CONTACT INFORMATION

Name: Lisa Brahms

Title: Director of Learning and Research

ORGANIZATION

Organization Name: Makeshop at the Children's Museum of Pittsburgh

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


Organization social media links:
https://www.facebook.com/pittsburghkids
Blog and/or site most related to programming, making: [http://Makeshopgh.com/blog/](http://Makeshopgh.com/blog/)

Location (city, state): Pittsburgh, Penn.

Is your organization rural, urban, or suburban? Urban

Is your space and/or elements of your programming mobile? Elaborate, if necessary.
Yes, within a region.

Target audience(s): Children’s Museum of Pittsburgh serves primarily intergenerational family units and school groups, the majority of whom are elementary age or younger. MAKESHOP also has special programs, which focus on teachers, the adult public, and youth over the age of ten.

Annual budget (indicate if public or not public): $175,000 (MAKESHOP; not public)

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?
As a museum, we are open to the public. Certain programs we provide (Adult Make Night, Youth Make Night, etc.) are age-restricted. As a museum, we offer memberships and are currently testing a "MAKESHOP Membership" model. For some groups, we offer free or reduced price access. Admission is required for general visitors (members and non-members). We offer programs and services for specific groups, such as Teacher/Educator PDs, restricted times for special needs groups such as children on the autism spectrum, etc.

Tell us about your organization. What distinguishes you from others?
With a team comprised of skilled makers as well as experienced researchers, MAKESHOP is able to marry theory to practice. With both practitioners and scholars in one department, there is constant exchange between the two: emerging theories are formed around observable interactions, and in turn directly influence facilitation and design. This give-and-take of information has made MAKESHOP a nationally recognized resource on both the logistical aspects of running family makerspaces, as well as the importance and impact of making on learning.

**MAKING AND CORE VALUES**

What is your mission statement?
MISSION: Children’s Museum of Pittsburgh provides innovative museum experiences that inspire joy, creativity, and curiosity.
VISION: We provide the highest quality exhibits and programs for learning and play. We are a partner and a resource for people who work with or on behalf of children.

KEY VALUES:
Commitment to Good Design Principles: The Children’s Museum is committed to quality design and firmly believes that attention to aesthetics and practicality creates functional, welcoming community spaces. This philosophy guided the 2004 Museum expansion, its development of exhibits, and is the basis for the vision of the Buhl Community Park at Allegheny Square.

Play with Real Stuff: The Museum’s “play with real stuff” design philosophy promotes an organizational commitment to the use of authentic materials and processes in its exhibits and overall design.

Commitment to Diversity: Children’s Museum of Pittsburgh is committed to providing an environment of inclusion and respect for visitors, staff, and board that is free of discrimination.

MAKESHOP, a partnership program of the Museum, the Entertainment Technology Center at Carnegie Mellon University, and the University of Pittsburgh Center for Learning in Out of School Environments, strives to achieve this through the thoughtful use and design of tools, materials and processes, in a supportive learning context.

What does it mean to “make” in your space/organization?
MAKESHOP approaches making as process-based. Achievements are recognized and valued, but each is only a step in the process towards whatever is next. Threading a needle or sanding a block of wood is just as valuable as soldering a circuit or designing a 3D model, and the question is always, “What’s next?”

(See MAKESHOP Learning Practices report, which can be found on our Making & Learning Research page.)

How does the above relate (or not relate) to your core values?
Through using authentic, hands-on experiences, we hope to expose our visitors to a wider world of possibility that they can use to question, create, and inspire themselves. Once a child has sewn stitches, they can marvel at their own clothing; when a family has turned a pile of junk into an incredible recycled city, they can understand their own power to transform their surroundings.

In addition, our commitment to good design principles, which, in the case of MAKESHOP, are research-based, is evidenced in our ongoing collaborative work across research and practice.
What forms of making (all creative endeavors) occur?
MAKESHOP embraces expression and exploration through processes-based experiences with tools and materials that tend to fall into the DIY (or DIT) realm of functional craft (rather than fine art), design, and technology (of all kinds, along the physical-digital continuum). Mediums used to do this include: fiber and textiles (sewing, embroidery, weaving), woodworking (attachment and shaping), electronics (take apart and construction), computational processes (programming and robotics), digital design and fabrication (3D modeling, laser cutting, graphic design), and exploration of recycled materials.

Are you influenced by any particular pedagogies (approaches to learning)?
We apply a practice-based approach to learning and making in the context of our museum makerspace. This perspective draws upon theories of cultural and social learning, which assert an understanding of learning as fundamentally tied to the social and cultural contexts in which it occurs and focuses on the “practices” that define learning communities (Brown, Collins, & Dugid, 1989; Lave & Wenger 1991; Wenger, 1998; Gutierrez and Rogoff 2003; Greeno, 1997). By practice, we mean the “...more or less coordinated, patterned, and meaningful interactions of people at work” (Spillane, 2012).

GOALS

What are the goals of the programming and experiences provided?
All of the activities and experiences provided by MAKESHOP aim to create open-ended exploration of tools, materials and/or processes. They are as non-prescriptive as possible and allow for many pathways of personal interest and investigation.

(See MAKESHOP Learning Practices report, which can be found on our Making & Learning Research page.)

How do your environment, tools, and materials reflect these goals?
Wooden and metal workshop-like fixtures, visible tools and materials, and an assortment of example projects fill the space, creating an atmosphere that is handmade and open to change and possibility. Tools and materials are selected to be functional, while taking into consideration the size, strength, and skill levels of our visitors. For example, all of the hammers in MAKESHOP are capable of driving nails — there are no plastic versions available — but there may be an assortment of handle lengths or grip styles on hand, in order to best match the tools with the individual needs and skills of the user.

How do you know when you’ve met your goals? What are your metrics of success?
The MAKESHOP Team meets (ideally) three times a week from 9–10 a.m. This time is used for project planning/check-ins, as well as constructive reflection. Often, this reflection time is structured around our Principles of Practice research work (see Learning Practices report). These reflective practice sessions have helped us create a "language of learning" as well as an evolving set of design principles, which guide
design decisions and iterations.

We have also conducted (and continue to conduct) visitor evaluations. (We hope to have the results of these published on our website.)

**What are your plans and hopes for the future of your space and programming?**

By working with diverse populations, we are better able to hone in on what core values are translatable across all experiences. We have made efforts to expand our understanding of how to better serve visitors with various accessibility needs, and some of our near-future plans and programming are focused around serving an older (18–24) audience.

In the past year, we have focused our efforts on better understanding how to work with teachers, students, and administrators to integrate making into schools in authentic ways. The necessity of sustained professional development became a core tenant of this work. This coming year, we anticipate expanding this work to multiple school sites throughout our local Northside Neighborhood, Western Pennsylvania, and West Virginia.

As an informal environment that also provides structured workshop experiences, we are beginning to look at where else on this spectrum we can explore, including the possibility of multi-session workshops, summer camps, and other medium-length experiences that build on one another.

**TOOLS**

**What are your most frequently used and commonly available tools?**

Current Top Five “Simple Tools”: Tape, scissors, sewing needles, hand saws, alligator clips.

We often hack or create tools to accommodate our visitors’ entry and access into the making experience. For example, we have created a suite of scaffolded tools — from beg-board scraps to cross-stitch fabric frames to thread-wrapped clothespins—to enable visitors to begin the sewing process at whatever place they feel comfortable and confident.

**List any special tools that require supervision, training, and/or certification.**


**What are the favorite tools (most popular/most desired, even if you don’t have many)?**

Sewing needles and machines, saws and hammers, stop-motion animation rig.

Our circuit blocks, which are both material and tool, are a favorite, of visitors and staff. We love to make and explore with circuit blocks, as well as use them as a reference tool with visitors.
Are there any tools that go largely unused, or that are no longer provided? Reasons?
Because of the informal nature of our space and the low average-age of our child visitor, our 3D printers usually sit neglected. The amount of upkeep or adjustment needed to keep those particular models running also often outweighs the time we’re able to dedicate to them.

**MATERIALS**

**What are some of the most popular and frequently used materials?**
Fabric, wood scraps, broken electronics, and recycled materials.

**What are some of your most interesting/unexpected materials?**
We get all kinds of weird donations! The two garbage bags full of Dictaphones were particularly memorable and useful.

**What are the most continually reused materials? Most consumed?**
Recycled materials (aka junk) are consumed most quickly, followed by fabric.

**COLLABORATION**

**What are some of the institutions and organizations that are sources of inspiration, support, and influence?**
The ASTC Community of Practice, Maker Education Initiative, The Tinkering Studio at the Exploratorium (the staff and approach to staff development), New York Hall of Science (Makerspace and Little Makers), Research Groups at Pitt (UPCLOSE), CMU (Create Lab, Children’s Innovation Project, ETC), Indiana University (Creativity Labs), University of Wisconsin, Lawrence Hall of Science (Activation Lab), MIT Media Lab.

**Describe any local, national, and global partnerships and collaborations.**
Core Partnerships:
MAKESHOP is a collaborative project of Children’s Museum of Pittsburgh, Carnegie Mellon University’s Entertainment Technology Center (ETC), and the University of Pittsburgh Center for Learning in Out of School Environments (UPCLOSE). As leading informal learning, design, and research organizations, each of the three partners brings a unique perspective and area of expertise to the project.

Key Project Collaborators (through grant-funded projects):
Institute of Museum and Library Services, Supporting Making in Museums and Libraries (Framework Project, see [http://www.makingandlearning.org/](http://www.makingandlearning.org/)); Research on Family Learning in Museum-Based Makerspaces; Making Experiences for Post-Foster Care Youth
General Camaraderie and Collaboration:
New York Hall of Science (Makerspace and Little Makers programs and personnel),
Research on Family Learning in Museum-Based Makerspaces

Tinkering Studio at the Exploratorium, Supporting Making in Museums and
Libraries (Framework Project); Research on Family Learning in Museum-Based
Makerspaces

Maker Education Initiative, Supporting Making in Museums and Libraries
(Framework Project); Research on Family Learning in Museum-Based Makerspaces;
Executive Director, Jane Werner is advisor to Maker Ed

Kids + Creativity Network, local network of organizations and individuals working
to at the cross-roads of education, the arts and technology through grant-making
and network activities (http://remakelearning.org/)

Key Research Collaborators:
University of Pittsburgh (Core Partner of MAKESHOP, as well as work with others in
the Education and Psychology Departments)
The Research Group at Lawrence Hall of Science
Evaluation and Research Team at the Exploratorium
The Creativity Labs at Indiana University

School Partnerships:
We work with many schools throughout the region on teacher practice around
making as a learning process, design of space, material and facilitation, as well as
student workshops and learning. These partnerships range from one-hour
workshops to yearlong residencies.

SPACES AND ENVIRONMENT

In what physical places does making happen in your organization? A single dedicated
space, multiple dedicated spaces, general use areas, a workshop (metal, wood, sewing, etc.),
outdoors, a theater, a music studio, an art studio? Everywhere? Somewhere else?
A single dedicated space and everywhere.

Elaborate on where making happens, if needed.
MAKESHOP is where "making" happens in our Museum, although visitors’
investigation of and expression with creative processes happens throughout the
Museum! From the Studio, where visitors engaged in fine art processes and
concepts; to Waterplay where visitors test and manipulate water in all forms; to the
Nursery, where young learners interrogate the materials and phenomena of light,
sand, and movement; to the contemporary artworks throughout the museum,
making, broadly considered, happens everywhere.
How are the spaces, tools, and materials organized?
MAKESHOP is roughly divided into three sections: a low-facilitation exploration area, a facilitated process exploration area, and a “workshop” that can change function as required (to host workshops, classes, or more intense or dangerous activities). There is a back office with three cabinets, one each for: wood and electronics; digital and computer; and fiber and miscellaneous. There is also additional basement-level storage, where boxes are labeled and sorted by medium or activity. Select tools and materials are displayed at varying heights, depending on the barriers to access deemed necessary. Non-hazardous, familiar materials may be at floor or table height, while more expensive or complex materials may be on shelves. Highly technical or dangerous items are kept out of sight and brought out on an as-needed basis.

How large is the space(s) where making happens?  1800 sq. ft.

Please describe how your site and makerspace(s) are staffed, including numbers of full and part-time staff and volunteers.
MAKESHOP is currently staffed by six full-time employees — a Manager, a Coordinator, a Specialist, and three Teaching Artists — in addition to a small handful of part-time Educators and an occasional volunteer. The number of Teaching Artists may vary depending on current grant-funded projects. Full-time employees are responsible for designing, testing, and executing special programs, events, workshops, and classroom experiences, as well as working with the general public. In addition, they are also involved with numerous research studies and must maintain reflections and documentation on their work. Part-time Educators work specifically in MAKESHOP and are trained on the tools, materials, processes, and philosophy of the space. They work primarily with family visitors and field trips.

The presence of educators skilled in the domains of making, as well as in the facilitation of informal learning, is an intentional and central factor of the space’s design and function. Each of the five core staff members have expertise in a different domain of making, such as textiles, electronics, construction, digital media production, and computer programming. This expertise is made accessible to visitors as a resource, as well as shared among the staff.

First impressions of space(s):
Ideally, when participants first enter MAKESHOP, they see a variety of different objects, tools, and materials that look interesting or exciting to explore. They hear somebody greeting them, to let them know they can be as self-directed as they’d like, or get as much help as they need. They feel empowered to make decisions. They experience something for the first time or something familiar in a new way. They leave with a new perspective on what they are capable of.

Describe your approaches and priorities in creating environments for making/learning.
PROGRAMMING

Describe the kinds of programming offered.
Open access to materials, tools, and processes. Designed elements and consideration of spatial arrangement to facilitate visitors' meaningful use of such materials, tools, and processes, such as circuit blocks, scaffolded sewing tools, "build-it" (exhibit component), "possibility pieces" (exhibit component), presence of skilled and knowledgeable (about making and about facilitating) teaching artists, etc.

Programs:
See websites for descriptions:
http://Makeshoppgh.com/eventsmenu/
https://pittsburghkids.org/education/

Youth Make (public program for 10+)
Adult Make Night (21+ evening program)
Club Make (middle school afterschool program)
Maker Story Time
Guest Makers/Weekend Workshops
Camp MAKESHOP
School Programs, on and off site (MAKESHOP Workshops)
Teacher Professional Development/Bootcamps
School Partnerships

How did your space and programming get started?
Early in April 2011, the partners began prototyping aspects of MAKESHOP on the Museum floor with visitors. While the vision for MAKESHOP was of an open-access workshop where digital and physical making would intersect, the team sought to prototype the medium-based themes of electronics, sewing, and woodworking independently to develop a deep understanding of the affordances of and limitations to the making process each medium presented to visitors, to facilitation practices, and to the general design of the space.

(Also see:

How do you decide on/design/make possible the space and components of the program?
The core MAKESHOP staff (manager, coordinator, and teaching artists) guide the design and development of space, activity, and facilitation. Some of this comes from personal interest and passion of the staff, some from the interest, passions, and challenge points presented by visitors, and some from commitments made by the Museum to funders/sponsors.
All are guided by the set of design considerations determined by the team through joint work and discussion (see page 9 of Learning Practices report).

**How has your environment and programming evolved? What has worked well, and why? What has changed? What could still be improved?**


**EQUITY AND ACCESSIBILITY**

**Are there segments of the population that you hope to serve better?**

Children’s Museum of Pittsburgh is a leader in rolling out the Museums for All national access programs, promoting special pricing so that low-income families have equal opportunities to experience cultural institutions. That said, we could certainly serve a more diverse (in all respects: racial, economic, etc.) audience. As a museum (and a "children’s" museum), there are barriers of perception that we must work harder to overcome. MAKESHOP is currently in the midst of efforts to better assess, reach and serve an older (middle and high school) audience.

**What strategies do you employ to help increase the accessibility of your space/program to all learners?**

MAKESHOP offers free field trip opportunities to schools with a high percentage of in-need children, and works with local partners to provide workshops in libraries, community centers, and other spaces at no or low-cost. The Museums for All program is a good first step. One of the biggest challenges is getting the word out about the program/marketing.

**What has worked well? What has been the greatest challenge?**

In terms of equity and access, when MAKESHOP first began doing outreaches and working in the wider community, there was certainly a learning curve: How do the spaces differ? What are the new audience’s expectations? The host institution’s priorities and expectations? What can we reasonably transport? If we’re on a timeline, how do we authentically condense an experience while maintaining the key values and goals of the activity?