

THE FUTURE NEEDS A PUSH

AUGUST 2022

FEATURED

PRE-COLLEGE STEM
PROGRAM SHOWCASE

THE FIVE C'S OF
ECOSYSTEMS TO
SUPPORT PRE-COLLEGE
STEM PROGRAMS

A NATIONAL NETWORK
TO ADVANCE EQUITY



Cultivating the Power of Pre-college STEM Programs

Pre-college STEM programs (PCSPs) serve an important role for students in their STEM journeys.

These programs connect students with the scientific community by engaging in high-quality STEM content such as cutting-edge research, or the latest engineering practices, experiences that students cannot get in their schools. Students learn important, transferable, skills like problem solving, experimental design, and critical thinking that will help them as they advance in STEM.

PCSPs reach students who have been traditionally excluded from STEM. PCSPs more accurately reflect the populations of students in urban areas than what we currently see in undergraduate STEM majors and the STEM workforce. Some PCSPs are situated within marginalized communities, bringing STEM experts and experiences to the students, while PCSPs associated with universities serve as a conduit between the university and the families of underrepresented students, providing connections that otherwise would not occur.

Our goal with STEM PUSH is to remove barriers to undergraduate admissions for underrepresented students from our partnering PCSPs so that they can continue their STEM journeys in college and beyond!



Rebecca Gonda, Ph. D.

Senior Personnel, Pre-College
STEM Programs & NIC



PRE-COLLEGE STEM PROGRAM SHOWCASE: GENE TEAM

STEM PUSH Hub member Becky Gonda directs the pre-college STEM program at the University of Pittsburgh.

"One of the greatest parts of running my PCSP, Gene Team, at the University of Pittsburgh has been developing relationships with students when most are just finishing 9th grade and being able to watch them grow as scientists and pursue their STEM goals," says Gonda.

Gene Team is a four-week summer program that immerses students in an authentic biological research project from one of the research labs in the Department of Biological Sciences at the University of Pittsburgh.

Students work as a team to advance the research while honing their biology and critical thinking skills.

Gene Team engages students in current research in biological sciences and provides college preparatory mentoring. The goal is to increase participation in biological research from groups that are historically underrepresented in science, technology, engineering, and math.

"The time spent in the lab with them and mentoring them has allowed me to see first-hand how students benefit from programs like Gene Team," says Gonda.



"By the end of our summer program, students are able to design their own experiments, think critically, and see themselves as scientists, prepared for additional STEM experiences. As someone who teaches undergraduate Biology majors, I see attributes of successful STEM majors in my Gene Team students," says Gonda.

PCSPs prepare students to be successful as STEM undergraduate majors, and since PCSPs are instrumental in engaging historically excluded populations, we can cultivate the power of PCSPs to improve the future of STEM.



THE POWER OF THE NETWORK: SUPPORTING PRE-COLLEGE STEM PROGRAMS

STEM Ecosystems exist to serve as **conveners, coordinators, and catalysts**—they bring together disparate stakeholders to support STEM in a region, to ignite sparks of connection so that collaborative opportunities, including PCSPs, can grow and thrive. All across the nation, these ecosystems are working alongside informal and formal educators, elected officials, university personnel, and industry to prioritize STEM. Within the STEM PUSH Network, ecosystems are striving to uplift those pre-college programs that work in communities, those that know communities, connect with often, the disconnected university system. Many ecosystems have connections with University departments and personnel, and connecting those that are doing work in the community (the pre-college programs) to universities is key to expanding and broadening the pipeline into STEM for many historically excluded communities.

Ecosystems have the ability to be translators and to **communicate**—there is a real opportunity to use connections to ensure that every stakeholder in the ecosystem has a voice and that those that need to hear the distinct voices—needs, dreams, efforts— can hear them. The ability of ecosystems to understand the self-interest of all parties is what helps to power the work.

Ecosystems have the ability to **champion** equity and the need for equity at scale to change a region. STEM Ecosystems by nature pursue justice—they believe that high quality learning should be accessible for each and every learner. As **conveners, catalysts, communicators** and **champions**, STEM Ecosystems can help leaders sift through the real issues, and elevate what works for those that have been excluded in narratives, opportunities and exposure. With STEM Ecosystems, we can magnify the narrative that works: Pre-college STEM programs give Black, brown and rural students the access and confidence need to pursue a post-secondary opportunities in STEM.



[Check out the 5 C's of the Remake Learning network.](#)

These strategies are heavily endorsed and utilized to grow connections in the Southwestern PA region.



LaTrenda Leonard Sherrill

Working Group Strategist, Remake Learning,
Pittsburgh STE(A)M Ecosystem

THE VALUE OF A NATIONAL NETWORK TO ADVANCE EQUITY

STEM PUSH is building the first national network of PCSPs that are focused on equity and have committed to use their program power to broaden participation in STEM.

The STEM PUSH Network recently surveyed participants on the value of the network.

Results showed:

91% gave the STEM PUSH Network a rating of 8 or higher on a scale of 1-10. Of 12 Cohort 1 programs, 7 report clear **growth in implementing culturally sustaining pedagogies with their students.**

72% of respondents would certainly (10/10 rating) recommend the STEM PUSH Network to others.

89% of respondents said they strongly value the opportunity to be a part of the STEM PUSH Network.

"When I get the opportunity to share and bounce ideas off others, it's very helpful. It allows me, to think bigger about what I want to do to scale my program. It provides the ability to dream, to aspire and to show - despite being very busy in Cleveland - how relevant the work is that we're doing with these communities. It shows how, nationally, other people are addressing it. It fuels me to continue to fight."

- Grady Burrows
HIT in the CLE



STEM PUSH is conducting the first large-scale, longitudinal examination of the efficacy of PCSPs on broadening participation in STEM at the undergraduate level.

This NSF INCLUDES Alliance is funded by NSF Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science (NSF INCLUDES), a comprehensive national initiative to enhance U.S. leadership in discoveries and innovations by focusing on diversity, inclusion and broadening participation in STEM at scale. It is also co-funded by the NSF Innovative Technology Experiences for Students and Teachers (ITEST) program and the Advancing Informal STEM Learning Program (AISL).



www.stempushnetwork.org