Relationships, Relevance, and Reciprocity:

Shifting Our Institutional Perspectives Using a Connected Learning Ecosystems Framework

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Sarah VanDenbergh, and Kerri Ziemann

ASTC 2023

Session Overview

- Key findings (Rae)
- Case studies (Ali, Kerri, Nina, Sarah)
- Asset mapping (activity)

STEM learning ecosystems

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Arizona State University

NISE NATIONAL INFORMAL STEM EDUCATION NETWORK

What are

STEM learning ecosystems

and how do they work?

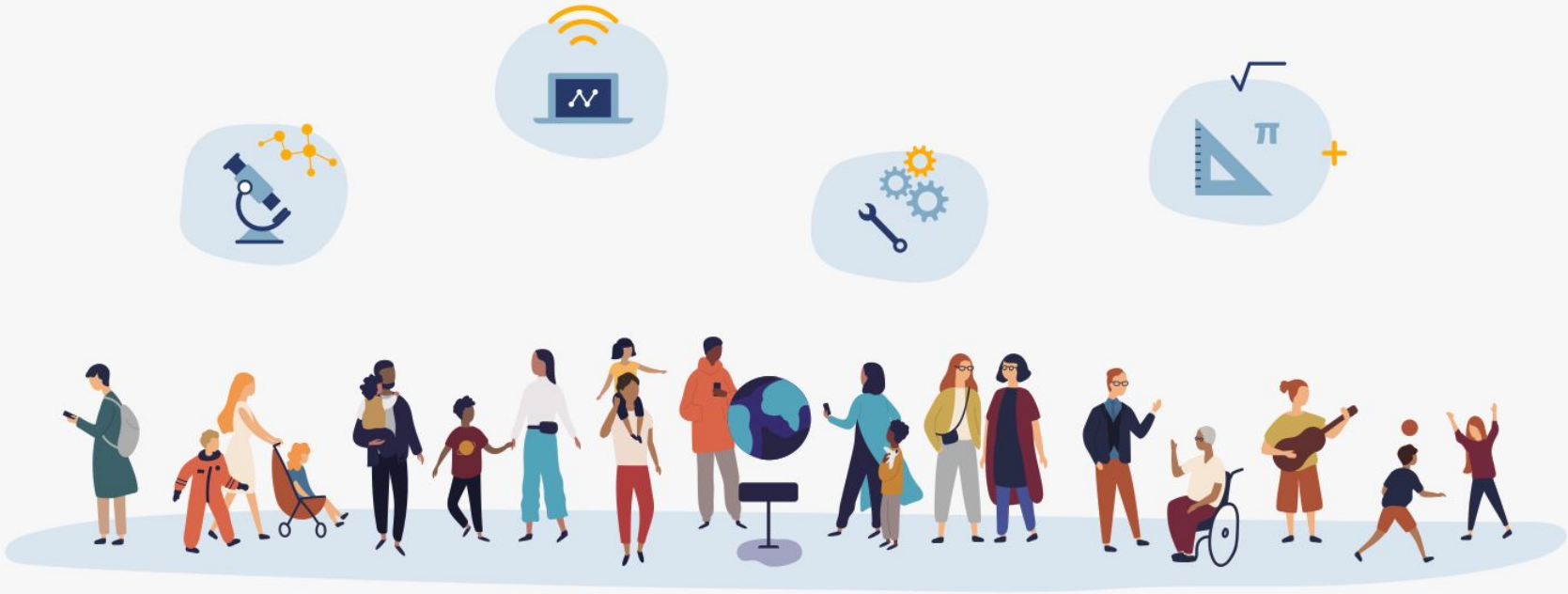
STEM Learning Ecosystems

are intentionally designed, community-wide partnerships

that enable people to actively

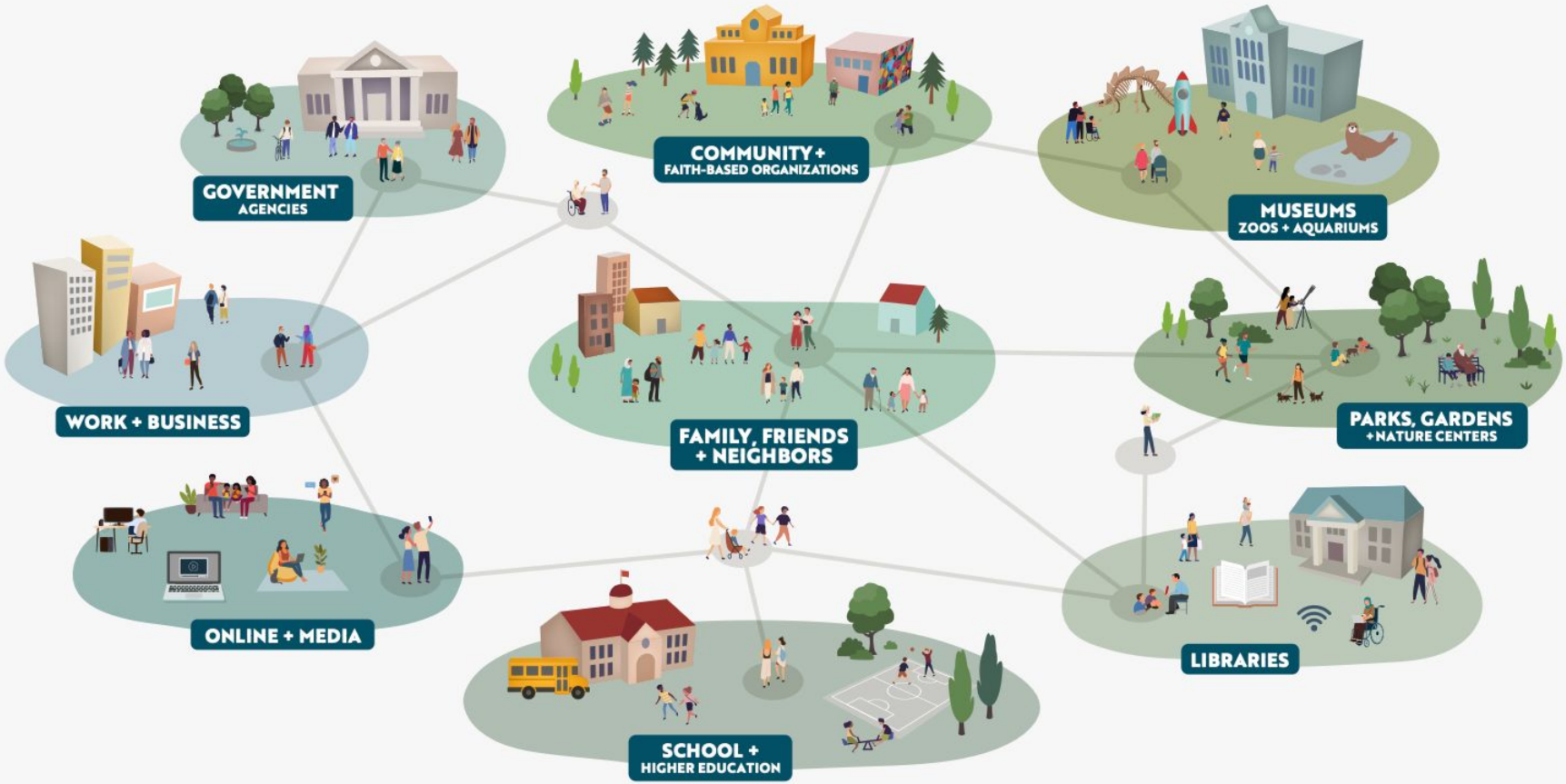
participate

in science, technology, engineering, and mathematics (STEM).



STEM learning ecosystems are designed to encourage people to learn about and use STEM throughout their lives,

at home, at school, and at work.

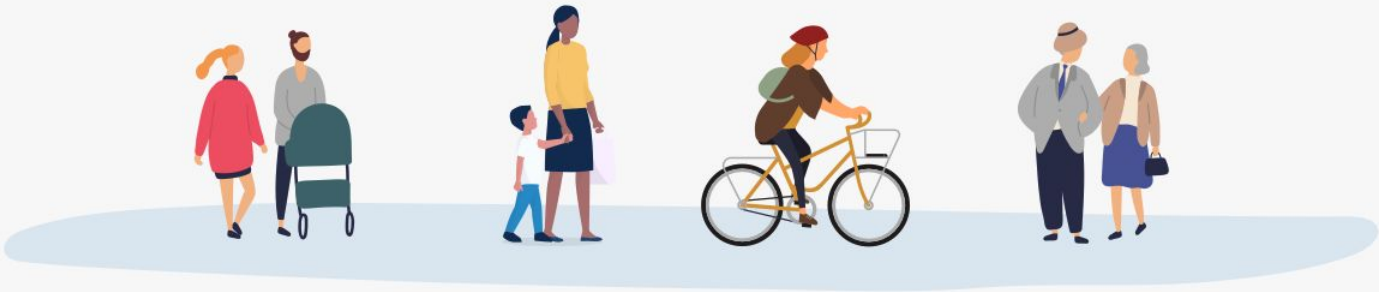


These partnerships draw on expertise and resources across a community

to create

equitable access

for learners of all ages.



Place-based

STEM learning ecosystems

are responsive to cultural, societal, and geographic contexts,

creating experiences relevant to local learners

and a more

vibrant future

for everyone.

Inquiry into four

STEM learning ecosystems

Inquiry into four

STEM learning ecosystems

3 key findings

RECIPROCAL partnerships

genuine **RELATIONSHIPS**

RELEVANT learning

Key findings

STEM LEARNING ECOSYSTEMS

1. To develop a community of lifelong learners, STEM learning ecosystems are built and sustained through intentional practices, principles, and activities; thrive through reciprocal relationships; and are grounded in their geographic and cultural context.

Key findings

STEM LEARNING ECOSYSTEMS

1. To develop a community of lifelong learners, STEM learning ecosystems are built and sustained through intentional practices, principles, and activities; thrive through reciprocal relationships; and are grounded in their geographic and cultural context.
2. Ecosystems that are designed to broaden STEM participation center diversity, equity, accessibility, inclusion, and belonging; prioritize a flexible and transparent culture; build genuine relationships among both individuals and organizations; and cultivate sharing of programming and resources.

Key findings

STEM LEARNING ECOSYSTEMS

1. To develop a community of lifelong learners, STEM learning ecosystems are built and sustained through intentional practices, principles, and activities; thrive through reciprocal relationships; and are grounded in their geographic and cultural context.
2. Ecosystems that are designed to broaden STEM participation center diversity, equity, accessibility, inclusion, and belonging; prioritize a flexible and transparent culture; build genuine relationships among both individuals and organizations; and cultivate sharing of programming and resources.
3. Providing opportunities for authentic STEM engagement starts with understanding what is relevant to learners and their community, then connecting content and experts through experiences that actively engage those learners.

Thank you

STEM LEARNING ECOSYSTEMS

NASA Partner

NISE NATIONAL INFORMAL STEM EDUCATION NETWORK

ARCTIC & EARTH STEM INTEGRATING GLOBE & NASA

Smoky Mountains STEM COLLABORATIVE

RAIN rural activation and innovation network

Learning Ecosystems Northeast

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Sciencenter

Ali Jackson,
Director of
Programs &
Partnerships

Ithaca's Connected Learning Ecosystem (CLE)

Building on a Rich History of Collaboration

- **Where Learning Happens**
- **Ongoing Museum & Community Partnerships**

Mix of Informal Educators and Teachers

- **libraries, our local land trust, state parks, community-based organizations, museums (art, historical, science, natural history), 4H, elementary/middle school science & social studies teachers**

CLE Priorities

- Relationship Building
- Mission Aligned & Sustainable Programming
- Collaborative Learning
- “Doing Work Together”

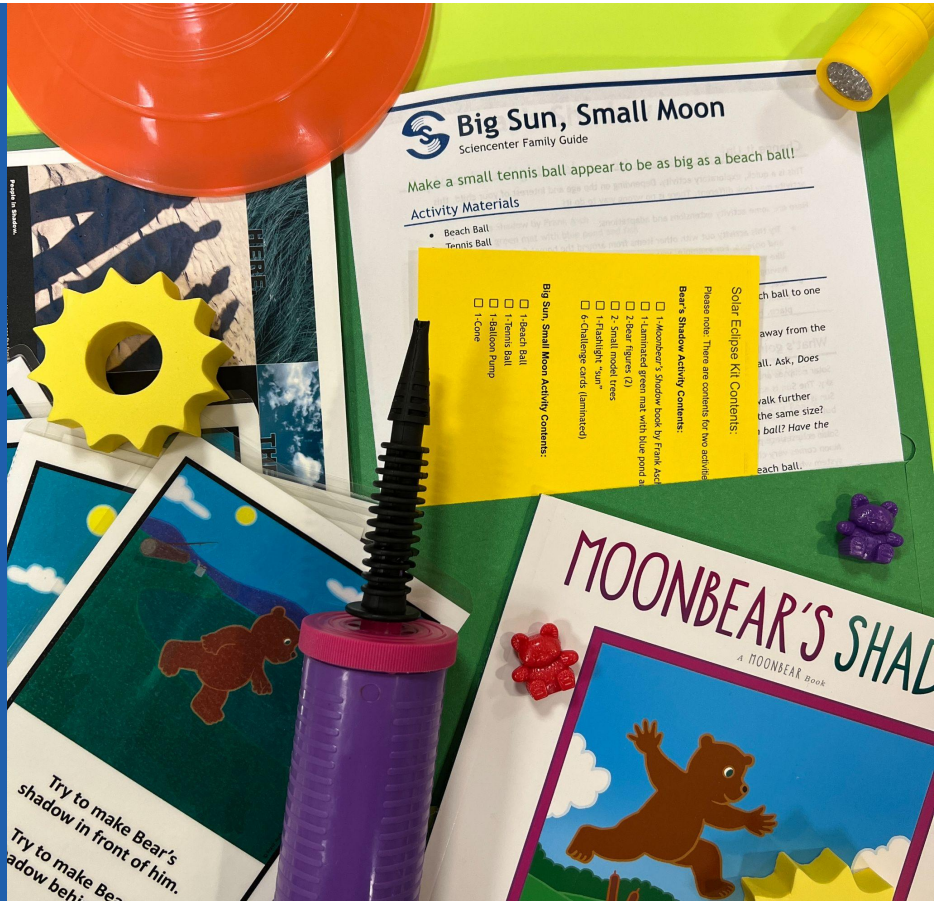
Museum & Library Partnerships

FLLS Summer Reading Program

2023/2024 Librarian Solar Eclipse Training & Evaluation

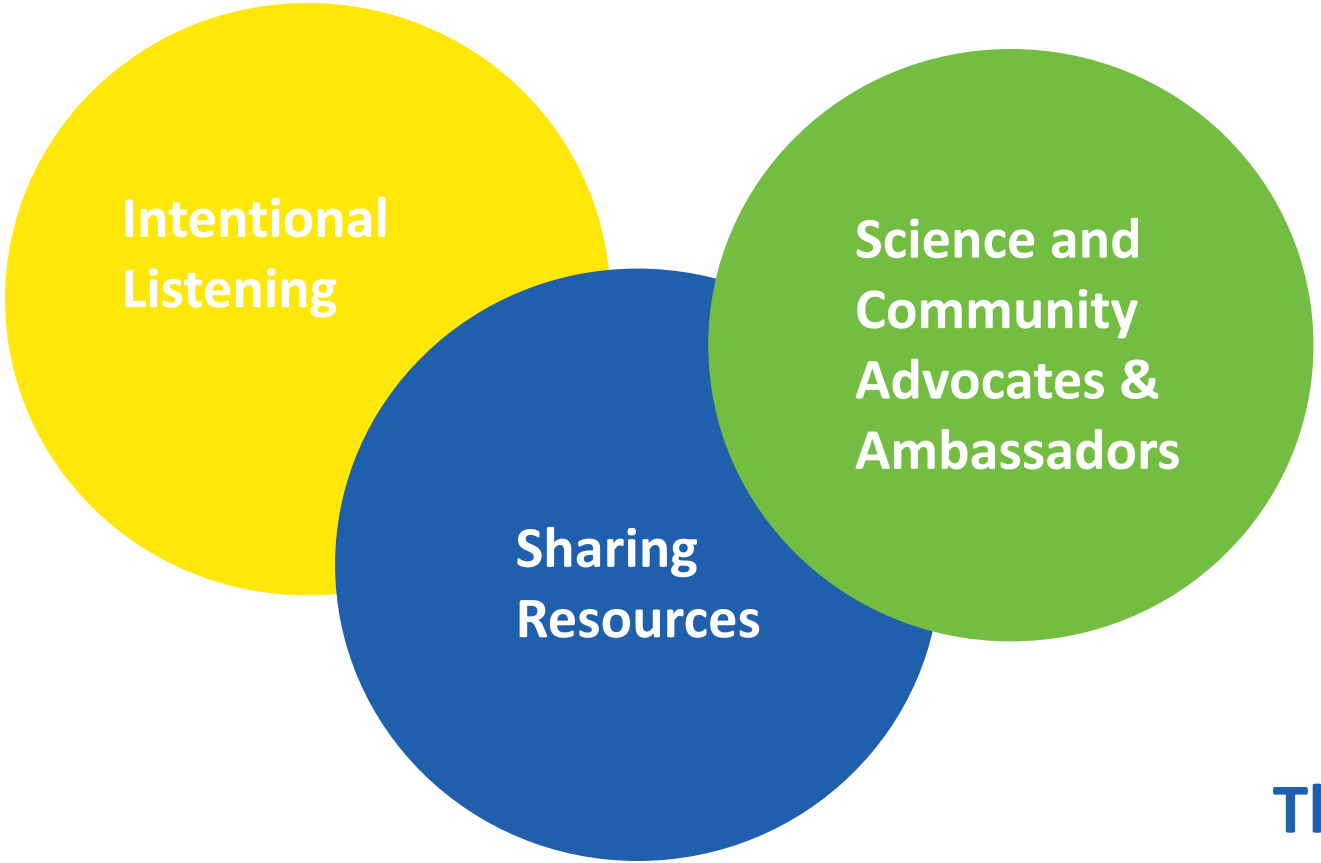
Co-created Family Science Kits

Family Memberships & Museum Comeback Passes



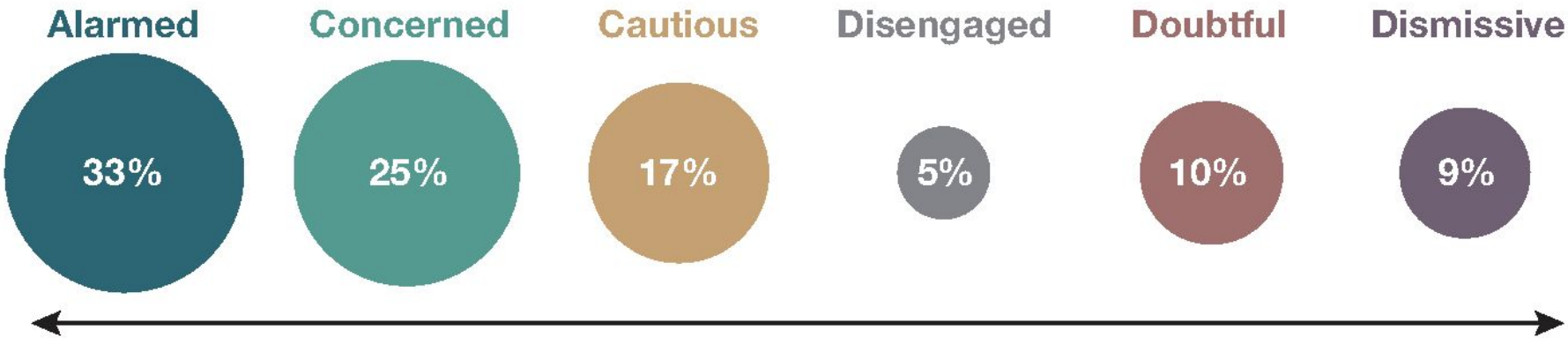
This project was made possible in part by a grant from NASA's Universe of Learning

Reciprocity, Relationships, Relevance



Thank You


THE
W!LD
CENTER
R ONE HOME
CLIMATE
SOLUTIONS



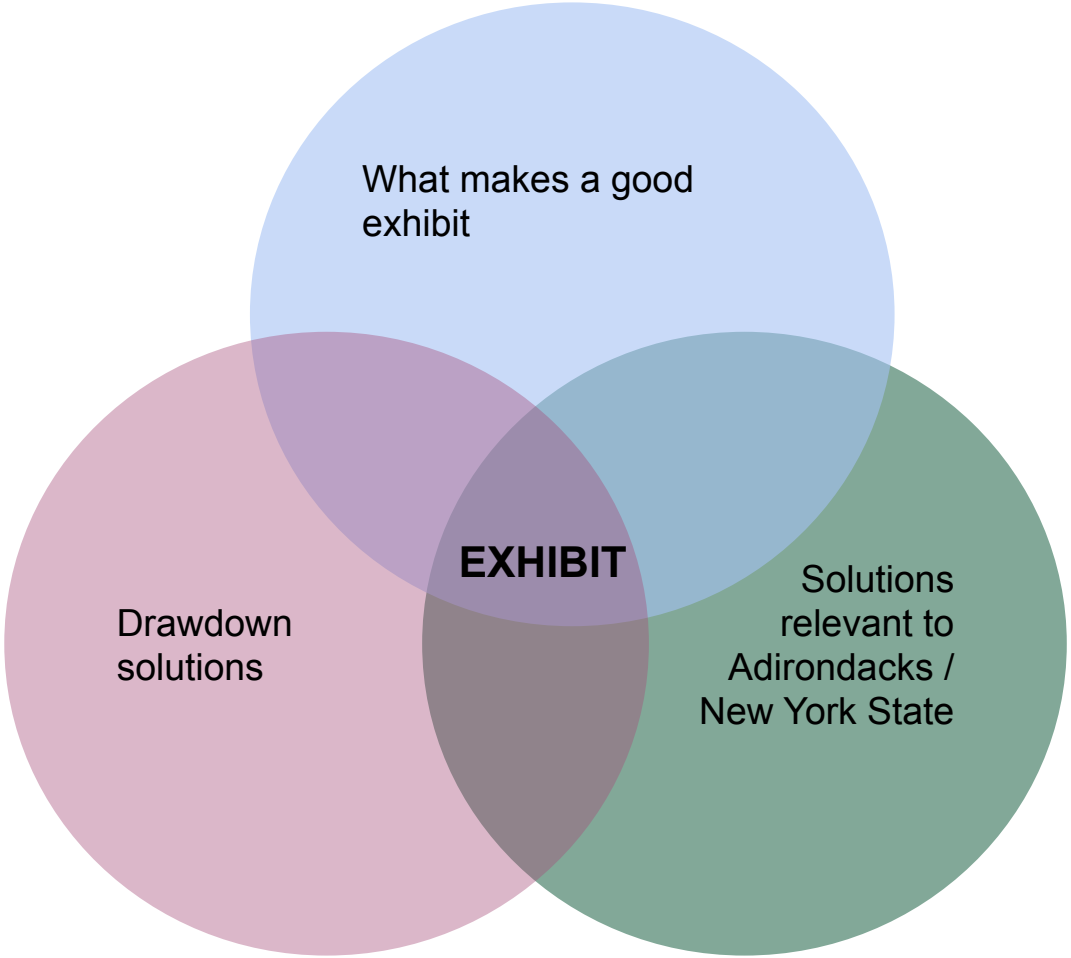
Highest Belief in Global Warming
Most Concerned
Most Motivated

Lowest Belief in Global Warming
Least Concerned
Least Motivated

September 2021
(*n*= 1,006)

YALE PROGRAM ON Climate Change Communication

GEORGE MASON UNIVERSITY CENTER *for* CLIMATE CHANGE COMMUNICATION



Content filters

Are there compelling storytellers or stories in our region?

Is there potential for an interactive? Is the content exhibitable?

Are we considering equity and accessibility when showcasing a solution? Is this solution available to everyone?

Voices from our community:

Explore the encouraging stories of people from different backgrounds who are building a web of climate solutions in their lives and communities.













REBUILDING OUR FOOD SYSTEM
REBUILDING OUR FOOD SYSTEM

Adirondack BUILDING Conference

STEVE LANGDON

Director of Shingle Shanty Preserve

JUNE 24

Adirondack Peatlands: A Critical Natural Solution to Climate Change






ECHO®

LEAHY CENTER
FOR LAKE CHAMPLAIN

STEM TEACHER INSTITUTE

LEAHY CENTER FOR LAKE CHAMPLAIN

Year-long professional learning community of 18 rural, K - 5th grade teachers and 2 ECHO educators

2 days meet-up at museum in summer
1 day meet-up at museum in fall
1 day meet-up at museum in spring
2 virtual evening meetings
1 class field trip to museum
2 outreach lessons at school
2 implementation support visits
2 virtual classroom visits
1 STEM Community Festival

LEAHY CENTER FOR LAKE CHAMPLAIN

Our Evolution

Relationships are term limited by a grant's scope	Relationships are ongoing and change over time
We, the museum, decide what teachers "should" be teaching	Resource sharing is responsive to what teachers communicate they need
Most interactions are one offs with teachers or students	Focus on building learning communities over time (teachers/students/families)

This project was made possible in part by the Institute of Museum and Library Services

INSTITUTE of Museum and Library SERVICES

eCHO LEAHY CENTER FOR LAKE CHAMPLAIN

Relationships

"And the access to ECHO educators, as resources. They care about each and every one of us and wanted to make sure that we have everything we needed to make sure that kids love STEM as much as they do."

Reciprocity

“I think one of the most powerful part was sharing ideas with each other. My cohort here at school and then, other teachers throughout the state—that piece was really powerful. It helped me to be thoughtful about observing kids interactions; observing kids’ interactions with each other, with materials, with the content.”

Relevance

“Again, a lot of professional development that teachers get, there isn’t a lot that goes directly to the kids; it’s a lot of like, ‘Okay, we’re going to fill teacher’s brain with this information and then, teacher take it back to your classroom.’ Liz and Elizabeth built relationships with my students and were able to come into my classroom and actually run and do activities with my kids and see how what we were learning in the course transferred into the classroom and actually helped implement that. . . ”

Learning Ecosystems
Northeast

Network of peer communities across Maine and the Northeast where teachers, librarians, and informal educators collaborate to increase STEM learning pathways for youth in their local regions.


Gulf of Maine
Research Institute
Science. Education. Community.


WABANAKI
YOUTH IN SCIENCE


AAAlab
@Stanford


EDC
Education
Development
Center


SHELBURNE FARMS
Learning for a Sustainable Future


DIRIGO
maine
STATE LIBRARY


1865 THE UNIVERSITY OF
MAINE
Cooperative Extension


Sciencenter
Gateway Community Services Maine


THE CHILDREN'S
MUSEUM
at SARATOGA


CUMMING
NATURE CENTER
Rochester Museum & Science Center


ECHO
LEAHY CENTER
FOR LAKE CHAMPLAIN


THE
WILD
CENTER

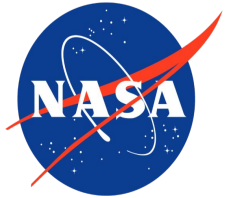

SQUAM LAKES
NATURAL SCIENCE CENTER
NEARER TO NATURE


DISCOVERY
MUSEUM
science. nature. play.

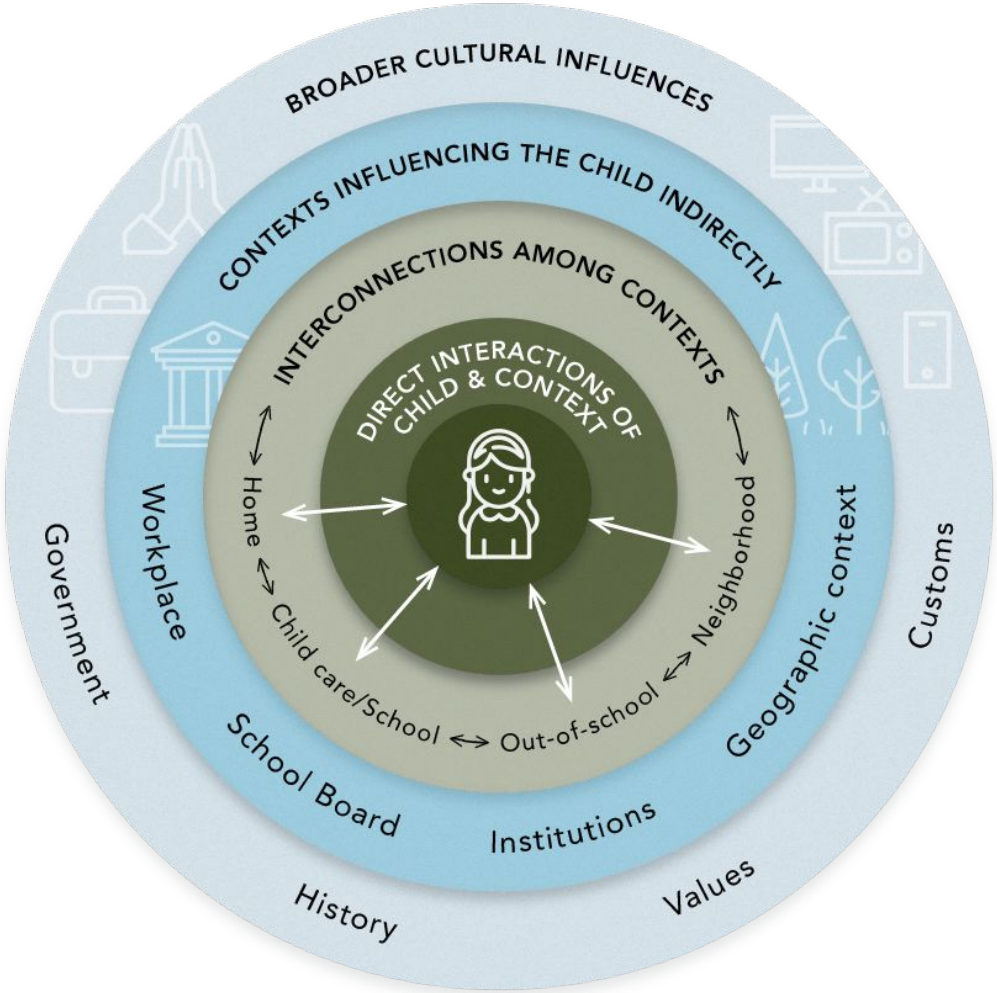

Maine
Discovery
MUSEUM
What will you discover?


MONTSHIRE
MUSEUM OF SCIENCE

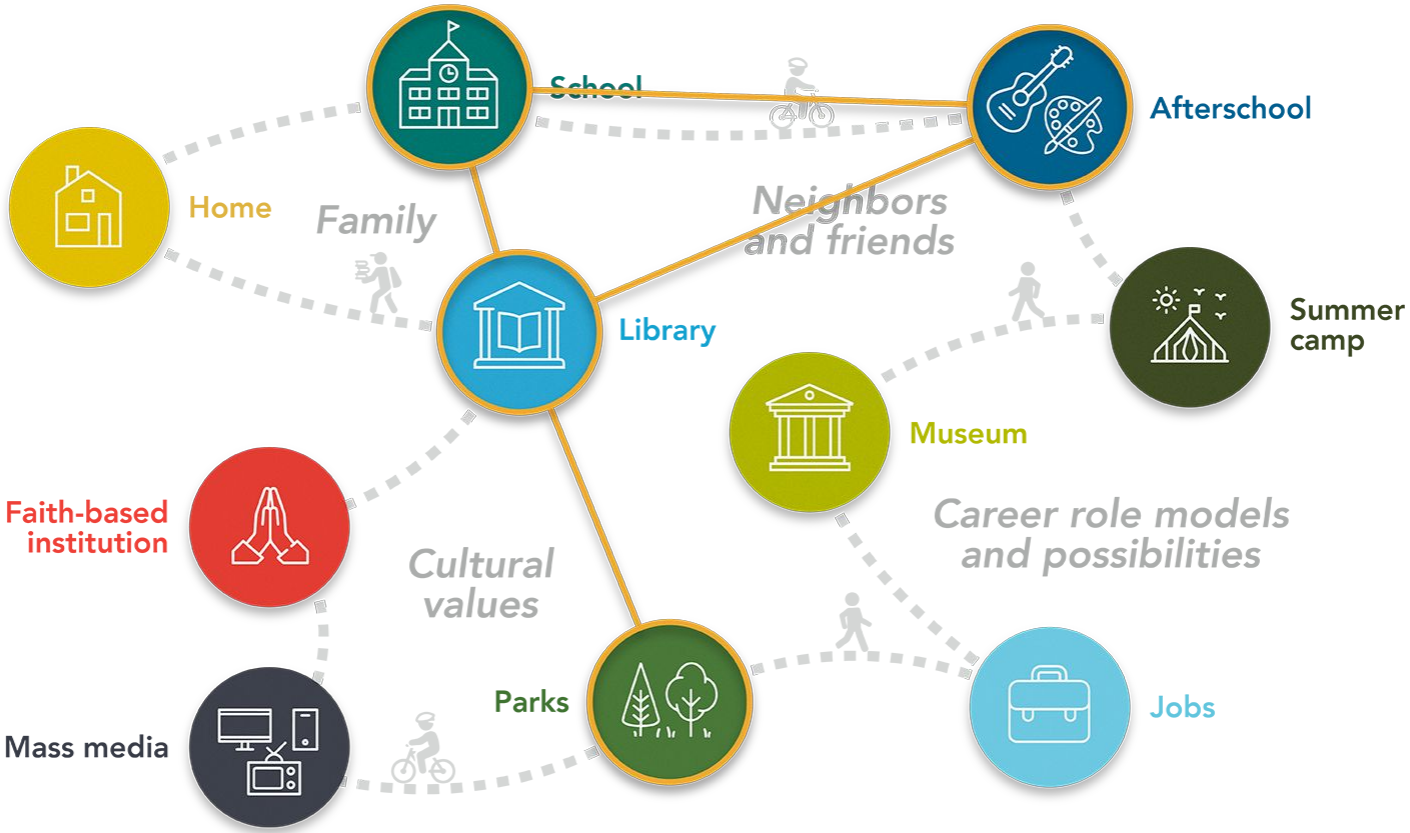

SEACOAST
SCIENCE CENTER


NASA

Partner


BROADER CULTURAL INFLUENCES
CONTEXTS INFLUENCING THE CHILD INDIRECTLY
INTERCONNECTIONS AMONG CONTEXTS
DIRECT INTERACTIONS OF CHILD & CONTEXT
Home
Neighborhood
Child care/School
Out-of-school
Government
Workplace
School Board
History
Institutions
Values
Geographic context
Customs


School
Afterschool
Home
Family
Neighbors and friends
Library
Summer camp
Museum
Faith-based institution
Career role models and possibilities
Cultural values
Parks
Jobs
Mass media


School
Afterschool
Home
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Neighbors and friends
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Mass media

Measuring Success

Surveys and Interviews adapted from the Collaboration Factors Inventory from the Amherst H. Wilder Foundation.

- People involved in the network trust one another.
- The level of commitment among network partners is high.
- People in this network have a clear sense of their roles and responsibilities.
- There is a clear process for making decisions among partner organizations in this network.
- My ideas about what we want to accomplish seem to be the same as the ideas of others.
- People in this network communicate openly with one another.

Storytelling

- New and/or deepened relationships
- On the ground examples of connected learning
- Organizational shifts in practice/approach

Institutional Shifts

- Relationships first, always and beyond the scope of the grant
- Brokering out to other organizations
- Co-crafted a shared vision and support one another in making it uniquely relevant to their community
- Focusing on distributed models of leadership and funding to develop long term sustainability

Activity

List, draw or map out assets in your ecosystems.

These could be **personal assets** that you or other individuals bring or **community assets** such as organizations, physical spaces or physical resources that your community has access to.

Community Assets

Associations / Potential Associations

Organizations, Initiatives, People, Programs, Projects, Businesses, Scout groups, After-school programs, 4-H, Libraries etc

Physical Spaces

Gardens, Parks, Forest/Nature Preserve, Trails, Lakes, Rivers, Coastal Access, Free meeting space, Libraries, Museums, Science Centers. Land Trusts, Historical societies, Lions club, VFW

Physical Assets

Tablets, Cameras, Audio and Video Recording, School Buses, Bicycles, Science Equipment, Naturalist Equipment, Maker supplies

Personal Assets

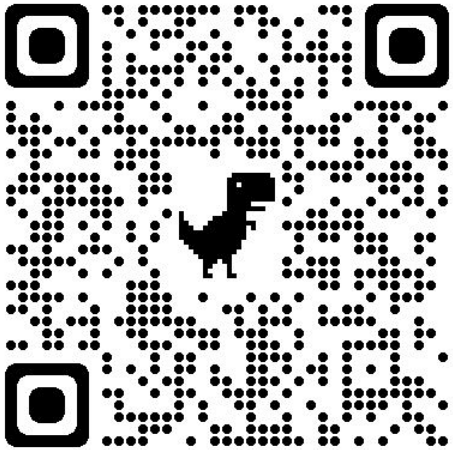
- Art/Music/Graphic Design
- Accessibility
- Storyboarding
- Organizing Ideas/Processes
- Outreach
- Facilitation
- Baking and Cooking
- Conflict Resolution
- Event/Trip Planning
- Multilingual
- Specific STEM Fields
- Education Equity
- Classroom Management
- Music
- Nature & Science Writing
- Website Development
- Data analysis/Coding
- Social Media
- Curriculum Development
- Framing Messaging
- Place-Based Education

- Big Picture Thinking
- Idea Generation
- Virtual Learning
- Diverse Learning Needs
- Listening
- Empathy
- Tactfulness
- Writing Proposals
- Teaching/Guiding Learning
- Explaining
- Mentoring
- Community Science
- Problem Solving
- Designing Experiments
- Creativity/Idea Generation
- Note Taking
- Social-Emotional Learning
- Trauma Informed Ed
- Volunteer Management and Development
- Hands-On Activities

Reflection discussion at your table

- Did you have an aha moment during this activity or presentation?
- Was there an asset you hadn't thought of or considered before?
- What steps might you take to bring the concepts of relationships, relevance and reciprocity back to your community?

Resources



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