

NISE Network Online Workshop

Museums Share Experiences Participating in STEM Learning Ecosystems

March 31, 2026



Today's Presenters:

- **Dr. KT Todd**, Director of Learning and Research, Children's Museum of Pittsburgh in Pittsburgh, PA
- **Lee Robinson**, Vice President of Education and Exhibits, Muse Knoxville in Knoxville, TN
- **Claire Stockman**, Vice President of Education, Creative Discovery Museum in Chattanooga, TN
- **Dr. Hoda Ehsan**, Chief Learning Officer, Da Vinci Science Center in Allentown, PA



Welcome! As we wait to get started with today's discussion, please...

Introduce yourself! Type your name, institution, and location into the [Chat Box](#)

Questions? Feel free to type your questions into the [Chat Box](#) at any time throughout the webinar. A selection of questions from the chat and workshop registration will be read aloud by moderators for presenters to answer during the Q&A.

Today's workshop will be recorded; those registered will receive an email when available here: nisenet.org/online-workshop-recordings

See you next time!

Upcoming Online Workshops...

Tuesdays; 2pm-3pm Eastern / 11am-12pm Pacific

- **April 14th:** Finding and Collaborating with NASA Experts - Solar System Ambassadors and Night Sky Network
- **May 19th:** Library Collaborations to Engage Local Public Audiences



Learn more and register at nisenet.org/events

Agenda

- **Christina**
 - Brief overview of STEM Learning Ecosystems
- **Dr. KT Todd**
 - How different disciplines intersect, looking at data to make changes in the work, cost savings by working together and structural alignment
- **Lee Robinson**
 - Tennessee statewide effort reaching rural communities across the state
- **Claire Stockman**
 - Building trust with local schools, aligning with state standards, and finding the fun and joy in working together
- **Dr. Hoda Ehsan**
 - Career pathways program, collaborations with schools and local businesses on a high school internships program

Introduction to STEM Learning Ecosystems

Christina Leavell

STEM Learning Ecosystems



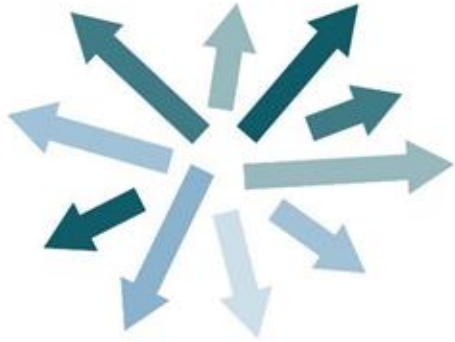
STEM Learning Pathways

Different journeys for learning across a lifetime

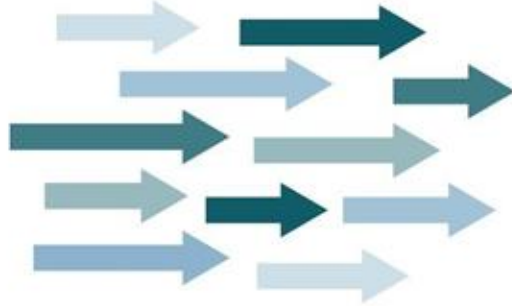


Collective Impact

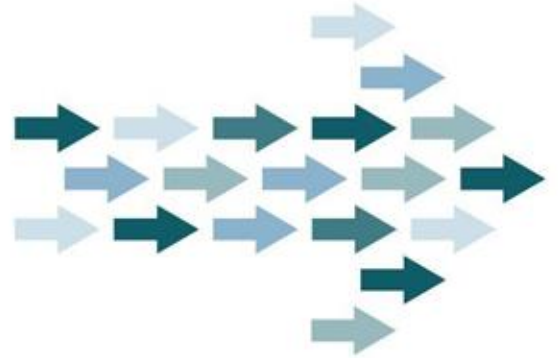
Organizations align efforts to achieve shared goals



Independent Impacts

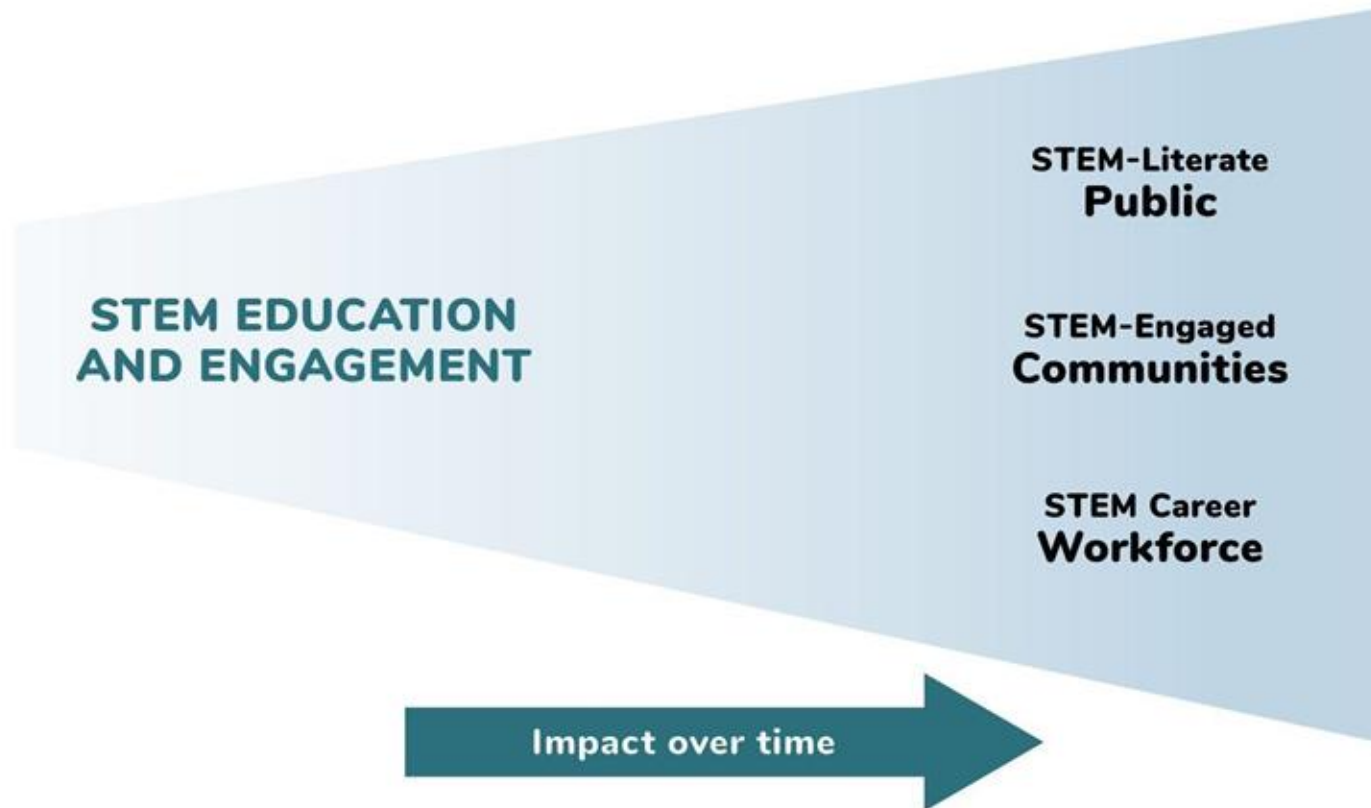


Coordinated Impacts



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 Learning and Research

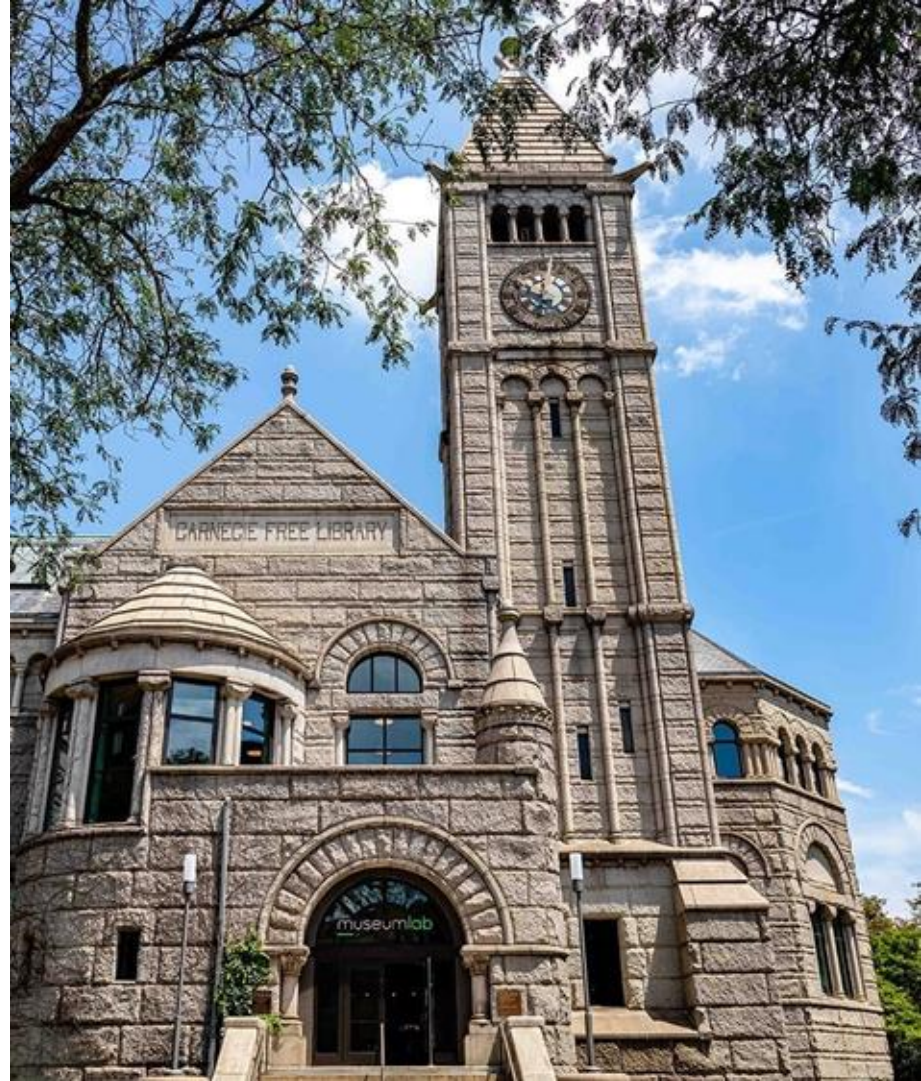
Children's Museum of Pittsburgh

ktodd@pittsburghkids.org

STEAM Ecosystems 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.



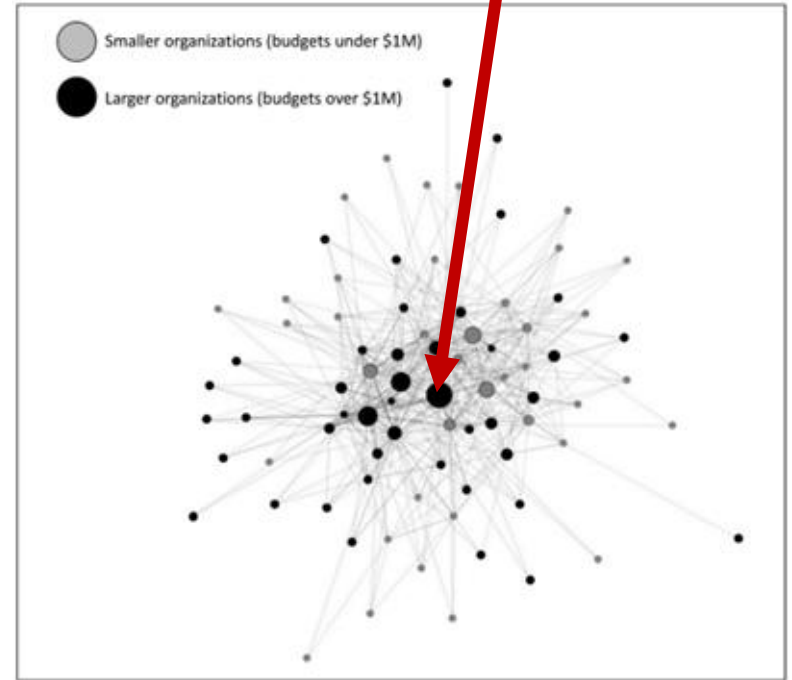


Our **campus** is
built around
partnerships...



...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.

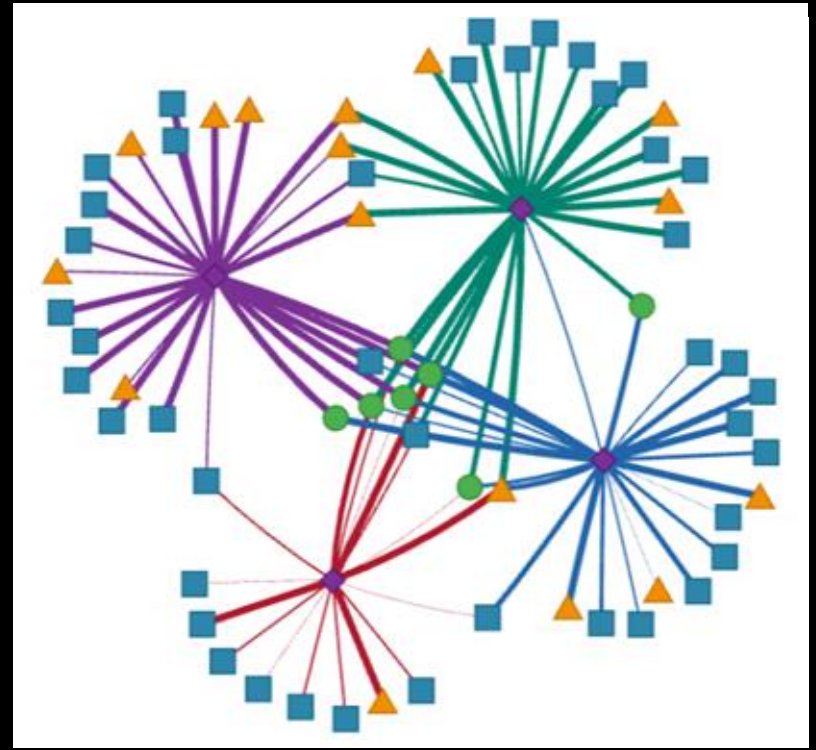
Then we chose **four focal programs** for our project.



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

We set **goals**.

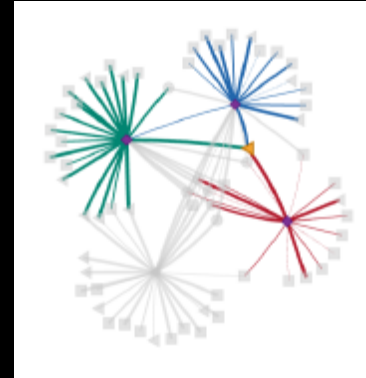
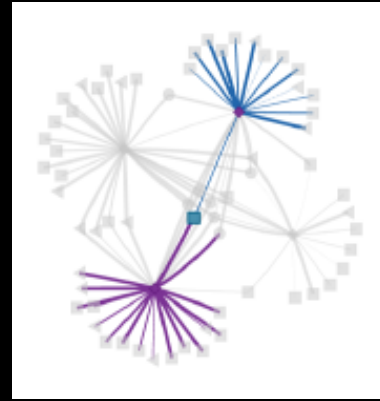
Investment in:

- 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**.



And we've started
making changes.

Adult membership:

- Networking event
- Shared costs for photography, security, catering, materials, & DJ
- Shared staffing
- Learning about prototyping

Youth membership:

- Playtesting and critique
- Networking
- Shared costs for activity materials
- Shared staffing
- Learning about prototyping

museumlab.



Maker residency:

- Networking event
- Alumni speaker for MLMP participants
- Shared curriculum about prototyping

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

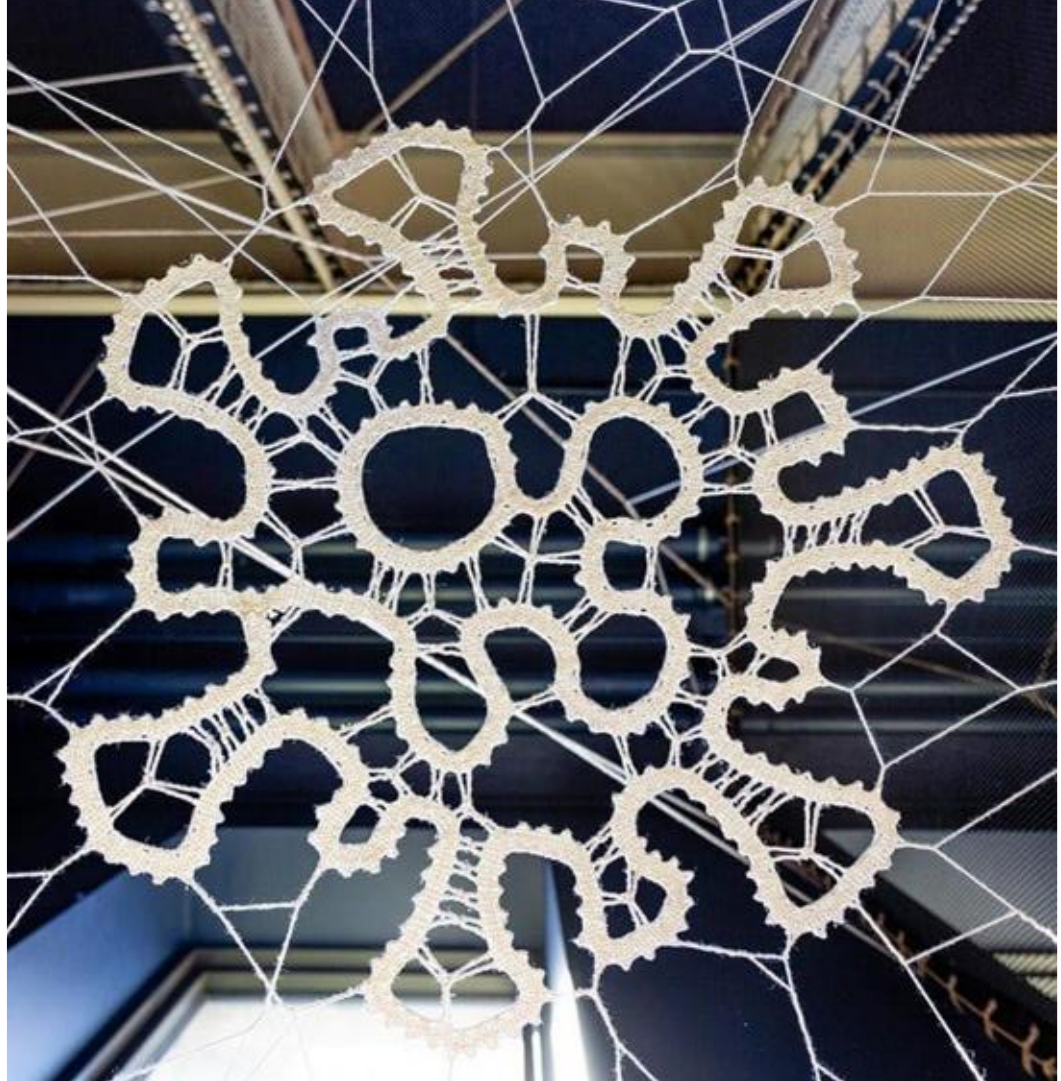
You don't have to create an ecosystem de novo; identify existing assets and adjust.

Ecosystems span boundaries; partners may value different goals.

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

Happy ecosystem-
building!

Reach me at:
ktodd@pittsburghkids.org



Lee Robinson

Vice President of Education and Exhibits

Muse Knoxville

lee@themuseknoxville.org

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About Muse Knoxville



Lee Robinson
Vice President of Education
and Exhibits

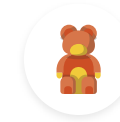
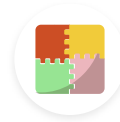




Muse Knoxville is a children's science, technology, engineering, arts and mathematics (STEAM) museum located in Chilhowee Park. Muse's hands-on exhibits and play-based programming in the museum, as well as in schools across East Tennessee bring STEM, the arts, health and wellness, and emergent literacy to life in the minds of children.

Each year, Muse Knoxville serves children and caregivers from across the country. In our current fiscal year, Muse has served families from 47 different states, 7 countries/territories, and over 940 unique zip codes through onsite museum attendance. Muse staff also travels each school year to 20 different counties for outreach STEAM lessons in classrooms across TN and KY, providing high quality, inquiry-based STEAM curriculum to students in preschool to 5th grade.

What we do/Our STEM Ecosystem



- On-site play-based museum exhibits for ages 0-12
- Daily STEAM activities/programs on the museum floor
 - Field trips and outreach lessons
 - Planetarium shows (Mobile Planetarium)
 - Childcare camps
 - Homeschool programming
- Workforce development apprenticeships for middle, high school and postsecondary students
 - Community events
- Birthday parties and team building events
 - Volunteer opportunities



SCIENCE
ALLIANCE
OF TENNESSEE



MoSH

MEMPHIS, TN

TENNESSEE
Rural Impact
PROJECT





SCIENCE
ALLIANCE
OF TENNESSEE



TENNESSEE
Rural Impact
PROJECT



“It has been exciting as well as a learning experience for me. I am taking so many great things back to my classroom and community.”

“I am taking away new ideas to use in my classroom and resources that could be beneficial in my classroom.”

“To each and every one of you, thank you for sharing your wealth of knowledge and supporting our efforts to provide STEM enrichment to our students, families, and communities. Job well done!”

“Small things can be BIG STEM ideas.”

“STEM really isn't that hard!”

TENNESSEE
Rural Impact
PROJECT





Claire Stockman
Vice President of Education
Creative Discovery Museum
cstockman@cdmfun.org



- Downtown Chattanooga, TN
- Opened in 1995
- Approx. 24,000 sf of exhibits
- Served 286,991 guests onsite and off-site in 2025
- 7,900 members in 2025
- Served 731 in Inclusion programs in 2025
- Approx. 60 employees (half part time, half full time)

Formal Education Partners

Hamilton County Schools
University of TN Chattanooga
Chattanooga State University
Public Education Foundation



Informal Education Partners

TN Science Alliance
TN Aquarium
Out-of-School Time Network
Early Matters
Oak Ridge- Center for Biofuels
Innovation

In-Museum Programs

Makerspace
STEAM Fellows
Camps
“STEM Sparks” Series
Science Demos, Field Trips

Outreach Programs

Outreach Lessons
Family Nights
StarLab
Science Troupe
STEM Jubilee

**JUST A SNAPSHOT!*



Standards-supporting



Standards-aligned



*JUST A SNAPSHOT!

In-Museum Programs

Makerspace

STEAM Fellows

Camps

“STEM Sparks” Series

Science Demos, Field Trips

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FOR EXAMPLE:



CHATTANOOGA CHAMBER
CITY CENTER COUNCIL

APRIL MEETING

WITH CHATTANOOGA QUANTUM
COLLABORATIVE

APRIL 2 | 7:30 - 9:00 AM
THE ULTRA CLUB - 519 W. 19TH STREET

MEETING SPONSOR:



Partnership
for economic development and growth



Danna Bailey,
Chattanooga Quantum
Collaborative

RSVP TO ATTEND | \$15 MEETING FEE INCLUDES NETWORKING & REFRESHMENTS
THE ULTRA CLUB AT FINLEY STADIUM | 519 W 19TH ST, CHATTANOOGA, TN 37408

One thing is a thing.
Two things is two things.
Three things is nothing at all.

Inclusion Programs



club
DISCOVERY

sensory
night

TURQUOISE
TRAIL

Inclusive
Environments
Training



Claire Stockman, Ed.S

VP of Education

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Dr. Hoda Ehsan
Chief Learning Officer
Da Vinci Science Center
hoda.ehsan@davincisciencecenter.org



DA VINCI SCIENCE CENTER® AT PPL PAVILION

THE Regional Hub for STEAM Education

Da Vinci Science Center

- A Regional Hub for STEAM Education
- Serving 22-county region within a 100-mile radius
- Spearheading initiatives to meet priority school and community needs



NEW DOWNTOWN ALLENTOWN SITE



STEM Learning Ecosystem



The Da Vinci Science Center is the region's hub for STEAM education, and contributes to every component of this ecosystem.

Local Industries: Potential Employers



The Da Vinci Science Center works closely with local industries: sponsorship and programming create a **sense of co-design** to the science center.

Career Development for All Learners



Career Awareness → Skill Building → Agency

From Career Awareness to Agency

Da Vinci accomplishes these through

- Exhibit floor experiences**
- Career-based programs**
- Inspirational events**

Olympus Endoscope



Mack LR Electric Vehicle



Factory Floor Videos



Exhibits : Showcasing Industry



Martin Guitar Cutaways



LVHN Medical Technologies



Bosh RexRoth



Science Shows

Exhibits : Exploring Careers



Career Spotlights



Career Kiosks

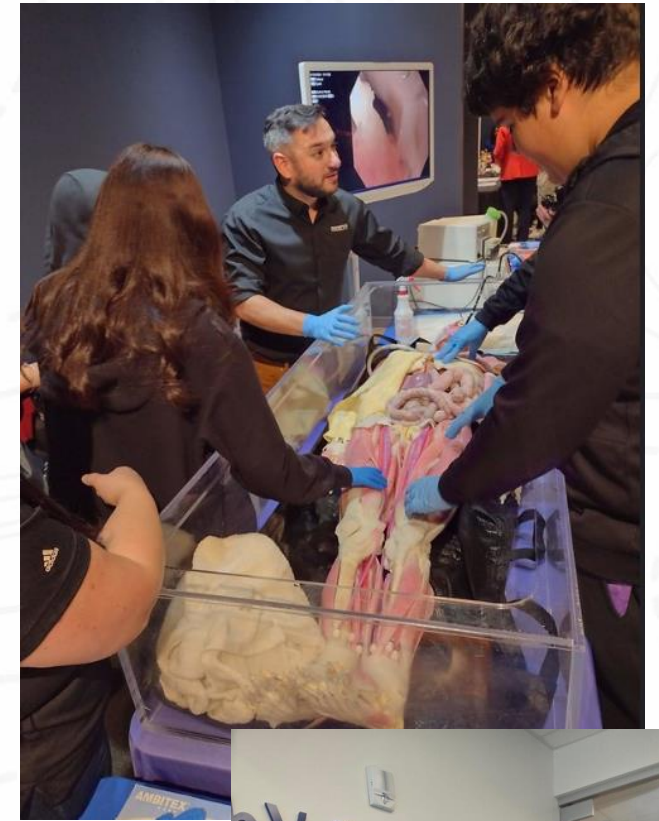
CAREER-BASED PROGRAMS

Middle School Career-Pathways Programs

- Be a Health Scientist
- Be a Space Scientist
- Be an Innovator

High School Career Pathways Programs: Year-Long experience

- Fall Exploratory Course at Schools
- Spring Concentration Course
 - Career Paths: Healthcare, Manufacturing, and Education
 - Co-developed with employers and experts in the field
- Paid Summer Internship Experience



SUCCESS STORIES FROM 2024-2025

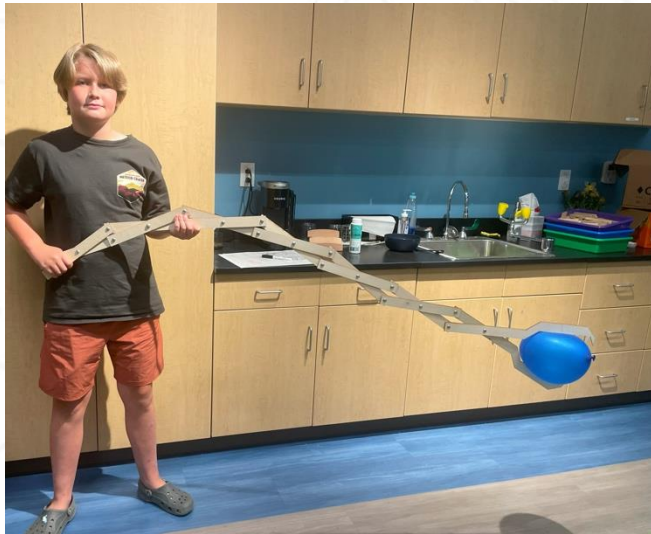
**High School Career Education Pathways
displaying their Youth Development Lessons.**



**High School Career Pathways Education interns with their
certification of program completion in the summer of 2025!**
The only graduating senior was offered a full-time job after
her internship experience.



DISTINCT TECHNOLOGY RESOURCES





WISE FORUM

WOMEN IN SCIENCE AND ENGINEERING
DA VINCI SCIENCE CENTER

Bringing together high
school and college students
with accomplished
professionals in STEAM fields

Presented by



INSPIRATIONAL EVENTS

CAREER CONNECTION DAYS

WHAT ARE CAREER CONNECTION DAYS?

Students explore a variety of science, technology, engineering, art, and math (STEAM) related careers and businesses that exist in the region.



Family & Community Engagement

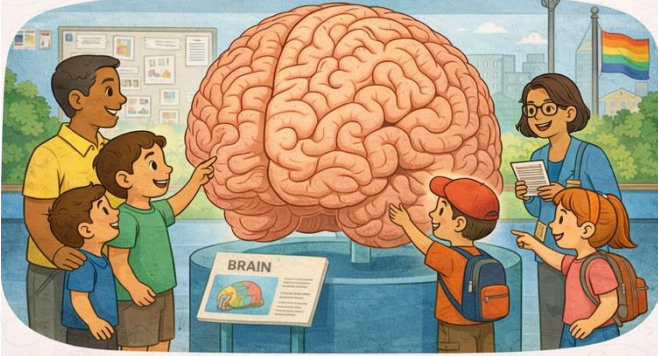


Exhibit-Based Exploration



Work-Based Learning



Career Agency

School & After-School Programs



Career Connection Day



**Designing Career Agency
Through a Connected
Learning Ecosystem**

THANK YOU

Dr. Hoda Ehsan, Chief Learning Officer
Hoda.Ehsan@davincisciencecenter.org



Resources, Reminders and Q&A

NISE Network Related Resources

- STEM Learning Ecosystems nisenet.org/stem-learning-ecosystems



STEM **LEARNING**
ECOSYSTEMS



Resources & Opportunities



Learn more and access
the NISE Network's online
digital resources
nisenet.org/browse-topic



Read our monthly newsletter
nisenet.org/newsletter



Past Recordings of Online Workshops
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Thank You



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ASU Center for Innovation in
Informal STEM Learning
Arizona State University

NISE
NATIONAL INFORMAL
STEM EDUCATION
NETWORK

Q & A