Designing Maker-Inspired Exhibits for the Youngest Learner

Mindy Porter, Amazeum
Erik Smith, Amazeum
Steve Davee, Opal School at Portland Children’s Museum
Janella Watson, New York Hall of Science
Neil Gordon, The Discovery Museums
Aaron Goldblatt, Metcalfe Architecture & Design
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Erik Smith, Director of Exhibits
Mindy Porter, Director of Education
Amazeum by the numbers

- Opened July 2015
- 55,000 sq-ft facility
- 25,000 sq-ft exhibit galleries
- 1 acre controlled outdoor space
- 500,000 guests since opening
- Core audience: 1 yr - 12 yrs old
- 5,200 Member households = 37% of attendance
Tinkering / Making
Attitudes
Habits
of Mind
Skills
Identity
School groups - 2nd grade & up
Ages 7 and Up
A SPECIAL PLACE FOR BIG KIDS
Scott Family
AMAZEUM
Tiny Tools: Screwdrivers & Wrenches
Tiny Tools: Whittling
Tiny Tools: Hammers
Tiny Tools: Bolts
Facilitated

Familiarity & Reproducible

Authenticity

Skill Building

Scott Family AMAZeum
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learning from youth about making & learning environments

Steve Davee
Opal School of the Portland Children's Museum
Math and Science Teacher/Documentation Specialist, 2003-2011
Tinkering Specialist, Fall 2016-present

Maker Ed (MakerEd.org)
Director of Education, Chief Maker Educator 2012-2017

CoLab Tinkering
Founder, 2008-present
We must respect the capability of children. We are all born makers.
Making comes in a multitude of forms
Every Place a Makerspace
OPAL SCHOOL’S VALUES

A powerful image of the young child as intelligent, creative and capable with gifts and abilities that the world needs.

A belief that children play a central role in the development of their own learning.

A deep respect for differences, however they may be expressed.

A belief that listening, dialogue and exchange open doors to unimagined possibilities.

A view that learning happens when people form relationships with one another, with ideas, materials and the environment.

A belief in the rights of children, families and educators to participate together in forming and shaping rich environments of learning, challenge and choice.
Icicles spiral
From quiet reaching trees.
Starry snowflakes
Tumble
To the ground
Landing on a blanket of snow.
Waiting
For the awakening
Of Spring.

Slyly, slowly,
Buds creep open
Reaching out to trees
Who survived
The cold, stormy darkness.
A silent good morning
To life.

Sword ferns battle
With lacy spider webs.
Dragonflies ruffle tips
Of flowers.
Flashbacks of Spring.
But wait!
The world holds still
As a single first leaf
Falls to welcome
Autumn.

Oh, copycats!
Those leaves tumbling
Just as snowflakes
Two seasons ago.
As the day is shorter,
Nights are longer,
The world is preparing
To close its eyes.

Regional Arts & Culture Council
www.racc.org

Opal School
of the Portland Children’s Museum

Center for Children’s Learning
of the Portland Children’s Museum

Portland Children’s Museum
where imagination lives
learning from youth
learning from your youth
Designing Maker-Inspired Exhibits for the Youngest Learner

Janella Watson
Director of Early Childhood Education
Design emphasizes problem-solving and helps people discover possibilities.

Make provides confidence-building experience with materials, tools and processes.

Play promotes intrinsic motivation, deep engagement and delight.
Little Makers
Principles

Materials Literacy & Tool Skills
Science + Math + Literacy
Purposeful Play
Rich Sensory Experiences
Collaboration & Co-learning
Creative & Divergent Solutions
Documentation & Storytelling
Science In The Everyday: Simple Materials, Complex Ideas
Imaginative Play and Storytelling
New York Hall of Science "Little Makers Space": Inspiration "Over"

METCALFE ARCHITECTURE & DESIGN • CONCEPT PROGRESS • MARCH 13, 2017
Interactive Concept Sketches

New York Hall of Science "Little Makers Space": Interactive Concept Sketches
METCALFE ARCHITECTURE & DESIGN • 1619 CONCEPT DEVELOPMENT • APRIL 28, 2017

+NYSCI: LITTLE MAKERS 4/28/17
WOOD FLING | MAD 16/19
New York Hall of Science "Little Makers Space": Interactive Concept Sketches

METCALFE ARCHITECTURE & DESIGN • 1619 CONCEPT DEVELOPMENT • APRIL 28, 2017

- Ways to make "faces"
- Velcro
- Magnets/Metal

- Could we use a large magnetic board, then we could "stick" tools to it?
- Might be nice to keep items on table

- Rolled lip?

- Tables for "face making" - Does face making need to be overthought?
New York Hall of Science "Little Makers Space": Interactive Concept Sketches

METCALFE ARCHITECTURE & DESIGN • 1619 CONCEPT DEVELOPMENT • APRIL 28, 2017

Interactive Concept Sketches

• ONE CONTINUOUS "WEAVE"
• START W/ A "BOLT" OF NYLON MESH
• AS WEAVING CONTINUES, CRANK MESH... AS IT MOVES TO THE END, IT BECOMES A CEILING DISPLAY

• NSF: LITTLE MAKERS 4/28/17 MAD 1619

• COULD FLIP WEAVE TO BE VERTICAL SURFACE, BUT THIS WILL TAKE UP "WALL" SPACE, OR DIVIDE THE EXISTING.

• "CAN BE COMPLICATED AT CEILING... OR NOT.
• MAKE LENGTH OF "MATERIALS" SPACE

New York Hall of Science "Little Makers Space": Interactive Concept Sketches

METCALFE ARCHITECTURE & DESIGN • 1619 CONCEPT DEVELOPMENT • APRIL 28, 2017
Little Makers
New York Hall of Science
nysci.org/little-makers/

Delia Meza
Early Childhood Science Coordinator
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Making Engages People

Through extensive prototyping and ongoing practice-based research, we identified and critically considered how our makerspace could best support such forms of engagement (Brahms & Wardrip 2014; Wardrip & Brahms 2015). We quickly determined that it wasn’t the fancy equipment or tools that we had, or the specific activities we designed that made MAKESHOP the accessible, empowering and personally relevant place that it is. Rather, the defining aspect of our work is our approach to people—both our visitors and our staff. Most notably, we’ve developed and sustained a dedicated team of educators who have a personal interest and expertise in making, are responsive to and position everyone (including themselves) as learners, collaborators, and teachers; and are committed to growing their own skills as designers and facilitators of making as a learning process for all.

MAKESHOP, the makerspace at Children’s Museum of Pittsburgh opened in October 2011 with the goal of providing a rich and supportive informal learning environment for children and families to engage with the “real stuff” of making. This meant designing experiences relevant for all visitors, drawing from physical and digital materials as well as accessible tools and processes that are empowering and personally relevant for everyone.

An important part of our mission is to provide an opportunity for multigenerational families to learn together. While the materials and science phenomena explored change from week to week, the workshop’s station-based structure is relatively constant. The exploration station introduces materials and tools. Learners sketch out their ideas at a planning and design station. They create and build their projects at the making station. The documentation station invites them to share their work by adding to a display or mural, telling a story about their creation, or snapping a photo.

From the program’s start four years ago, Little Makers facilitators engage in reflection after each workshop, leading to ideas that help refine our approach, tweak the setup of the space to be more welcoming for diverse families, share facilitation techniques, spark ideas for new projects, and learn from our missteps. Through this process, we’ve developed a set of guiding principles that are rooted in the museum’s Design-Make-Play learning philosophy. Design emphasizes intentionality in problem solving and helps people see the possibilities in the world. Make highlights hands-on experience with materials, tools, and processes while nurturing skill and confidence development. Play promotes intrinsic motivation. When combined, these strategies support open-ended exploration, imaginative learning, deep engagement, and delight—ingredients that inspire passionate learners and critical thinkers. Design-Make-Play transforms STEAM learning for young children and their families in our community through the following core tenets:

**Collaboration and Co-learning**

Opportunities abound for math and science learning in children’s everyday experiences, such as cooking in the kitchen, splashing in the bathtub, and collecting rocks and leaves on a walk in the park. By elaborating on the science families are already doing together, we reveal meaningful ways for adults to participate in making, provide tools for
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