respond to the distinctive need for children to learn through concrete interactions — touching, exploring, manipulating — and provide layered experiences for children of varying developmental stages. Little Makers scaffolds materials exposure, helping children discover material properties and build confidence to combine new materials in innovative ways.

What forms of making (all creative endeavors) occur?
Little Makers workshops invite families to tinker with new and familiar materials and tools, explore science phenomena, and make something together. Each weekly drop-in workshop presents a unique theme/science content area to explore.

A sample of Little Makers programming includes:

Superhero Science: Pow! Zoom! Zam! Discover the science behind superhero powers. Design, make, and build your own super gadget to ward off villains and help you save the day.

Bird Nesting: Birds have unique ways of using special materials to make their homes. Explore the science behind nest making and transform recycled materials into a nest of your own.

Water Works: Splash into science as we explore the properties of water. Tinker with household materials to create a fun water wall!

Sensational Sand Play: Mix simple household ingredients to make a batch of moldable sand. Hold it, mold it, squeeze it, pour it!

Soap Making: Mix and mold household ingredients with essential oils and liquid water color to create scented soap.

Wood Works: Practice woodworking skills as you learn to measure, drive nails with a hammer, use sandpaper, and then design and create wooden projects from racecars to birdhouses.

Butter Up: Through the exploration of ingredients from savory herbs to cocoa powder, vanilla, and cinnamon, invent your own flavors and shake up batches of homemade butter.

Ball Run Fun: Exploring the properties of mass, force, and motion, use cardboard, cups, tubes, and a wide variety of recycled materials to build and test a ball run.

Are you influenced by any particular pedagogies (approaches to learning)?
Design-Based Learning

What are some good examples of especially powerful/ ambitious/successful making experiences?
Exploring Circuitry, Wood Working, Little (Mud) Makers

GOALS

What are the goals of the programming and experiences provided?
We aim to root each of our workshops, the environment we create, and the learning experiences we provide for families in NYSCI's Design-Make-Play pedagogy, and principles of practice we are developing through research in family engagement in museum-based makerspaces in collaboration with the Children's Museum of Pittsburgh.

The core ingredients that we believe make Design-Make-Play transformative experiences for STEM learning for young children and their families are:

Materials Literacy: When children are able to find new uses for everyday materials

they develop materials literacy, a potent skill that enables children to see possibilities in the world around them. One way to promote this is by providing opportunities for families to use familiar and new materials in unexpected ways. This can focus attention not just on the potential uses of everyday materials but on their properties as well. By fostering materials literacy and tool use, we empower families to continue the learning by applying new concepts and skills to new contexts: home, school, and community.

Science Process Skills and Mathematical Thinking Engaging: Opportunities to design, make, and play foster science and math literacy, instill positive attitudes about science and math, and lay a foundation for the development of skills young children need to be successful as they start school. Making experiences rooted in deep noticing afford open-ended ways to understand the world through asking questions, probing for answers, investigating and communicating. By providing natural phenomena to explore and the tools to investigate them, making encourages the development of skills including identification and creation of patterns, measurement, counting, sorting, and classification — skills at the core of early mathematical thinking.

Purposeful Play: We make sense of our world through self-directed, rich sensory experiences. Play develops children's content knowledge and provides children the opportunity to develop social skills, competences, and disposition to learn.

Divergent Solutions: Making inspires learners to identify, use, repurpose, and combine materials and processes in new and innovative ways, reflective of their own creative thinking, and encourages kids to be natural problem solvers.

Collaboration and Co-learning: By highlighting the opportunity for math and science learning in children's everyday experiences, and elaborating on the science that families are already doing together, we both provide meaningful ways for adults to participate in making and encourage continued experimentation at home. Little Makers experiences aim to engage parents as playmates and first teachers and foster positive parent-child interactions — how parents and children communicate through language, shared experiences, and mutual discovery — as powerful influences on how children learn, grow, and thrive.

Documentation and Sharing: For young learners, who build confidence and agency through self-expression, sharing is at the heart of their healthy socio-emotional development. Opportunities for storytelling, muraling, sketching, paired with physical displays and digital documentation of children's work and play acknowledge and support children's desire to communicate and represent their knowledge of the world, and inspire further investigation and exploration. For parents, documentation provides a valuable lens on learning.

How do you know when you've met your goals? What are your metrics of success?
Reflective Practice