Early Learning and STEM – Opportunities Ahead!

ACM InterActivity Conference
Pasadena, CA; May 4, 2017
Session Agenda

- Introduction

- The “What” of Early Learning and STEM
  - Big-Picture Need
  - Overview of 3 IMLS-Funded Programs

- The “How” of Early Learning and STEM
  - Facilitated Discussion of 3 IMLS-Funded Programs
  - Sharing Tips/Resources with Audience

- Conclusion
Our Speakers Today

IMLS
- Paula Gangopadhyay, Deputy Director for Museums
- Reagan Moore, Museum Program Specialist

Children’s Museum of Denver
- Mike Yankovich, President and CEO
- Erika Weiss, Associate Director of Education

Hands On Children’s Museum
- Patty Belmonte, Executive Director
- Amanda Wilkening, Visitor Experience Manager

Kansas Children’s Discovery Center
- Dene’ Mosier, Executive Director
- Caitlin Luttjohann, STEAM Education Manager
About the Institute of Museum and Library Services

Who are we?
- IMLS is an independent federal grant-making agency and the primary source of federal support for the nation’s approximately 123,000 libraries and 35,000 museums and related organizations.
- The Institute of Museum and Library Services (IMLS) helps ensure that all Americans have access to museum, library, and information services.

What do we do?
- We make grants, convene groups, conduct research, and publish in order to build the capacity of museums and libraries to serve the public.
Office of Museum Service Grants
(Numbers based on 2016 Appropriations)

- MFA
  - $20M

- AAHC
  - $1.4M

- NLG
  - $7.7M

- NANH
  - $900K

OUT OF CYCLE GRANTS

COOPERATIVE AGREEMENTS

Individual Museums

Museums

Universities

Associations

African American Museums

Native American and Native Hawaiian Museums
Early Childhood and STEM

- Why STEM in Early Childhood?
- The STEM Pipeline
- Early Childhood Learning and IMLS:
  - Our investments and resources?
  - What have we learned?
  - What are we doing to encourage STEM in Early Childhood?
- What are other federal agencies and foundations doing?
- Opportunities
Why STEM?
THE STEM PIPELINE

Early Childhood  Elementary  Middle  High
IMLS and Early Childhood

- Past Investments (2011-2016)
- Types of projects funded
- Partnerships
- Resources
Growing Young Minds Report

BUILDing Supportive Communities with Libraries, Museums, and Early Childhood Systems

A Toolkit for Collaborative Efforts to Improve Outcomes for Young Children and Their Families
1. New York Hall of Science—Queens, New York*
2. Franklin Institute—Philadelphia, Pennsylvania
3. Frost Museum of Science—Miami, Florida
4. Children’s Museum of Houston—Houston, Texas
5. Scott Family Amazeum—Bentonville, Arkansas

An IMLS-ED Partnership Project
## Supporting Makers in Museums and Libraries project

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<th>Museum Name</th>
<th>State</th>
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<td>1</td>
<td>AHA! A Hands-On Adventure, A Children’s Museum</td>
<td>Ohio</td>
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<td>2</td>
<td>Betty Brinn Children’s Museum</td>
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<td>Children’s Discovery Museum of Illinois</td>
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<td>Children’s Museum of Houston</td>
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<td>Children’s Museum of Pittsburgh</td>
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<td>Creative Discovery Museum</td>
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<td>Kidzu</td>
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<td>14</td>
<td>Kohl’s Children’s Museum</td>
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<td>15</td>
<td>Please Touch Museum</td>
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<td>16</td>
<td>ScienceWorks Hands On Museum</td>
<td>Oregon</td>
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<td>17</td>
<td>Scott Family Amazeum</td>
<td>Arkansas</td>
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<td>18</td>
<td>Stepping Stones Museum</td>
<td>Connecticut</td>
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<td>19</td>
<td>Tulsa Children’s Museum</td>
<td>Oklahoma</td>
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**A Cooperative Agreement with the Children’s Museum of Pittsburgh**
An overview of STEM at ED:
https://innovation.ed.gov/what-we-do/stem/

Early STEM:  https://innovation.ed.gov/what-we-do/stem/early-stem-education/

- Downloadable Tip Sheets for parents, families and educators.
- FACT SHEET on Early STEM Learning
- Early Math Practice Guide
Federal Interagency Working Group:

- ED
- HHS
- HUD
- IMLS
- NASA
- NIH
- NSF
- USDA

Sample of Foundations

- William Penn Foundation (Philadelphia)
- The Packard Foundation
- Annie Casey Foundation
- Early Childhood Funders Network
Opportunities: ECL and STEM

- Educating the Educators
- Learning from Brain Research
- Leveraging Digital
Services Provided by Growing Scientists

• Programmed field trips for students to all 3 partner organizations for participating classrooms
• In-class outreach session for participating classrooms
• Professional development for participating teachers
• Supplies and material stipends
• Family Science Nights
• Free annual passes for the whole family
• Provided transportation for events
Why do we focus on early elementary students?

• Early exposure to STEM concepts can significantly impact a child’s development and future interest in STEM.
• However, most investments in STEM are made in middle and high school, not early childhood.
• Growing Scientists positively impacts children’s science identities, increasing the chances that they will engage with and perform well in STEM subjects throughout their academic life.
Growing Scientists By the Numbers 2014-2015

• 1,550 Low-income K-2 students served
• 70+ hands-on science and engineering programs facilitated
• 500+ Hours of teacher professional development training provided
• 89% Average rate of eligibility for Free and Reduced Lunch in participating schools
Hands On
Children’s Museum
Olympia, WA

Young Makers Initiative

Made possible with a grant from

INSTITUTE of Museum and Library SERVICES
Hands On Children’s Museum

• 28,000 s/f facility
• ½ acre Outdoor Discovery Center
• Adjacent 1-acre East Bay Public Plaza
• Annual visitation 310,000 in a region of 250,000 residents
• Annual Operating Budget $3.5M
• Facility is LEED Gold & Green Globes Certified
Young Makers Initiative

Project Goals

✓ Young children, including those from at-risk and underserved families will build early STEM skills through Young Makers activities.
✓ Caregivers will have a greater understanding of the importance of STEM.
✓ Early educators will increase their understanding of the Maker Movement and learn how to increase STEM learning in the classroom.
Young Makers Initiative

Making & Tinkering Tenets (Inspired by the Exploratorium)

✓ Merge Art & Science
✓ Express Ideas Via Construction
✓ Let Kids Use Real Tools
✓ Value Process over Product
✓ Get Messy
✓ Use Familiar Materials in Unfamiliar Ways
✓ Work Solo & Collaborate
Young Makers Initiative

Evaluation & Findings To Date
Evaluation is grounded in the Learning Dimensions Framework developed by the Exploratorium

4 Categories of Learning
- I’m Engaged
- I Take Initiative & I’m Intentional
- I Request Help or Ideas from Others, I Offer Ideas & Tools to Others
- I Have an Ah-Ha moment!

Key Findings
- Young Makers activities engaged 100% of the child participants!
- Through Young Makers activities children are developing new skills and interests
- Parents and caregivers most often cited creativity as a developing skill
- 89% of caregivers noticed their child using skills in other settings after practiced at the MakeSpace
Young Makers Initiative

Thanks to IMLS Support

- MakeSpace Programming linked to Visitation Increases & Visitor Satisfaction
- New Mobile MakeSpace is very popular
- Maker activities infused in Adult Swim preschool, camps, & many other programs
- Requests for in-school maker program from area superintendents
- Maker activities for at-risk children & families

Up Next – Nature Makers
Kansas Children’s Discovery Center
Structures and Strategies for STEM Foundational Learning

Kansas Children’s Discovery Center
We allow students to embrace their natural tendency to modify their world by working as engineers. They create a project, test it out, make modifications after each test, collaborate with their peers and then report on their challenges and successes.
Push, Pull, Launch!
Support for Educators

STEAM Professional Development Sessions: All learning is hands-on and packed with developmentally appropriate practices.

Extension activity resources available at: kansasdiscovery.org
Hands on Learning for you!

KCDC’s STEAM Expert and Staff Engineer has brought many components of the Build, Roll, Engineer field trip for you to try out!
Questions?
Talk to Us!

IMLS

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- Reagan Moore, rmoore@imls.gov

Children’s Museum of Denver

- Mike Yankovich, MikeY@cmdenver.org
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