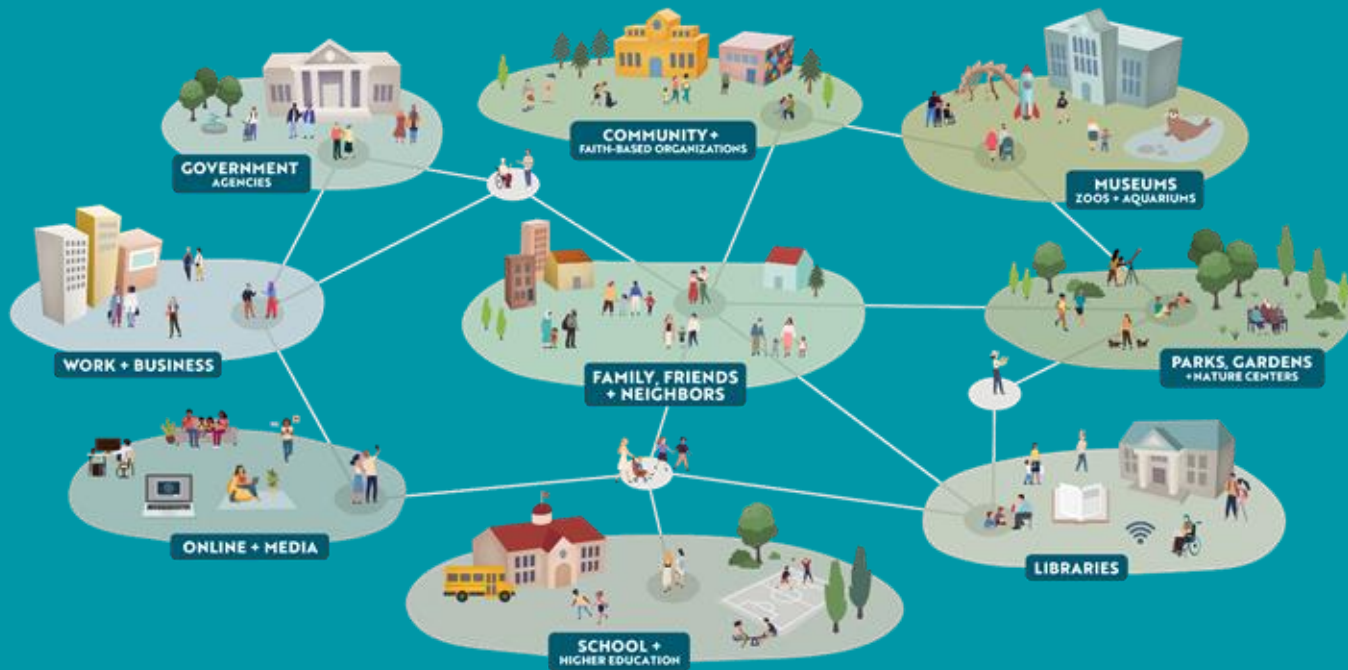


It Takes a Village: Science Center and Museum Roles in STEM Learning Ecosystems



Welcome!

ASTC Conference, Phoenix, AZ | Thursday, September 17, 2026

Introductions & Agenda



Christina Leavell, Community Manager, NISE Network,
Arizona State University, Tempe, AZ



Dr. KT Todd, Director of Research, Strategy &
Innovation, Children's Museum of Pittsburgh, PA



Beth Demke, Chief Executive Officer, North Dakota's
Gateway to Science, Bismarck, ND



Angela Damery, Director of Education, Sciencenter,
Ithaca, NY



Introductions & Agenda



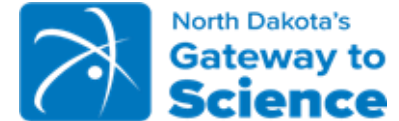
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**Values Part
1**

**Values Part
2**

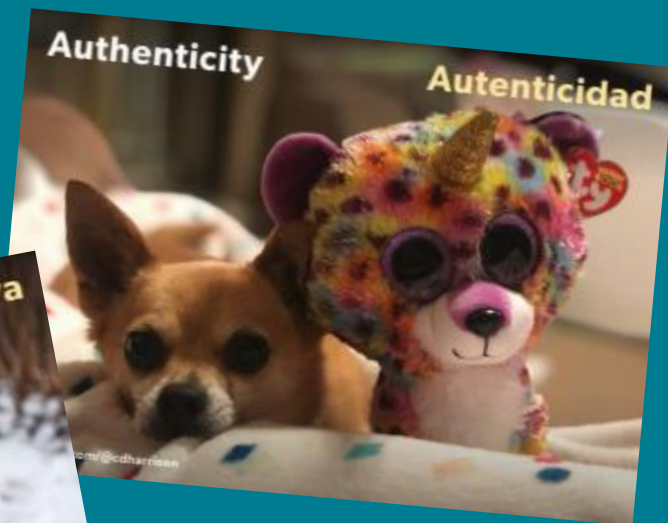
**Values Part 3
& Wrap Up!**

What Values Do You Share? Conversation Starter

Successful collaborations are grounded in shared values. Values shape the behavior and decision-making of an organization or collaborative group.

1. Look through the cards
1. Choose a value card (or two... or three...) that resonates with you and relates to your collaborative STEM engagement efforts
1. For now, hold onto your card(s)





Introduction to STEM Learning Ecosystems

**Christina Leavell
Community Manager, NISE Network
Arizona State University
cleavell@asu.edu**

STEM Learning Ecosystems



STEM Learning Ecosystems

KEY IDEAS

Community

STEM learning ecosystems are built and sustained through intentional practices; thrive through reciprocal relationships; and are grounded in their geographic and cultural context.



Belonging

Ecosystems can broaden participation by cultivating genuine relationships among individuals and organizations; creating a flexible and transparent culture; sharing programming and resources; and prioritizing a sense of belonging.



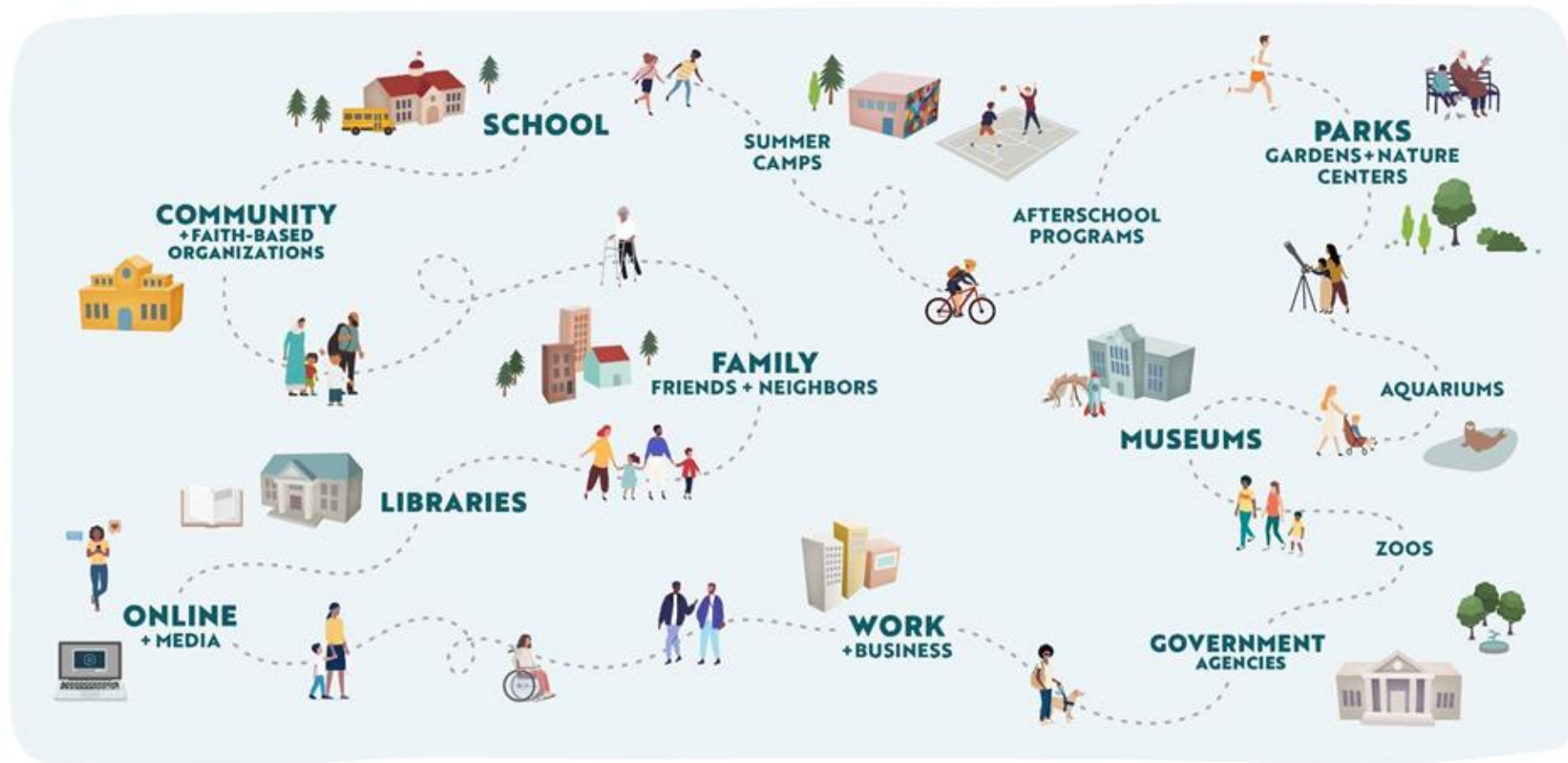
Engagement

Authentic STEM engagement starts with understanding what is relevant to learners and communities, then creates connections to content through active learning experiences.



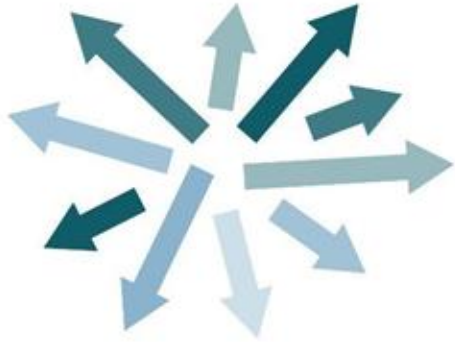
STEM Learning Pathways

Different journeys for learning across a lifetime

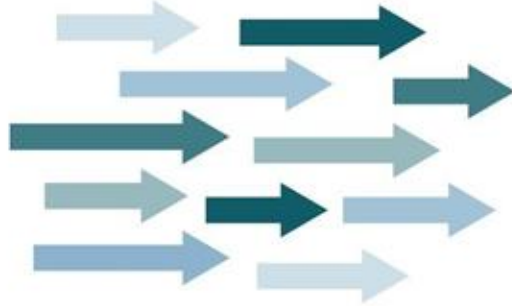


Collective Impact

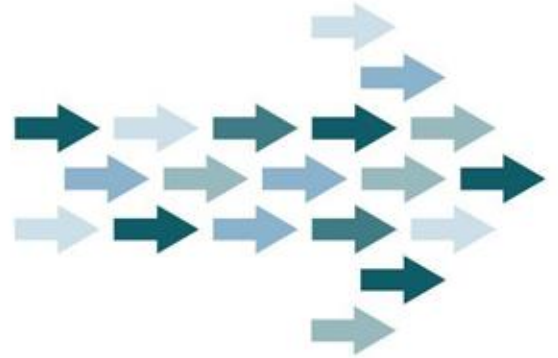
Organizations align efforts to achieve shared goals



Independent Impacts

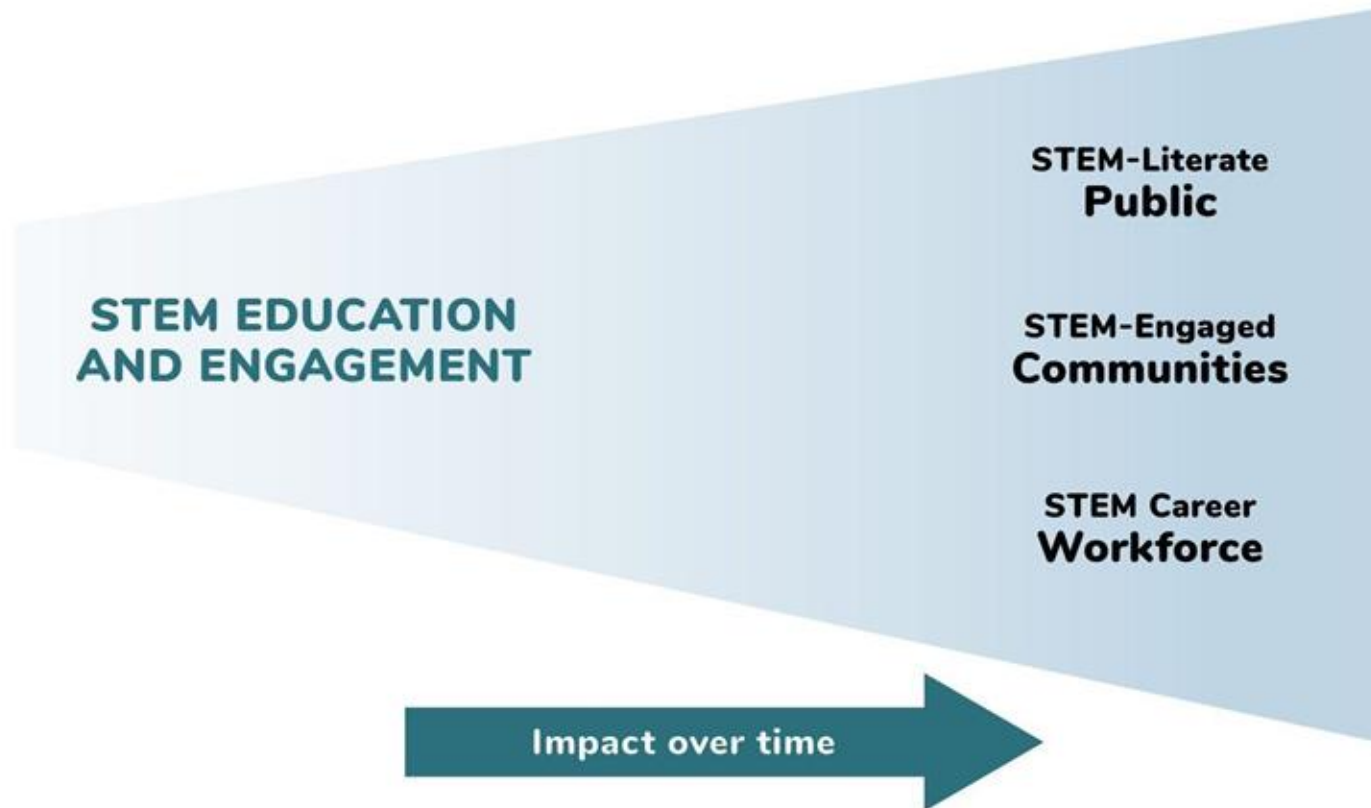


Coordinated Impacts



Collective Impacts

STEM Learning Outcomes



NISE Network Resources

Videos:

1. What Are STEM Learning Ecosystems?
2. Introduction to STEM Learning Ecosystems
3. Building and Supporting Strong Partnerships
4. Engaging Everyone in STEM Learning
5. Creating Authentic STEM Learning Experiences
6. Perspectives on STEM Learning Ecosystems, Belonging, and Authentic STEM Engagement

Professional Learning Activities:

- What is Learning Conversation Starter
- What Values Do You Share? Conversation Starter
- Depict Your Partnership

Illustrations:

- STEM Learning Ecosystems Illustrations

Online Workshop Recordings



**STEM LEARNING
ECOSYSTEMS**



<https://www.nisenet.org/stem-learning-ecosystems>

STEM Ecosystems Resources

STEM Ecosystems national network:

- Community of practice
- Convenings and online workshops
- Resources
- Newsletter
- List of participating ecosystems:

<https://stemecosystems.org/ecosystems/>



<https://stemecosystems.org/>

Dr. KT Todd

Director of Research, Strategy, & Innovation

Children's Museum of Pittsburgh

ktodd@pittsburghkids.org

Cultivating the STEAM Ecosystem in Pittsburgh

KT Todd

children's
museum.
pittsburgh
museumlab.



Our mission compels us to **forge connections** with artists, community partners, and neighbors to work on behalf of children, youth, and families.



Our ~150 staff members
create experiences for over
300,000 visitors each year.

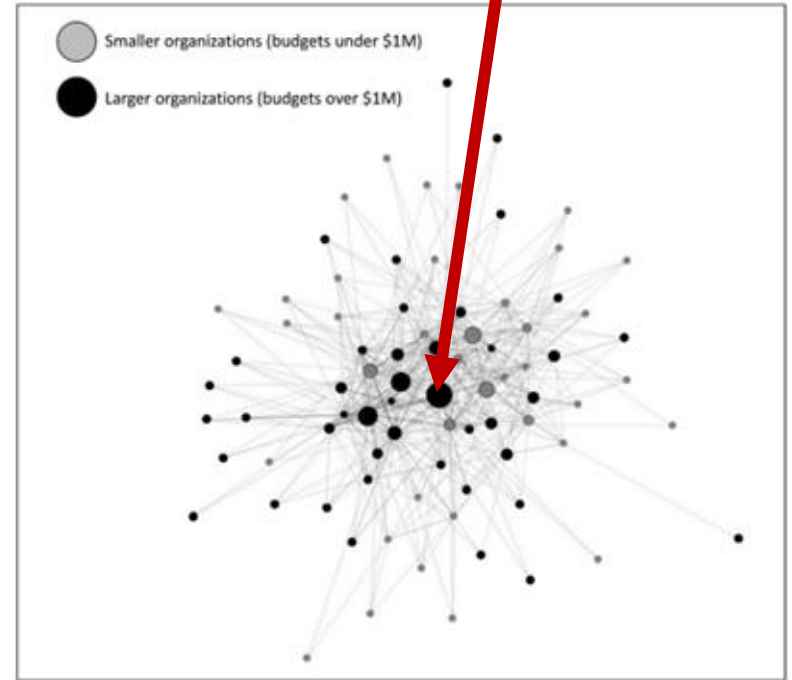


Our **campus** is
built around
partnerships...



...but **we didn't initially intend** to build an ecosystem.

Children's
Museum of
Pittsburgh



Akiva, T., Hecht, M., & Osai, E. (2024). Arts learning across a city: How ecosystem thinking helps shape understanding of Black-centered and Eurocentric arts programming. *Urban Education*, 59(3), 631-659.

Once we identified our
role on the ecosystem,
we wanted to know:
**how much could we
strengthen it with
intentional effort?**

THE HEINZ ENDOWMENTS

HOWARD HEINZ ENDOWMENT

VIRA I. HEINZ ENDOWMENT

First, we **defined** our ecosystem.

Our ecosystem is a community of people, organizations, and resources with the shared goal of supporting creative practice in Pittsburgh.

Like a garden, its thriving depends on diversity, balance, and active cultivation.

Then we chose **four focal programs** for our project.



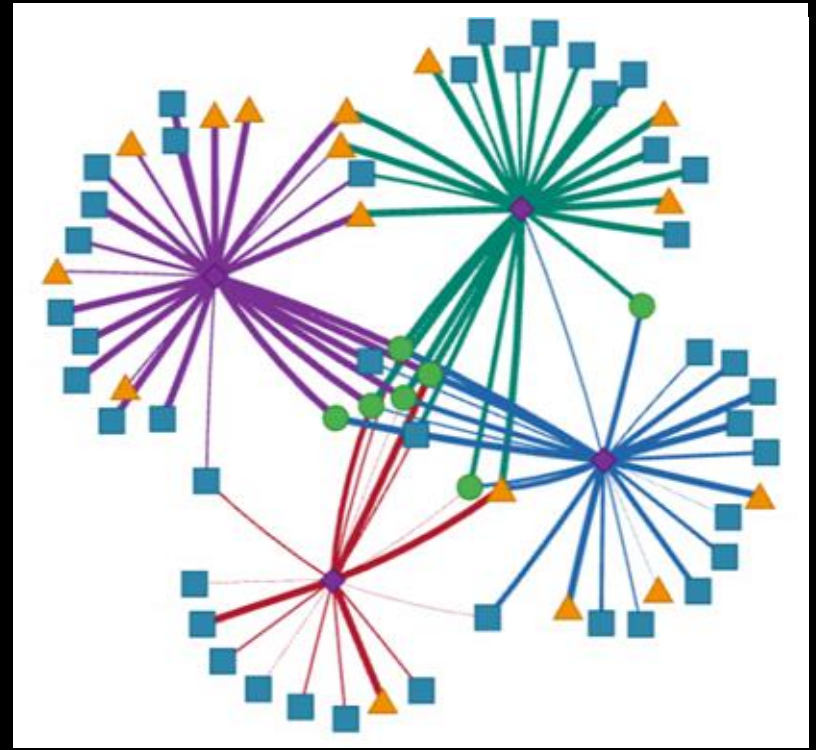
museumlab.



Next, we explored
those programs' **initial
roles** in the ecosystem.

Number of partners: 69
Number of connections: 92
Connection strength: 2.4 out of 5

Next, we explored those programs' **initial roles** in the ecosystem.



Number of partners: 69
Number of connections: 92
Connection strength: 2.4 out of 5

We set **goals**.

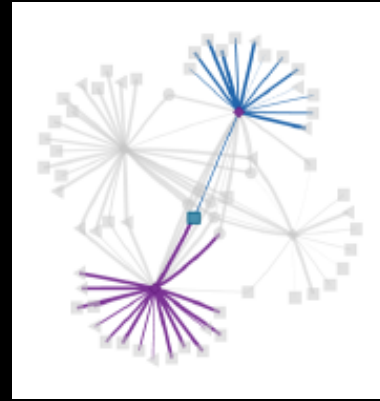
Investment in:

- Shared resources
- Strengthened skills
- Networking

Will lead to:

- Stronger collaboration between programs
- Higher ratio of connections to partners

Data helped us identify
areas of **opportunity**.



Now we're **making changes.**

Aligning schedules for multiple programs

Networking between programs

Youth + adult critiques and playtesting

Sharing photography, security, catering, DJ

Hiring alumni for speaker series

Group purchasing

We're continuously learning, but some **takeaways** are:

You don't have to create an ecosystem de novo; identify existing assets and adjust.

Ecosystems span boundaries; partners may value different goals.

Data helps showcase your impact, identify goals, and demonstrate progress.

Want to talk about using
data to grow your
community's ecosystem?

Reach me at:
ktodd@pittsburghkids.org

Growth

Crecimiento



unsplash.com/@milada_vigerova

Community

Comunidad



unsplash.com/@randyfath

Small Group Conversations

Share with the others at your table:

- 1. Your name and organization**
- 1. The value that resonates with you and why**
 - If you are in a large group, please share the value most important to you so everyone gets time to share
 - If everyone doesn't get time to share in this round, there will be time during the next

7 Minutes



Beth Demke
Chief Executive Officer
North Dakota's Gateway to Science
Bismarck, ND
beth@gscience.org

North Dakota's Gateway to Science

Founded in 1994 in a shopping mall

Opened this facility in March 2023

43,700 sq ft

100,000 annual visitors

40 staff – 20 FT, 20 PT

Budget \$2.5 million

<https://gatewaytoscience.org>



Inspiring the scientist in everyone!

Collaboration

Colaboración



Curiosity

Curiosidad



Integrity

Integridad





Who We Are

North Dakota's Gateway to Science is a hybrid science center and children's museum.

Our mission is to inspire the discovery of science through hands-on experiences.



North Dakota's
**Gateway to
Science**

Inspiring the scientist in everyone!

Interactive STEM Experiences

At the center in Bismarck



Across the state



Connecting Classroom to Community

- We spark students' interests and connect their passions with education and career opportunities.
- We invite STEM professionals to share their expertise and interact with students in our programs.
- We engage and empower parents, grandparents, caregivers, and educators, demystifying STEM.



The North Dakota STEM Ecosystem engages diverse stakeholders to shift mindsets and influence policy to achieve measurable results in the advancement of STEM education's support of workforce development in North Dakota

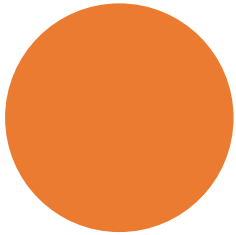
The North Dakota STEM Ecosystem is guided by the following Goals:

- The ND STEM Ecosystem will be a statewide resource for improving STEM access for all North Dakotans.
- The ND STEM Ecosystem will engage industry, community and education systems to address workforce challenges and STEM literacy.
- The ND STEM Ecosystem promotes a lifelong learning environment to develop employability and life skills and connect passion with opportunity.
- The ND STEM Ecosystem will be accountable by addressing the STEM education needs of North Dakota and disseminating results through NDSTEM.org website and social media outlets on a regular basis.

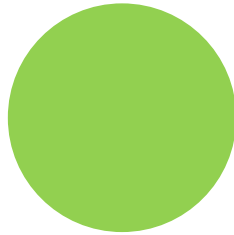
Advance all students as problem solvers and lifelong learners through STEM



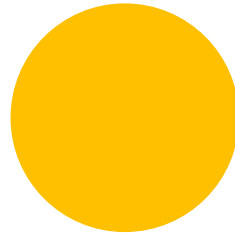
Managing the Ecosystem



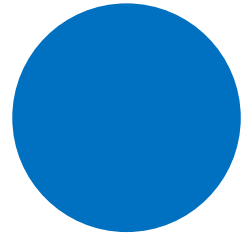
BOARD AND
COMMITTEE SUPPORT



FUNDRAISING/GRANTS



PROJECT
MANAGEMENT



COMMUNICATIONS

Managing the Ecosystem



BOARD AND COMMITTEE SUPPORT

- Facilitate meetings
- Work with Board President to plan agenda
- Manage SharePoint site for document distribution

Managing the Ecosystem



FUNDRAISING/GRANTS

- Establish new partnerships and build on existing partnerships
- Research grant opportunities
- Develop collaborative grant applications
- Develop sponsorship packages for projects

Managing the Ecosystem



PROJECT MANAGEMENT

- STEM Grants Program Support
- STEM Day at the Capitol
- STEM Day at the State Fair

Managing the Ecosystem



COMMUNICATIONS

- Update website
- Manage social media channels
- Publish quarterly newsletter



Contact

North Dakota's Gateway to Science

Beth Demke, Chief Executive Officer

1600 Canary Avenue • Bismarck, ND 58501

701-751-6903

beth@gscience.org

gatewaytoscience.org

facebook.com/gatewaytoscience

instagram.com/gatewaytoscience/

linkedin.com/company/gateway-to-science-center/



Inspiring the scientist in everyone!

Small Group Conversations

Sharing & Comparing Values as a Group

1. What do you notice about the group's choices?
 1. What might this say about your collaborative efforts?
- If anyone missed sharing their values last time, be sure to have them go first

5 Minutes



Angela Damery

Director of Education

Sciencenter

Ithaca, NY

adamery@sciencenter.org

ITHACA, NY

MISSION

Cultivate an engaged community of curious, collaborative, critical thinkers.

VISION

A community where people use science as a way of understanding the world.

Curiosity

Curiosidad

Collaboration

Colaboración

Playful

Juguetón/a

Founded on a History of Community Partnerships

- Founded in 1983 by local teachers
- Volunteer Built! Moved to the current location in 1993



About Us

- College town in rural Upstate NY
- Visitation
 - ~4,000 members (1/4 through Membership Access Program)
 - Over 100,000 visitors each year
- 25 staff
- 11 traveling exhibitions
- Education programs supported by local, regional, and national partnerships





Learning Ecosystems Northeast

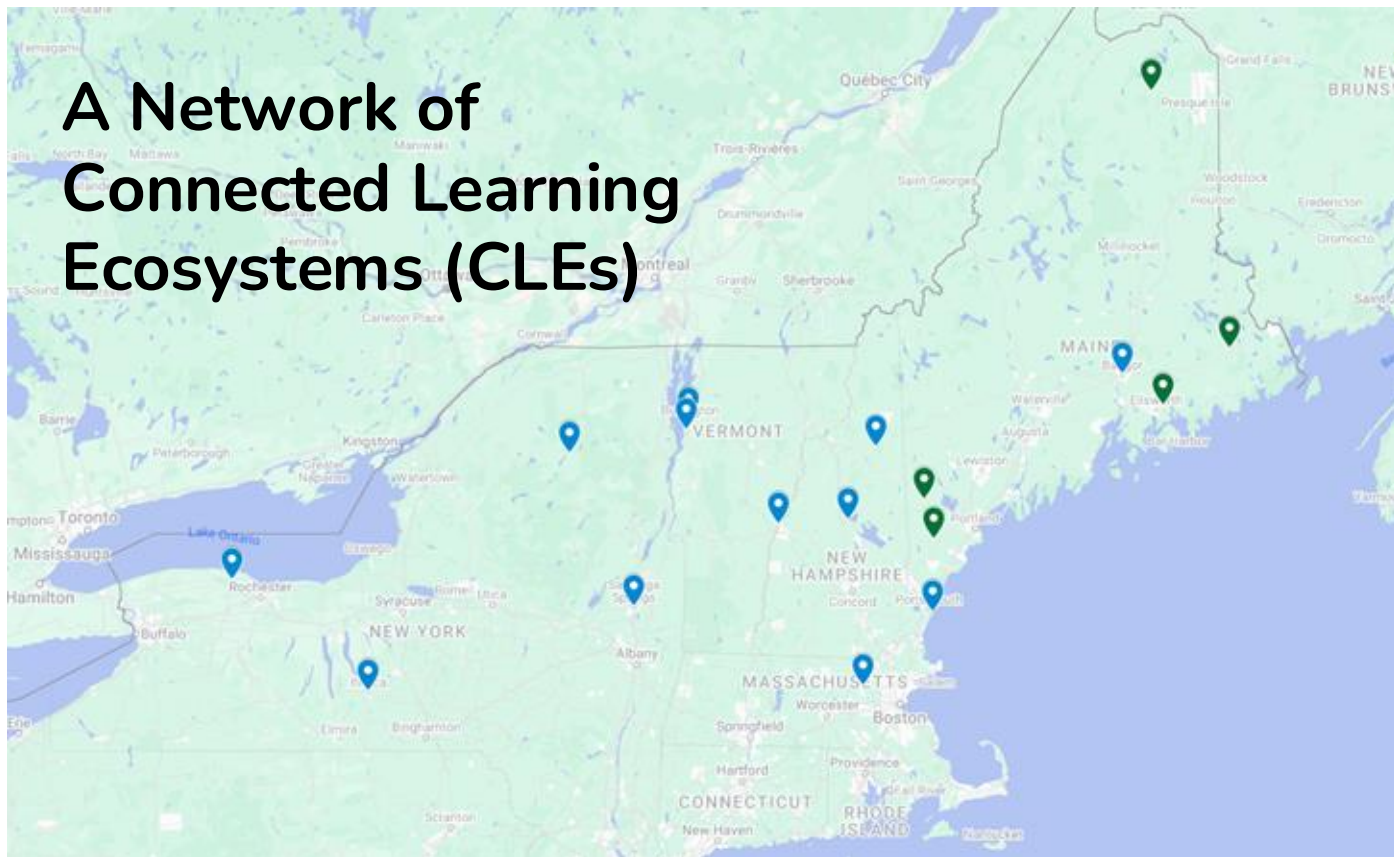
learningecosystemsnortheast.org/



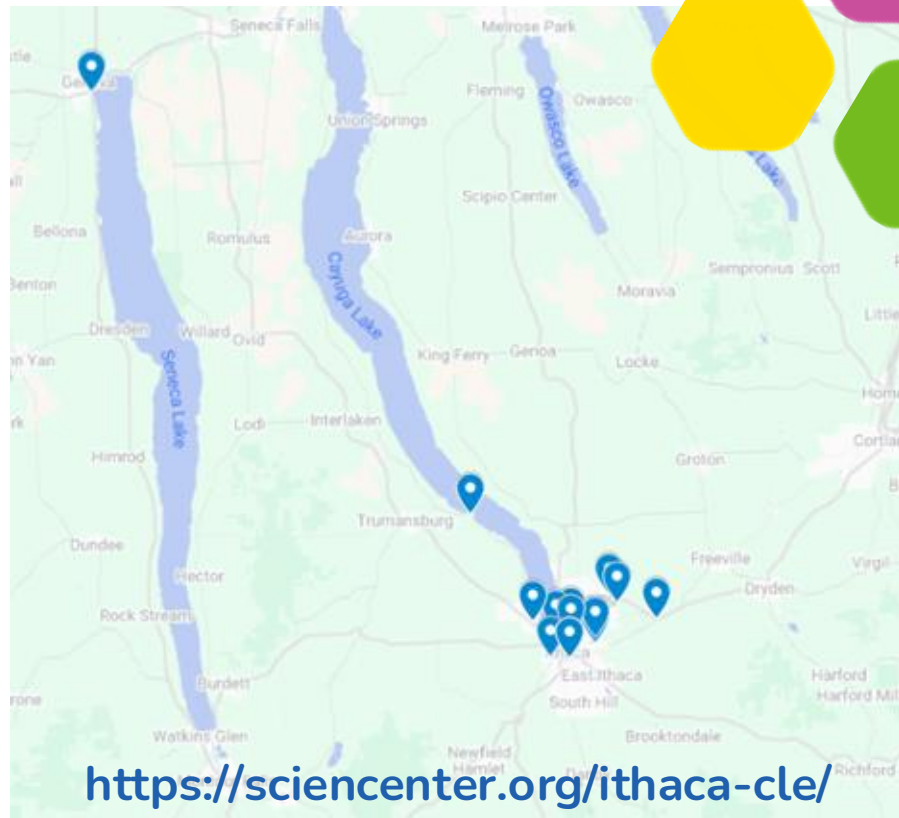


Learning Ecosystems Northeast

A Network of Connected Learning Ecosystems (CLEs)

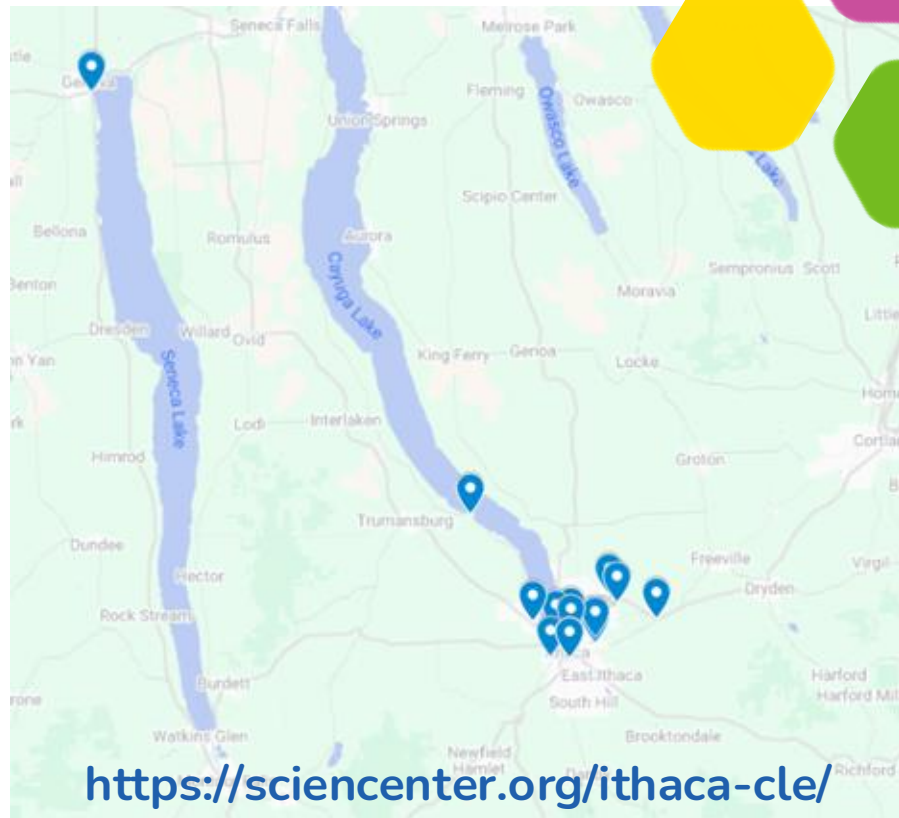


- **Ithaca CLE** established in 2024
- Hyperlocal, meets in person
- Members representing 27 organizations including:
 - Middle and High Schools
 - Informal Learning Institutions
 - Cornell University
 - City of Ithaca
 - Cooperative Extension
 - Libraries
 - Community Organizations



<https://sciencenter.org/ithaca-cle/>

- Finger Lakes CLE
- Regional, meets virtually
- Members representing 22 organizations including:
 - Middle and High Schools
 - Informal Learning Institutions
 - Rochester Institute of Technology
 - Cooperative Extension
 - NYS State Parks
 - Community Organizations



<https://sciencenter.org/ithaca-cle/>

Professional Learning & Resource Sharing

- Relationship building
- Meetings hosted by member organizations

Direct Youth Engagement

- Mini-grants to support connected learning experiences



Challenges

- Recruiting and retaining classroom teachers alongside informal educators
- Fostering a sense of shared ownership
- Broadening participation and deepening involvement



Strengths

- Sustainable relationship building
- Professional networking for on-the-ground practitioners
- Funneling federal funding and NASA educational resources to smaller local organizations in support of climate and data literacy projects



"Mycelium in forest floor," Peryton Mango

https://commons.wikimedia.org/wiki/File:Mycelium_in_forest_floor.jpg

Small Group Conversations

Determine the Group's Three Core Values

1. Working together as a group and decide on three core values.

It may help to categorize the selected cards into themes, and then narrow them down.

5 Minutes



Debrief & Questions

Christina's

KT's

Beth's

Angela's



Thank You!



ASU Center for Innovation in
Informal STEM Learning
Arizona State University

children's
museum.
pittsburgh
museumlab.

 North Dakota's
Gateway to
Science

 **Sciencenter**



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