Building and Strengthening STEM Learning Ecosystems: A GROWING GUIDE TO SUCCESS
“Launched in 2019, the STEM Learning Ecosystems Discussion Series features conversations with Ecosystem leaders from around the world about the most pressing topics facing their communities today. Topics of high interest were identified through survey data and the self-assessment, Ecosystems Indicator Tool (EIT).”
“A well-organized network can be a huge asset that business is looking to leverage,” shares Katie Grootegoed of NeoSTEM. “Our collaborations give business access to the range of public and private schools in the region, while also allowing them to tap into more nimble partners in the ecosystem first to pilot ideas.”

Leveraging network partners to support business partnerships was a common theme and the Great Lakes Bay Regional STEM Alliance and PA Seed both talked about their abilities to engage employees and businesses through tours and site visits.

“We were really lacking talent, especially STEM talent, in our area,” Lori Flippin says, introducing the Great Lakes Bay Regional Alliance origin story. “Our four chambers came together to work on a business attraction project to address the issue. Meanwhile, we brought together educational entities to work on the talent pipeline. We are working to support all regional industries, including automotive, agriculture, I.T. and healthcare.”

“A well-organized network can be a huge asset that business is looking to leverage,” shares Katie Grootegoed of NeoSTEM. “Our collaborations give business access to the range of public and private schools in the region, while also allowing them to tap into more nimble partners in the ecosystem first to pilot ideas.”

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“International capitalism alone is not a sustainable business model. There need to be opportunities for all and real public value,” says Rob Boyajieff describing Siemens’ approach to business and community engagement. “We want to use technology and modernization as the means to create more connected, thriving communities. If a college campus undergoes a modernization project, students should be involved in that design process. That is real-world, workforce development experience right there.”

“We have definitely learned from our failure of not listening first,” says Dr. Lindsey Rutherford Sides of PA SEED. “Small tweaks to your verbiage to show the connections are sometimes all it takes, but that means you have to listen to industry needs first. I recommend doing small listening tours as a start-
Know your Industry. Do your research and be prepared. Know where employment gaps exist and learn about future projections. Understanding industry priorities and pain points are useful as well.

Leverage your community assets. Work with local organizations that convene and support business and industry. These might include Chambers of Commerce, Workforce Investment or Development Boards and other Economic Development Councils. Post-secondary institutions can add huge value too.

Communicate your value and needs. Don’t be afraid to have honest conversations with business partners about your needs. Also, make sure that the discussion is well-rounded and you are able to simply (sans jargon) communicate your value.

Listen to business leaders. Listen to their needs first. Then take the time to understand how your work can offer solutions.

Identify the right people. Make sure you are connected with the right person(s). Different roles and responsibilities in all organization, make sure your business representatives are connected with the right people on your side and vice-versa.

Cultivate the partnership. Building relationships take time and effort. Invite partners to events; keep them in the loop by sending relevant and brief information. Put the time in to develop mutually beneficial, respectful unions.

Say thank you. Don’t forget to recognize partners (this goes for all types of partners) and thank them both privately and publicly (if appropriate) for their support. This can be done from the beginning of a relationship (e.g. thanks for attending this event, speaking on this webinar, etc.).

DON’T BE AFRAID TO PUT YOURSELF OUT THERE. DEVELOP A STRONG BRAND FOR YOUR ECOSYSTEM AND SHARE IT WITH EVERYONE YOU MEET. PARTNERSHIPS BEGIN AT ANY TIME AND IN ANY PLACE.

PA SEED has ‘flipped’ the conversation for the education community in approaching business, with their FREE ‘EducatorExcursions’ program, educators visit industry to learn from business.

“‘I’m always amazed with the six-degrees of separation concept. There have been so many times where I am sitting next to someone new who has heard about our work from another partner. Through random conversation, I leave the meeting with a new partner on board,” Grootegoed says. “We have also learned a lot through our shortcomings. Even with failure, through conversations, we learned the more you can show others the work is real, with real people behind it, the more compelled people are to join you.”

KNOW YOUR ASSETS, LISTEN TO INDUSTRY, COMMUNICATE THE VALUE, INVITE PARTNERS IN AND EXPRESS GRATITUDE – IN THAT ORDER.

PANELISTS
Robert Boyajieff, Siemens Industry, Inc.
Lori Flippin, STEM Initiative Leader, Great Lakes Bay Regional Alliance, Great Lakes Bay Regional STEM Initiative
Katie Grootegoed, Director of Technology Enhanced Learning, Breakthrough Schools, Northeast Ohio STEM Learning Ecosystem
Lindsey Rutherford Sides, Ed.D., Supervisor of STEAM Education, Bucks County Intermediate Unit, PA SEED

A FULL RECORDING OF THE WEBINAR IS AVAILABLE AT: https://www.youtube.com/watch?v=SKNT5C1yxMg

STEM Learning Ecosystem Discussion Series - Pressing Topics
The Business Connections Conversation is the fourth in a series of webinar-based discussions designed to meet the needs of local and regional Ecosystem leaders have identified. Topics of high interest were identified through a survey distributed to Ecosystem leaders, as well as members that make up the STEM Learning Ecosystem Community of Practice. Panelists were selected based on self-assessed expertise in each area based on the data collected from the same survey and Ecosystems Indicator Tool (EIT).

OTHER WEBINAR TOPICS IN THIS SERIES INCLUDE:
• Communications
• Organization and Governance Structures
• Programs
• Fundraising
COMMUNICATIONS:
Celebrating Success

IF WHAT YOU DID ISN’T COVERED PUBLICLY IN SOME WAY, IT IS LIKE IT NEVER HAPPENED.

Effective communications are as critical for ecosystems’ success as engaged partners. In a conversation series, Pressing Topics, three ecosystem leaders share ideas for connecting with any audience.

The statewide New Jersey STEM Pathways Network is lucky to call Kim Case its managing partner. Case works for a communications firm on top of her role at the Research & Development Council of New Jersey and her former life as a lawyer. With a diverse set of skills, Case has the entire state talking about STEM.

“We were able to expand an existing program’s NJ STEM Week into a whole Month. March is officially NJ STEM Month by gubernatorial proclamation,” Case shares. “By offering mini grants to partners throughout the state and using free communication platforms like Twitter, the New Jersey STEM Pathways Network leveraged work that was already happening in the state as an opportunity for communities to get excited about STEM. It’s a win-win for everyone. Community-based organizations are able to highlight their work, families are notified of existing (often times free) programs in their areas and it makes legislators look great.”

HIGHLIGHTING THE WORK OF REGIONAL PARTNERS BUILDS TRUST AND BOOSTS YOUR COMMUNICATIONS EFFORTS IN WAYS ONE ORGANIZATION CAN’T DO ALONE.

“Our goal is to amplify the voices of all network members,” says Remake Learning Lead LaTrenda Leonard Sherrill. “We are always asking our Ecosystem members to submit information on various channels. Remake Learning uses the home page of our website as the main connection point for all members. Our blog and other pages discuss all of the work going on, including events hosted by other partners and member profile pages.”

IT’S WORTH INVESTING RESOURCES TO EFFECTIVELY COMMUNICATE THE WORK.

Leonard Sherrill also speaks candidly about learning from failures. “By relying on partners to generate content, we realized the partners with more resources were able to contribute more. We had to take a step back from communications to look at our work through an equity lens. Using our equity pillars, we were able to leverage Remake’s communications resources to highlight work with our rural students, girls and students of color.”
IN THE BEGINNING, WHEN YOU HAVE FEWER RESOURCES AND VOICES, IT IS IMPORTANT TO DIVERSIFY YOUR COMMUNICATION MEDIANS. FROM SOCIAL MEDIA TO PRESS RELEASES, WEBSITES TO OP-EDS, THERE ARE SO MANY WAYS TO DELIVER YOUR MESSAGING IN WAYS THAT KEEP IT INTERESTING.

With fewer resources, Cohort 4 Ecosystem Lead Heddy Clark shares how STEM SENC keeps the message interesting. “As a newer Ecosystem, we are still pulling things together as we go along. Right now, our content is mostly made up of relevant information I pull from the different listservs and distribution lists I am on to create a PDF newsletter.”

“I am also finding opportunities to speak at conferences and forums to spread the word. I recently spoke at a conference with many legislators in attendance. Even just five minutes on the agenda gets STEM SENC included in the follow-up minutes posted to their website. That creates a domino effect.” Clark continues, “I have even written an Op Ed, which has worked really well in our favor. I was even able to secure a little bit of funding through these methods!”

**PANELISTS**

Kim Case, executive director, Research and Development Council of New Jersey; New Jersey STEM Pathways Network

Heddy Clark, director, STEM Learning Cooperative, University of North Carolina Wilmington; STEM SENC

LaTrenda Leonard Sherrill, lead, Remake Learning, CS for PGH; Pittsburgh Regional STEM Learning Ecosystem

**PARTNERS**

STEM SENC

NEW JERSEY STEM PATHWAYS NETWORK

A FULL RECORDING OF THE WEBINAR IS AVAILABLE AT:

https://www.youtube.com/watch?v=eQ0Cq-IfqvU

**TAKEAWAYS**

Be Consistent.
Whether you do communications work yourself or hire experts, the secret to being effective is being consistent.

Plan.
Communications must be planned alongside all work and initiatives.

Concentrate on channels that work for you.
Ecosystems don’t have to pursue every communication medium, start with what works for you first.

Press releases and op-eds effective vehicles for raising public awareness and creating opportunities.
They often result in a domino effect where one contact leads to another etc. Blogs and social media are also great tools.

Highlight existing work.
Ecosystems can highlight the work of their partners and of the collaboration and don’t need to create all of the content.

Reuse and repurpose content.
People miss things and find news for so many different mediums. Old content can seem new when repurposed.

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- Organization and Governance Structures
- Programs
- Fundraising
Governance: Building Ecosystem Culture

The Lancaster STEM Alliance trajectory was aligned to strategic priorities from the start. “We have five strategic priorities that help us align under a common vision,” says Willonda McCloud of the Lancaster STEM Alliance. “The Alliance is made up of K-12 schools, informal learning organizations, universities and industry. The five priorities allow partners to find a place for their expertise and operationalize together.”

McCloud shares that meetings are efficient, with the Alliance’s backbone organization, the Steinman Foundation, taking on the overall organization of the Alliance and the subgroups taking responsibility for their goals during subgroup meetings. “It keeps partners engaged and coming back to the table,” says Willonda. “Each subgroup has a chair responsible for moving that work along as well. Establishing a process like this allows us to be respectful of people’s time and they know what to expect.”

Kansas City became the KC STEM Alliance through an evolution of existing Project Lead the Way and First Robotics partnerships pushed further with philanthropic support. Ann Zimmerman, director of the KC STEM Alliance, recalls the history of the ecosystem and the evolution of its governance structure: “In 2006, we had multiple school districts implementing best practices. We did some strategic planning and realized we could create this umbrella organization over what was already happening to gain some synergy and scale; this would give us the opportunity to align learning and connect to industry.”

She explains that the Kauffman Foundation had been a major investor and helped enable the official formation of the ecosystem in 2012.

FROM SETTING PRIORITIES TO DECIDING WHAT GETS DONE AND WHEN, ECOSYSTEMS CAN’T THRIVE WITH A SYSTEM OF ORGANIZATION AND GOVERNANCE.

Some ecosystems rely on work groups; others have structures that include multiple boards; and some are far less structured. Leaders from Lancaster, Tulsa and Kansas City, all share information about how they have organized their work and communities.

AT FIRST OUR ECOSYSTEM JUST CONVENED PARTNERS TO SHARE BEST PRACTICES AND RESOURCES. BY BUILDING OUT OUR STRUCTURE TO INCLUDE AN ADVISORY BOARD, WE WERE ABLE TO EXPAND CAPACITY, SCALE AND CONNECT TO INDUSTRY.
Look at the landscape. Find your assets to build on early. Making connections that are almost there will give you something to talk about and build momentum. Also, identify the gaps that need to be addressed. This work will create longer-term changes in communities that produce thriving economies.

Planning is critical. Designing your bigger vision for the work is important. It might take you a while to get there, but understanding the challenges you want to solve and identifying benchmarks to get there will give you a map when things get messy.

Systems work. It can take a while to develop new systems that people use to share information, collaborate and track progress, but it’s worth the time invested. Mechanisms to create and track the work will allow you to scale.

Track your progress. Measurement can be tricky, especially in the beginning when things are messy, however, it can provide a historical reference of progress when new partners and funders start to notice you. Find things you can track and review metrics consistently.

Ask for help and elevate community leaders. Recruit experts in the community to lead work groups or act as ecosystem champions. By elevating existing talent, you ‘work smarter,’” making them look good, getting quality work done, and creating another arm of publicity to advertise the work.

Celebrate success. No success is too small to get excited about. Celebrate your partners, convene and communicate often. Keep your partners coming back.
ECOSYSTEMS CAN LEVERAGE EXISTING ASSETS IN A COMMUNITY TO HIGHLIGHT, ALIGN AND SCALE PROGRAMS AND INITIATIVES FOR ALL LEARNERS.

Ecosystems in the STEM Learning Ecosystems Community of Practice learn from one another in countless ways. In a conversation series, Pressing Topics, three ecosystem leaders share their best thinking around leveraging partners in the design and scaling of programs and initiatives.

Saskia Traill, senior vice president of ExpandED Schools, says that philanthropic partner, the Pinkerton Foundation helped the NYC STEM Network to build on existing resources and partnerships to best serve the community. “We are really lucky to have so many committed cultural institutions in New York City,” says Traill. “Questions from funding partners helped us connect all the great work already going on. This led to the creation of initiatives like the Educators Academy that supports aligned STEM learning.”

Communities are the foundation of our work, and it is crucial to involve them in the design and implementation of programs and initiatives. Kansas City STEM Alliance, AZ SciTech, First 2 Network (West Virginia) and Symbiosis (British Columbia) all echo the importance of listening sessions with inclusive representation in their own regional work as well.

ADDING DIVERSE VOICES TO THE INITIAL INITIATIVE DESIGN ENSURES PROGRAMMING MEETS ACTUAL COMMUNITY NEEDS AND CHALLENGES US TO LOOK FOR LANGUAGE THAT MAKES STEM ACCESSIBLE FOR ALL.

Community listening sessions to inform programs are critical. “San Diego is a pretty large region, in order to ensure we were meeting community needs, the Ecosystem decided to focus on one neighborhood at a time,” says Kris Mooney, director of education, Fleet Science Center, San Diego. “52 Weeks of Science, an initiative promoting a science activity every week, leveraging the assets of the Barrio Logan neighborhood, was born from those sessions.”
LEVERAGING THE RIGHT PARTNERS CAN EXPAND YOUR ABILITY TO SCALE EXISTING AND EFFECTIVE PROGRAMS EXPONENTIALLY.

Jeremy Babendure of Arizona SciTech is convening partners to create more centralized messaging to better distribute information about existing programs in the different communities throughout the ecosystem.

Meanwhile, the NYC STEM Network has developed a partnership with the Department of Education’s STEM Office to establish a centralized communications vehicle that can reach one million students in 32 school districts.

BUILDING TRUST AMONG PARTNERS TO INCREASE THE ABILITY TO SHARE RESOURCES FOR PROGRAMMING IS IMPORTANT.

Ecosystems like East Syracuse Minoa, Kansas City STEM Alliance and the New Jersey Pathways Network have been able to leverage the international STEM Learning Ecosystems initiative to build trust among local stakeholders and encourage greater collaboration to align and expand programs.

“Getting partners to share their events, resources, etc. takes trust,” says Ann Zimmerman of KC STEM. “We inspire groups to work together by telling stories of success from the larger Community of Practice. KC STEM gets partners in a room to map out the landscape of who is doing what and why - we work together to fit the pieces of the puzzle together. Members build partnerships in those meetings to align their programs so young people get an appropriate continuum of exposure to STEM.”

KNOW YOUR ASSETS, LISTEN TO INDUSTRY, COMMUNICATE THE VALUE, INVITE PARTNERS IN AND EXPRESS GRATITUDE – IN THAT ORDER.

“Program duplication isn’t necessarily a bad thing,” says Traill of NYC STEM Network. “In our neighborhood listening sessions, we received some pushback that forced us to question why duplication was such a concern. In upper- and middle-class communities, there is a lot of redundancy in programming and availability of resources. The bigger conversation should be alignment.”

PANELISTS

Saskia Traill, PhD, Senior Vice President of ExpandED Schools; NYC STEM Network
Catherine Morton, Ed.D., Assistant Director, Health Sciences Technology Academy, HSTA; First 2 Network (West Virginia)
Jeremy Babendure, PhD, Executive Director, AZ SciTech
Kris Mooney, Director of Education, Fleet Science Center, San Diego STEM Ecosystem

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https://www.youtube.com/watch?v=FQhEnlhw6KI

STEM Learning Ecosystem Discussion Series - Pressing Topics
The Programs and Initiatives Conversation is the first in a series of webinar-based discussions designed to meet the needs of local and regional Ecosystem leaders have identified. Topics of high interest were identified through a survey distributed to Ecosystem leaders. Panelists were selected based on self-assessed expertise and data from the Ecosystems Indicator Tool (EIT).

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- Organization and Governance Structures
- Business Connections
- Fundraising
Raising the Funds

**BUILD THE RELATIONSHIPS – LONG BEFORE THE ASK - EVEN WHEN FUNDING IS NOT ATTACHED.**

Fundraising is a key factor in maintaining a thriving STEM Learning Ecosystem. This Pressing Issue Conversation features three ecosystems that offer effective and creative ways to raise capital for their community.

Allison Brody of **STEM New Mexico (STEM-NM)** acknowledges the power of partnerships in securing funding: “We are constantly looking for partnerships and collaborations that we can support, whether or not there is funding attached. Seeing where the energy and interest lies is where we want to be. From the beginning we are clear about our values and mission, which gives us a reputation that we can leverage to secure funding.”

**STRONG PARTNERSHIPS, CHARGED BY A VISION AND MISSION, MAKE FUNDING STREAMS POSSIBLE THAT MIGHT NOT HAVE BEEN POSSIBLE BEFORE.**

“We don’t have a lot of large institutions in our rural community,” says Jeanne Miller, co-lead of the **Carbon Schuylkill and Luzerne Counties Ecosystem**. “We have had to be very creative with our afterschool program, which is really the heart of our work. Thanks to deep relationships within the community we were able to collect 12 years of longitudinal data. This has supported our CSL Ecosystem to secure more than $7 million for the next five years. Our impact is directly attributed to the buy-in partners have to our mission. The funding we have been able to secure is reflective of that partnership buy-in to the mission.”

**DATA THAT ARTICULATES YOUR IMPACT IS IMPORTANT TO SECURE SUSTAINABLE FUNDING.**

Afterschool programs and career pathways were priorities for the community in the Carbon Schuylkill and Luzerne Counties Ecosystem. Miller recalls, “When we built the afterschool programs to include a focus on STEM careers, we didn’t realize we were building our Ecosystem’s infrastructure. By being able to articulate our success with strong impact data, we communicated effectively with our senators whom have become big champions for us.”
“I like to send partners and potential funders ‘bright spot briefs’ and other relevant information,” says Heather Kleiner of North Louisiana STEM Alliance. “People remember those things. We have started to see years of partnership cultivation starting to pay-off. Funders and companies want to be a part of the success that we have been able to showcase. Highlight our local work as part of the larger Community of Practice and in connection to Federal STEM Plan has generated a lot of excitement. We highlight the Plan as an urgent call to action that funders understand.”

Kleiner also speaks about the importance of keeping your promise. “By keeping our promises to partners, we have been able to repair some relationships that were previously damaged under old leadership.” By staying true to their Ecosystem values North Louisiana STEM Alliance promotes sustainable relationships.

**FUNDRAISING MODELS OF STEM LEARNING ECOSYSTEMS**

Every Ecosystem is unique and has generated funding to sustain their regional efforts in different ways. Many ecosystems are using a combination of the models listed to the right.

**PANELISTS**

**Allison Brody**, Director of STEM Education & Workforce Development, Explora, STEM-New Mexico (STEM-NM)

**Heather Kleiner, PhD**, Sponsored Programs Manager, Sci Port Discovery Center, North Louisiana STEM Alliance

**Jeanne Miller**, Miller Educational Services, Carbon Schuylkill and Luzerne Counties Ecosystem

**FUNDRAISING MODELS**

**Grant Funding** Ecosystems apply for state, federal, corporate and foundation grants to support ecosystem initiatives, programs and general operation costs (e.g. staffing, materials, space, etc.).

**Boards (Boards as fundraisers)** Ecosystems develop Boards that function in a variety of different capacities to help lead the work. As part of their service to the board, members make contributions to the ecosystems.

**STEM Champions** Several Ecosystems have been successful in identifying a champion for their work. Those champions support fundraising efforts for the region.

**Pay – to – Play** Ecosystem members contribute a specific amount to support the general operation and overhead costs of the ecosystem. Overhead costs might include staffing, materials, office space, etc.

**In-Kind Donations (Internal and External)** Ecosystems have received in-kind donations of staff time and space to support the ecosystem. Many organizations have adopted the ecosystem approach to expand strategic plans and strengthen existing efforts.

**Individual Giving** Ecosystems have been able to leverage contributions from individuals in the community at all levels to support the work. This includes both individual giving campaigns as well as ongoing, open solicitations to the general public.

**Fee-for-Service** Some ecosystems have been able to offer and charge for services, including teacher professional development and other programs.

**Social Enterprise** Sell product to generate funds that support the ecosystem.

**Pass Through Support** Ecosystem receives grant funding to regrant to other organizations. The fiscal agent typically receives a percentage or portion of those grant funds to manage and distribute the funds to regional partners. This fee supports an ecosystem/backbone organization’s overhead.

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