NeoSTEM
An Exploration of Northeast Ohio's Energetic, Collaborative STEM Initiative

Learn more at www.NeoSTEM.org

In addition to offering an overview of NeoSTEM, its work, STEM in general, this document also offers tangible ways that you or your organization can be involved and, more importantly, why you want to.

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What is NeoSTEM?

NeoSTEM is a collective of dozens of organizations and individuals from throughout Northeast Ohio who believe that STEM offers a critically important pathway for students, families and our entire community.

NeoSTEM creates and cultivates STEM education opportunities in the northeast Ohio communities that need - and crave them - the most. NeoSTEM functions as an ecosystem, a collaboration of individuals and organizations from education, business and industry, government, out-of-school-time partners, a wide array of cultural institutions, philanthropy and others - all acting with shared beliefs and working toward a common goal. That goal is to introduce all students to the power and opportunity that comes with STEM, and to support them along their educational and career pathways.

We believe

We believe in the power of STEM-driven education and thinking. We recognize that in a world dominated by technology and connectivity, a command of STEM concepts is essential. Every profession, every job, now requires STEM thinking.

We believe STEM is a force for social mobility, one that elevates individuals, families, and entire communities, and positions them to achieve their potential.

We believe in the power of diversity as a change agent. Northeast Ohio will continue to evolve and prosper as a community if all of its residents are ensured equality of opportunity in education.

We believe that far too many among us - particularly those counted as Black, Brown, or poor - are without even basic educational resources that others take for granted. We understand that a lack of diversity in northeast Ohio's workforce represents a denial of talent to our region.

What Work Does NeoSTEM Do?

NeoSTEM serves its mission by creating and coordinating ongoing STEM programming for students and families of all ages, and by hosting signature events that showcase the world of STEM thinking and opportunity.

WIR'ED is a program that pairs tech-savvy, "digital native" high school students with small business owners and non-profit operators to expand the organizations' online footprints and improve their digital operations. With the guidance of NeoSTEM staff and assistance from volunteer creative professionals, students and businesses work together to build and refine business websites, create social media content, and develop marketing materials.

WIR'ED Works

Sherolynn Eppinger, owner of 1000 lbs. Lighter Fitness on 131st Street in Cleveland, understands the symbiosis between students and businesses participating in WIR'ED.

"My student was very knowledgeable, and had great ideas that matched perfectly with my ideas and vision. She made major updates to my website, along with promotions and marketing. As a small business owner doing all the work, it was a big help having the extra hands and ideas. It also allowed her to see how the work comes together and is used for business. So the experience on both ends is beneficial and more students should have this experience."

Be sure to visit 1000 lbs. Lighter Fitness' website.

Developed in Summer 2021, **"I am STEM"** is an outreach campaign to elevate the visibility of BIPOC STEM professionals in northeast Ohio. In the program, we interview people in STEM professions to discuss their upbringing, education, and career paths. We then produce videos and printed materials profiling the individuals, and make those materials available for public distribution. Those posters were displayed in every CMSD school building and student's can access the recorded videos through PACE, a Planning and Career Exploration program.

STEM in My Neighborhood is an umbrella initiative to foster STEM programming at the neighborhood level in unique communities throughout the Cleveland metropolitan area. Through the initiative, NeoSTEM offers "STEM stipends," which function as "micro grants" to individuals and community organizations to help enhance existing STEM learning through existing programming.

NeoSTEM's **teacher externship program** places area educators with businesses in STEM-focused industries for hands-on, real-world STEM experiences. Through the program, teachers gain a deeper understanding of the many career pathways available through businesses, and design learning experiences for their students back to their classrooms. Educators become an extension of your HR department's marketing team.

IR'ED
Sponsored by Verizon

Score with STEM is a signature event designed to spark excitement and interest through sports, and reveal the many behind-the-scenes career opportunities available through STEM. In partnership with the Cleveland Cavaliers, NeoSTEM hosted more than 50 hands-on STEM exhibits and welcomed more than 1,500 students and families to the Rocket Mortgage FieldHouse for the event, and provided Cavs game tickets to every attendee.

SCORE WITH
STEM
STEM Night
PRESENTED BY
CLEVELAND CAVALIERS NEOSTEM

STEM Exploration is a signature event bringing hands-on STEM exhibits and programming to neighborhood recreation centers in the City of Cleveland. Conducted in partnership with the Office of Prevention, Intervention, and Opportunity for Youth and Young Adults, the pilot event featured afternoons of STEM programming at two recreation centers and welcomed 270 attendees. This program removes barriers to access by bringing STEM into local neighborhoods.

STEM on Wheels - STEM on Wheels, an exhilarating neighborhood program that merges STEM Learning with the art of cycling. In collaboration with our dynamic partners—MyCOM, Bike Cleveland, Ohio City Bike Coop, and League Cycling Instructors—Participants explore the physics of riding through interactive experiences that bring scientific concepts to life. Hands-on learning dives into the mechanics of bikes, mastering essential skills and acquiring the tools to keep your ride in top-notch condition. They also a deep understanding of the rules of the road and unlock the secrets of rider predictability, ensuring a safe and enjoyable experience while cycling alongside motorists. STEM on Wheels empowers participants to embrace the joy of independence on two wheels.

STEM Youth Advisory Council - The STEM Youth Advisory Council (SYAC) is an innovative program that empowers young minds to shape the future of STEM education and outreach. Comprised of passionate and diverse youth leaders, SYAC serves as a powerful voice for the next generation, providing valuable insights and perspectives to inform the development of impactful STEM initiatives. Through collaborative discussions, brainstorming sessions, and community engagement, SYAC members actively contribute to the design and implementation of programs that promote inclusivity, foster curiosity, and inspire a love for STEM among their peers. SYAC amplifies youth voice in shaping the landscape of STEM education and empowering them to become agents of change in their communities.

How Can I Engage in NeoSTEM and its Work?

There are numerous ways for you as an individual, business or organization to engage in the work of NeoSTEM:

- Join monthly meetings
- Apply to serve on the NeoSTEM Advisory Council
- Volunteer with one of NeoSTEM's many community initiatives
- Sponsor NeoSTEM or one of its events by offering financial or in-kind support

What is STEM?

SSTEM is an acronym. It means Science, Technology, Engineering, and Math. Often you'll see it with an extra letter - another M for music, or an A for art. But STEM really refers to a core set of skills - critical thinking, innovation, problem solving. Essentially, STEM is a mindset.

Ask someone in a STEM job and chances are they'll tell you this: STEM is a way of thinking, a way of looking at the world. We know this because we recently interviewed more than 30 STEM professionals and asked them, "What does STEM mean to you?" Not one recited the acronym; all of them repeated some version of this basic refrain - "STEM is how I see the world."

So when you hear someone talk about STEM skills, they're talking about proficiency in the basics - science,math, technology, and so on. But they're also talking about something bigger. They're talking about critical thinking, about problem-solving. Today, when someone talks about "STEM thinking," they're really talking about an almost fundamental way of looking at the world, one that asks, "what's the problem, and how can I fix it?"

STEM Thinking

"For me, STEM, sure, it's science, technology, engineering, and math, but it's also curiosity. It's the curiosity to know how things work, and the curiosity to want to be someone who can influence how things work, or how to fix things. For me, I summarize it as curiosity, and that is what it means to me. We must continue to be curious, continue to want to innovate, venture, and discover."

Cristina Gonzalez Alcala, Community Investment Officer, Akron Community Foundation

"I always say that STEM to me is my form of art. I always say I'm not creative as an artist, but I'm creative when it comes to technology. So to me, STEm is another form of experiencing creativity, and freedom for me as far as how my brain is wired."

Leon Wilson, Chief of Digital Innovation and CIO, Cleveland Foundation

"STEM is where all of the jobs are going. This is where the future of the world is dependent. You can see it in everyday life, especially with what we've been dealing with in the pandemic. You can see in everyday life how much the world really depends on people who have expertise in these fields."

Jason Ross, Manager of Graduate Programs in Molecular Biology, Cleveland Clinic Lerner College of Medicine

"For me, STEM means that we are looking at how we collaborate across multiple different subjects, and how those all work together and how we integrate them. So it's not about one thing in one area, it's about how we take everything that we do. Because at this point what isn't run by a computer? Think of all the apps on your phone, call your house, close your windows. What can't you do?"

Alethea Ganaway, Program Manager, Additive Manufacturing Program, Cuyahoga County Community College

Why is STEM Important?

Look around. Everything you see - everything - is the product of STEM. From the beginning of your day to the end of your day, everything you do, interact with, and touch comes from STEM. The device you're using to read this document. The building you're in and the systems that keep it comfortable. The food you'll eat and the water you drink. Everything you can touch in your life is STEM.

And it's more than our physical world. We're connected, integrated, with each other and the digital world around us. We use our smartphones to speak intimately with our loved ones, and still share our thoughts with millions of people via social media. We use our devices to conduct business, and to seek entertainment. We use them to monitor our heart rates, track our steps, and control the appliances in our homes. We are, in a very real way, digitally connected, and open to the rest of the world, in virtually every aspect of our lives.

Our progress in this regard is not static. The development of technology outpaces itself every day, and will continue to do so at an increasingly faster rate. Gordon Moore, an engineer and the current chairman of Intel - figured out back in the 1960s that the number of transistors in an integrated circuit doubles about every two years, while the cost of those transistors is roughly cut in half. People started seeing that trend all over the place and it eventually became Moore's Law, which, in practical terms, holds that the pace of technological growth isn't incremental, but exponential. Our technological growth is getting faster and faster.

The logical conclusion, then, is that in order to live in this world, and to succeed in it, our children must have an understanding and command of STEM principles and thinking. According to the U.S. Department of Education:

> *In an ever-changing, increasingly complex world, it's more important than ever that our nation's youth are prepared to bring knowledge and skills to solve problems, make sense of information, and know how to gather and evaluate evidence to make decisions. These are the kinds of skills that students develop in science, technology, engineering, and math, including computer science—disciplines collectively known as STEM/CS. If we want a nation where our future leaders, neighbors, and workers can understand and solve some of the complex challenges of today and tomorrow, and to meet the demands of the dynamic and evolving workforce, building students' skills, content knowledge, and literacy in STEM fields is essential. We must also make sure that, no matter where children live, they have access to quality learning environments. A child's zip code should not determine their STEM literacy and educational options.*

The National Science Foundation reached a similar conclusion:

> *Rapid technological advancements and societal changes are our daily reality. While the future of work, the economy, and society is uncertain, one thing is not: To maintain the nation's leadership in science and technology discovery, we must create an approach to science, technology, engineering, and math (STEM) education that prepares and advances the U.S. for this future.*

Experts agree that science, technology, engineering and math will drive new innovations across disciplines, making use of computational power to accelerate discoveries and finding creative ways to work across disciplinary silos to solve big challenges. To remain competitive going forward, our nation must continue to design and build a thriving innovation economy, supported by a citizenry that is invested in the STEM enterprise. To succeed, the nation must invest in new research and innovation infrastructures that include all people, regardless of their background.

STEM Means Jobs

During the COVID-19 pandemic, STEM-focused jobs saw an annual mean wage of about $100,900, as compared to only $55,260 for non-STEM jobs. Computer and information systems managers in particular saw average annual wages of more than $162,000.

Over the past 10 years, growth in STEM jobs was three times greater than that of non-STEM jobs, and 80% of the fastest-growing occupations demand some mastery of STEM skills.

According to Adecco, the world's second-largest HR provider and staffing firm, for every two available STEM jobs, there is only one qualified candidate available. "While the supply of available STEM talent is drying up, the market is flooded with available STEM jobs - and the situation is only going to get better for job seekers."

Problem: STEM is Not Diverse

It's not a secret. STEM lacks diversity.

According to the Pew Research Center, the BIPOC population and women are significantly underrepresented in STEM nationally. This is equally true in northeast Ohio. According to Team NEO's Misaligned Opportunities 2022, minority groups are underrepresented in 19 of the top 20 in-demand professions, and minority students are not gravitating toward STEM fields.

It should come as no surprise, then, that minority underrepresentation in STEM persists because individual, institutional, and systemic barriers block minority access to STEM education opportunities. In her report "Towards Greater Equity in Science, Technology, Engineering, and Math," Me'lani Labat Joseph found there are "clear, consistent issues that emerged in terms of barriers and systems-level challenges" that prevent BIPOC populations from accessing STEM learning opportunities. Those barriers include:

- A lack of awareness of STEM enrichment opportunities;
- A lack of transportation;
- Feelings of exclusion among BIPOC populations in STEM spaces;
- Failure to address basic needs, such as food and housing, clothing, and social and emotional learning.

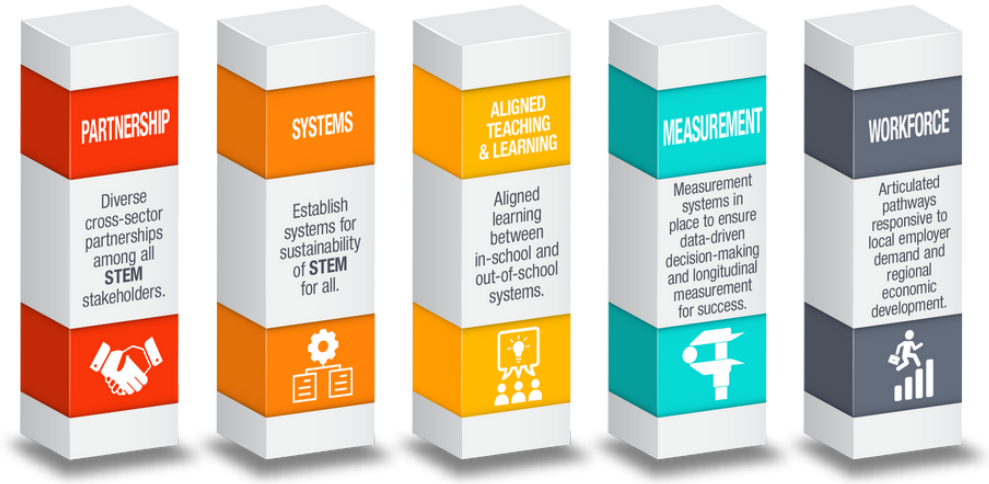
Solution: NeoSTEM Programming

Over the past year, northeast Ohio's education thought leaders have reported their assessments of equity and diversity in the current STEM landscape. And as an action- and goal-oriented organization, NeoSTEM has responded.

Consider some of the barriers Black and Brown communities face in accessing STEM enrichment opportunities - failure to meet basic needs, missed connection opportunities, lack of awareness, limited transportation, lack of understanding, limited community presence, lack of trust. Every NeoSTEM program and event is developed to overcome those barriers.

But perhaps most importantly, over the past two years, NeoSTEM has demonstrated time and again its ability to remain constant in the STEM education space. We've established meaningful connections with key stakeholders throughout northeast Ohio, and have shown our ability to engage communities. And because our focus is building STEM opportunities from the ground up, we've engaged with our audience to forge lasting bonds. We're not going anywhere, and our audience knows it. We have credibility.

Snapshot of Our Three-Year Plan



Equity, Access, Opportunity, Socio-emotional Health & Learning

Strategies to Achieve The Pillars

- Secure long-term funding.
- Deepen relationships with existing partners and funders and develop more.
- Grow public-facing work to cement relationships, including funding and to increase excitement about, knowledge of and engagement with STEM.
- Deepen NeoSTEM's already strong presence and engagement with PACE.
- Continue stability of NeoSTEM's core operations, including regular monthly meetings and signature programs, including:
  - I AM STEM
  - Teacher Externships
  - Wir'ED
  - Score with STEM
  - Guardians STEM Day
  - STEM in My Neighborhood
- Reorganize staff to hire a highly visible, community-connected and engaged and passionate associate director who will join the director in community building as well as efforts to strengthen NeoSTEM.
- Establish an Advisory Council made up of stakeholders from key sectors needed for NeoSTEM's overall mission, including business and industry, K-12, higher education, government, philanthropy, non-profit institutions, sporting teams, faith-based organizations and STEM-rich institutions.

Our Current Staff

Ebony Hood, Executive Director

A lifelong Cleveland resident, Ebony has more than 20 years of experience in grassroots community organizing. Ebony graduated from Baldwin Wallace University with a Bachelor of Science in Biology and Sustainability, and from Kent State University with a Master's degree in Education. In addition to her role as NeoSTEM's director, she is the co-founder of Syatt, a non-profit organization dedicated to providing equitable access to nature.

Jeremy Shorr, Engagement Consultant

Jeremy Shorr, Engagement Consultant. A lifelong Aurora resident, Jeremy is an education futurist who is passionate about innovating the instructional experience for learners of all ages. He enjoys collaborating with schools and organizations around the country to rethink and design STEM from pre-K through 12th grade. Jeremy graduated from Ohio University with a bachelor of science degree in linguistics, and has been recognized by such organizations as the National School Boards Association, Crain's Cleveland Business, and Ideastream, and was an Educational Policy Fellow with the Institute for Educational Leadership in 2015-2016.

Lauren Hoefling, Communications Consultant

Since joining NeoSTEM, Lauren's favorite initiatives include the Score with STEM event and the I am STEM visibility program. Lauren graduated from Providence College with a bachelor of science degree in marketing, and a master's degree in business administration. A downtown Cleveland resident, Lauren is passionate about work that ensures a stronger future for all of northeast Ohio.

Alyssa Lenhoff-Briggs, Director Emeritus

Alyssa Lenhoff-Briggs is a social entrepreneur, teacher, community activist, facilitator and storyteller. As a former investigative reporter and college professor, Alyssa developed diverse skills that are critical for her as the vice president for innovation and transformation at TIES. Alyssa is the former director of the NeoSTEM Ecosystem and now as one of its key consultants.

The NeoSTEM STEM Think Tank

The **NeoSTEM Ecosystem** serves as a collaborative platform for STEM stakeholders throughout northeast Ohio and we're looking for passionate, driven, and creative leaders to join the NeoSTEM STEM Think Tank.

As a member of our esteemed team, you will collaborate with like-minded individuals to generate groundbreaking ideas and cutting-edge solutions that have the potential to revolutionize the world.

If you are passionate about exploring innovative solutions to the world's most pressing problems?

Are you driven by the desire to make a difference through scientific discovery and technological advancement?

If so, you may be the perfect candidate to join our STEM Think Tank.

With access to the latest research and technologies, you will have the opportunity to contribute your unique perspective and expertise to a dynamic community dedicated to advancing the frontiers of science and technology. Join us in our mission to transform the world through innovation and exploration, and let's work together to create a brighter future for all.

Details of the STEM Think Tank

The think tank aims to bring together educators, industry leaders, community organizations, and other stakeholders to develop and implement innovative solutions to promote equity in STEM education and career pathways. The think tank will conduct research, gather data, and analyze trends to inform its work and identify opportunities for improvement.

The focus of the think tank will be on promoting access and opportunity for all students in Northeast Ohio to high-quality STEM education, regardless of their background or circumstances. This includes increasing the representation of underrepresented groups in STEM fields and addressing systemic barriers to their success.

The think tank will also focus on developing partnerships and collaborations between educational institutions, businesses, and community organizations to create a more cohesive and comprehensive approach to STEM education and workforce development in the region.

These leaders have been brought to the table because of their desire to see change and their commitment to action. We owe our youth and communities innovation and advancement in STEM learning opportunities. This is important, hard work is not for everyone. This opportunity is for those willing to help dismantle systemic barriers. As a unit, the STEM Think Tank will be a strong advocate for our region.

Ultimately, the goal of the STEM think tank will be to create a more equitable and diverse STEM workforce in Northeast Ohio that can meet the demands of a rapidly evolving economy while providing opportunities for all individuals to reach their full potential.

STEM Think Tank Members are required to serve a minimum of one year and the continuity of their service will be on an annual invitation basis.

Responsibilities

STEM Think Tank members will:

- Primarily work to serve those most in need including individuals of varying abilities, LGBTQIA+, women & BIPOC communities in underrepresented STEM roles.
- Promote equitable access to STEM learning opportunities for all throughout our region including rural backgrounds.
- Advocate for diverse representation in STEM careers and mentorship.
- Increase STEM literacy and access amongst students and families.
- Help track and bridge existing STEM organizations, programs, and stakeholders through a regional platform.
- Create opportunities for collaboration and innovation through quarterly “State of STEM” retreats with regional STEM stakeholders.

Platform

Monthly Meetings: Schedule regular monthly meetings for the members of the STEM think tank. This can be done in-person or virtually depending on the location and preference of the members.

Agenda: Create a clear agenda for each meeting that outlines the topics to be discussed, the goals of the meeting, and the desired outcomes. This will help keep the discussions focused and productive.
Presentations: Encourage members to give short presentations on their current research or ideas. This will allow for a deeper understanding of each other's work and provide opportunities for collaboration.

Guest Speakers: Invite guest speakers to give talks on topics related to STEM fields. This will expose members to new ideas and provide opportunities for networking.

Workshops: Organize workshops that provide members with the opportunity to learn new skills or techniques related to STEM fields. This can be led by members or guest speakers.

Collaborative Projects: Encourage members to collaborate on research projects or other initiatives related to STEM fields. This will foster a sense of community and encourage teamwork.

Social Events: Host social events to build camaraderie among members. This can be a great way to foster connections and encourage brainstorming.

Online Engagement: Encourage members to engage with each other online through a forum or social media platform. This will allow for ongoing collaboration and discussion.

NeoSTEM Partnership & Sponsorship Opportunities

PLATINUM AT $150,000 – 1 AVAILABLE

- Titled sponsor of NeoSTEM, Dominant presence at all events and in all promotional materials
- Featured as dominant sponsor in all promotional materials during and leading up to the Score with STEM event and all NeoSTEM events, including games or events with the Guardians or other large public-facing initiatives
- Branded I Am STEM profile, 12 (Billboard/Website landing)
- Chair the SwS and Guardians events,
- Chair the NeoSTEM Advisory Council
    - Diamond Level, plus the above listed benefits

DIAMOND AT $100,000 - 1 AVAILABLE

- I Am STEM profile, 5 (Website)
- Serve as vice chair on SwS and Guardians events,
- Vice chair of the NeoSTEM Advisory Council
    - Gold Level, plus the above listed benefits

GOLD AT $75,000 - 2 AVAILABLE

- I Am STEM profile, up to 3 website and outreach promotion
- Sponsor of NeoSTEM, presence at all events and in promotional materials, Serve on the SWS and Guardians events, serve as the assistant vice chair of the NeoSTEM Advisory Council
    - Silver Level, plus the above listed benefits

SILVER AT $50,000 - 3 AVAILABLE

- I Am STEM profile, up to 2 website and outreach promotion
- Sponsor of NeoSTEM, presence at all events and in promotional materials, Serve on the SWS and Guardians events, serve on the NeoSTEM Advisory Council
    - Bronze Level, plus the above listed benefits

BRONZE AT $25,000 – 4 AVAILABLE

- I Am STEM profile, 1 website and outreach promotion
- Company name or logo included in social media activation driven by NeoSTEM Ecosystem, 6 dedicated posts
- Dedicated page in STEM Activity Book produced for the Score with STEM event as well as others. (Signature Events)
- NeoSTEM Advisory Council
- Name/logo printed in promotional materials/Community Partner link on NeoSTEM Website
- Includes 12 tickets for employees/staff/volunteers to attend

This level sponsors 350+ students to attend Score with STEM 2024 Day Event w/Cleveland Cavaliers Game ticket

NEOSTEM ADVISORY COUNCIL AT $5,000 - 10 AVAILABLE

Be a part of increasing STEM teaching, learning, and workforce development in the region

- (10 seats reserved for organizations that are not classified as non-profits or that are not deemed "small" business.)
- Customized page in NeoSTEM STEM activity book used for outreach events & community partners
- Name/logo printed in promotional materials/Community Partner link on NeoSTEM Website
- Includes 4 tickets for employees/staff/volunteers to attend

This level sponsors 40 students to attend Score with STEM 2024 Day Event w/Cleveland Cavaliers Game ticket