

Messages and Talking Points

Leveraging Out-of-School STEM Programming to Support Education Recovery

This tool has STEM-specific talking points for learning recovery and workforce. Use these messages for engaging with policymakers and education leaders to make the case for partnership and funding.

Re-engaging through STEM Learning

Research shows that hands-on, experiential learning by students is linked to higher levels of interest in STEM and leads to better STEM learning outcomes. Even before the pandemic, schools often provided few opportunities of this kind, especially in schools that serve under-resourced and marginalized communities. The pandemic has significantly deepened existing gaps for students to access hands-on STEM learning opportunities, as well as hindering students' social emotional development, leaving policymakers with the question of how to recover and fill these gaps equitably.

- Afterschool and informal learning programs offer policymakers a strong solution to this question, supporting extended-learning efforts, sustained engagement, and learning recovery and acceleration in the STEM subjects through hands-on, personalized learning.
- The hands-on STEM learning in afterschool is a perfect complement to the school day, especially as students have limited experience with STEM in virtual and hybrid schooling. In a recent survey, 65% of parents with children in online or hybrid school don't believe the STEM offerings for their students meet their standards of quality, engaging activities. Afterschool can provide opportunities for students to explore STEM in new ways, addressing the pandemic inflicted challenges students have experienced.
- Afterschool programs offer students a unique opportunity to engage in collaborative, inquiry-based learning while building core skills in math, science, and literacy, increasing the likelihood of academic success in all subjects.
- Afterschool programs have stepped-up in embracing hands-on STEM learning activities in their programming, inspiring student engagement and innovative learning opportunities students would not typically receive in the classroom. Throughout the pandemic, afterschool STEM programs have engaged students in hands-on learning, whether through utilizing 3D printers to produce personal protective equipment for local hospitals to participating in citizen science projects and contributing to important scientific research.
- Afterschool programs offer a safe environment to support students' social and emotional development and an opportunity for young people to see themselves as someone who can succeed in STEM. Project-based learning in afterschool STEM programs provides opportunities for students to work with peers and develop their skills in teamwork and communication. The afterschool environment also provides a low-risk setting for students to explore new STEM subjects and hands-on activities without the pressure of failure presented in the school day, building resiliency and interest in STEM.

Effective STEM learning requires partnerships between schools and afterschool programs

SHINE in Carbon County, PA is a 21st Century Community Learning Center program with a mission to link schools and homes through education. SHINE engages 4th and 5th graders in STEM learning based on in-demand careers in engineering, health sciences, and green energy through hands-on projects that utilize relevant technology. Students learn from teachers with technical expertise within state-of-the-art laboratories at the Carbon Career & Technology Institute and focus on topics ranging from solar cars and houses to hydroponics. Among SHINE participants, 97% were excited about STEM activities, 89% said science and math would help them be more successful, 85% enjoyed using CAD, and 77% became familiar with careers that require engineering and electronics.

We know the pandemic has exacerbated existing education equity gaps, particularly in STEM subjects. Equity remains a central tenant for policymakers and education officials as they develop recovery plans.

- Out-of-school time programs thrive at serving students from low-income and racially marginalized communities and will play a critical role in re-engaging students from underserved communities in high-quality STEM activities.
- The wealthiest 20% of families spend almost seven times more on enrichment activities outside school for their children than do the poorest 20%.¹ Afterschool programs are the most effective way at closing this gap and doing so with high-quality engagement in activities that spark a long-term interest in STEM.

Finally, we know that the demand for these programs is there.

- Demand for afterschool programs has continued to outpace supply. For every one child enrolled in a program, there are three others who would participate if one were available.
- In the recently released America After 3PM survey the Afterschool Alliance found that the overwhelming majority of parents and guardians recognized the value and need for afterschool programs with 94% of parents satisfied with their child's afterschool program.
- The survey also found STEM continues to be a key aspect of afterschool, with 73% of programs serving students with STEM learning opportunities.

Workforce, Economic, and Community Recovery and Accelerating Workforce Trends

The sudden emergence of the COVID-19 pandemic has dealt a significant blow to state economies, businesses, and working families while accelerating trends that underscore the urgency of strengthening the STEM-literate workforce. Additionally, the economic consequences have not been felt evenly, reflecting racial and gender disparities that existed before the pandemic and have widened even more.

Furthermore, the learning loss in STEM for the current cohort of students can have ripple effects that threaten the long-term economic health of communities and our nation as demand for STEM talent accelerates due to the pandemic. Analysis based on previous studies of school closures and the impact on economies conducted by the Organisation for Economic Cooperation and Development suggests that current students might expect lower earnings than current workers and the United States GDP would shrink by 1.5% or \$14.2 trillion in economic value without intervention from policymakers.

The good news for policymakers is that afterschool programs also play a unique role in supporting the economic recovery and acceleration of workforce trends. As flexible as they are, afterschool programs are uniquely able to tailor themselves to meet the needs of the community.

- Afterschool STEM programs provide opportunities that inspire long-term intellectual and emotional interest in STEM. These programs center on authentic questions that can be explored by youth and adults together so students not only learn what STEM is but how it can be an enjoyable and empowering experience.
- Afterschool STEM programs develop 21st century skills highly valued in the workplace, such as problem-solving, creativity, and collaboration—skills that are in high demand by employers in many sectors.
- Afterschool providers can serve as a valuable partner for connecting local employers and the workforce needs to the education system.
 - Afterschool programs have unique opportunities to connect students and employers through apprenticeships, mentorships, hands-on learning, career exploration, and career and technical education.
 - Serve as a point of contact for local workforce boards, career and technical education providers, school districts, and employers.
- Afterschool STEM programs build science identity and career knowledge, putting students on the path toward majoring in STEM fields and pursuing STEM careers. The nation's economy will increasingly depend on a workforce fluent in STEM, a trend that has accelerated even quicker as a result of the pandemic.

Every \$1 invested in afterschool programs saves \$3 by:²



Increasing kids' earning potential



Improving kids' performance at school



Reducing crime and juvenile delinquency

Career Exploration Through Afterschool

High school students enrolled in the EVOLUTIONS After School Program (Evoking Learning and Understanding Through Investigations in the Natural Sciences) in New Haven, Conn., a majority of whom are from low-income families and are first generation college aspirants, have the opportunity for paid museum and lab internships. After one year, high schoolers who participate in the program—which explores STEM careers—are eligible to work in the museum or intern in Yale science faculty's laboratories. The program also introduces students to a range of career fields available within the museum, from graphic designers to exhibit technicians. Through a collaboration with local schools, students earn school credits for successful participation in the program.

¹ <https://www.russellsage.org/publications/whither-opportunity>

² http://roseinstitute.org/wp-content/uploads/2016/05/Costs_Benefits_After_School_Programs.pdf