



# STEM in Afterschool

## Changing Perspectives. Shaping Lives.

The impact of afterschool programs on young people's aspirations and skills in science, technology, engineering and mathematics (STEM).

Highlights from "Examining the impact of afterschool STEM programs", a research paper by the Afterschool Alliance and the Program in Education, Afterschool & Resiliency at Harvard University. Commissioned by the Noyce Foundation.

**After the school bell rings,** young people are learning, exploring, making and questioning. Afterschool programs have long influenced students' personal development and supported their social and emotional growth. Today, the afterschool field has enthusiastically embraced STEM as an integral part of their educational offerings.

Afterschool programs that offer high-quality STEM learning experiences have a significant impact on participating youth—they cultivate students' interest in STEM and build STEM skills and proficiencies among diverse groups of young people.

### What Students Say About STEM:

I like to do this.

I can do this.

I want to do this.

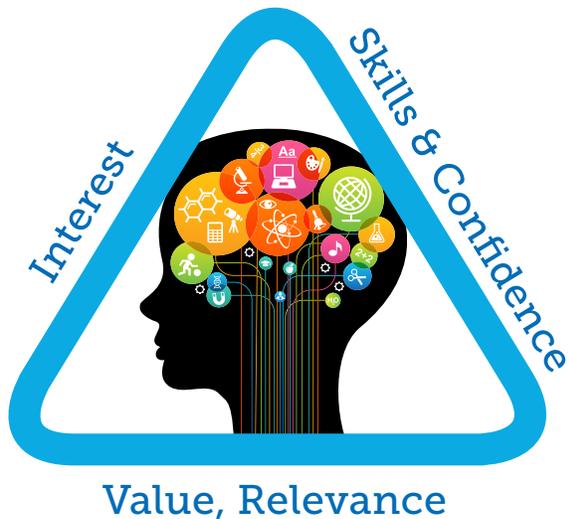
**This is important to me!**



PHOTO CREDIT: SCIENCE CLUB

# Afterschool Makes STEM Stick

## STEM IDENTITY



Lack of a STEM “identity” is often cited as one of the main reasons that young people don’t pursue STEM fields. Research has found that even students who do well in STEM subjects do not aspire to STEM careers—often times students’ idea of what scientists look like doesn’t match who they are.

Afterschool programs play a major role in addressing this issue: they excite and sustain interest, build real skills, help youth connect STEM to their lives and communities, and introduce youth to a diverse array of professionals.

**Interest and ability feed off each other.**

Young people who become interested in STEM topics and professions are more willing to stick with it. As a result they develop skills that feed their interest and build confidence in their STEM abilities.



**Dosage matters.** More frequent participation in afterschool STEM programs is correlated with greater STEM interest and higher scores on assessments.



**Role models and mentors help break down stereotypes about who pursues STEM,** which is especially important for underrepresented populations. Afterschool programs are a prime space for youth to connect with and learn from STEM professionals.



Students at Techbridge in Oakland, CA, participate in weekly hands-on design projects and explore STEM careers through field trips to engineering and technology companies.



The Science Action Club in San Francisco, CA, helps middle school youth contribute to real science research through citizen science projects in their local communities.



In Project GUTS in Santa Fe, NM, middle school youth program computer simulations to solve real-world “what-if” scenarios, such as the spread of contagious disease and evacuation routes when a fire breaks out.

# Impacts & Outcomes of Afterschool STEM Programs

Across programs and evaluations, we know it's true: in high quality afterschool programs, young people gain real STEM skills and learn that STEM is important and relevant to their lives.



PHOTO CREDIT: GIRL START

## I **like** to do this.

- ✓ Afterschool STEM programs are **successful in engaging and retaining large numbers of students** from diverse populations.
- ✓ Young people in these programs **express curiosity and interest in STEM subjects**, in ways that extended that interest in school and out of school.

## I **can** do this.

- ✓ Participants come to **understand the value of STEM** in contributing to society and solving global and local problems. They begin to see how STEM intimately connects to their everyday lives.
- ✓ Youth display an **increased awareness of career options**, as well as a nuanced understanding of those careers.

## I **want** to do this!

- ✓ As they participate, young people **gain real skills** and the ability to productively engage in STEM processes of investigation.
- ✓ Youth learn essential **STEM-relevant life and career skills**.



Intensive afterschool STEM programs can also have a positive impact on academic performance such as better test scores, taking more science and math courses, and higher rates of high school graduation.

# Learning Happens Everywhere

Young people draw on a variety of educational supports that not only include schools but also their families and peers, out-of-school time programs such as afterschool, and community resources such as science centers, libraries, universities and businesses.



Afterschool programs are a unique and critical component to a child's learning and must be included as an integral strategy in STEM education improvement efforts.

PHOTO CREDIT: FUSE

## Dig Deeper!

The full paper details evaluation findings from 11 strong afterschool STEM programs, and gives an overview of recent research findings about the importance of afterschool and other out-of-school time experiences for STEM learning. The report can be downloaded at: [www.afterschoolalliance.org/STEMimpacts](http://www.afterschoolalliance.org/STEMimpacts)