THE POWER OF COLLABORATION
INTRODUCTION

Careers in mathematics, science, engineering, and technology are among the fastest growing and most rewarding professions in today’s economy. But for many of the nation’s underserved youth, these opportunities can seem far out of reach.

In 2015, four of the nation’s largest youth-serving organizations—Boys & Girls Clubs of America, Girls Inc., the National 4-H Council, and the YMCA of the USA—joined forces to launch Imagine Science. Their mission is to build excitement and confidence in young people from low-income communities in pursuing STEM careers. To date, partners working in eleven communities nationwide have brought Imagine Science to over 30,000 under-represented youth.

The effort is getting results—71 percent of participating students showed an increase in their enthusiasm for STEM learning across 2019-2020, according to surveys, and 54 percent said they were interested in pursuing a STEM career compared to a national benchmark of 46 percent.

Getting kids excited about STEM takes high-quality programs, and the secret to delivering them, partners say, is a high and often unprecedented level of collaboration across organizations. “It’s more brains, more ideas, more innovation, more scale and impact,” explained Dominique Jones, executive director of Boys & Girls Clubs of Harlem.

PROGRAM PARTNERS

CONVENING PARTNER

YOUTH IMPACT

58% GIRLS
89% YOUTH OF COLOR
83% FROM LOW-INCOME HOUSEHOLDS
36% NEW TO IMAGINE SCIENCE PARTNERS

71% STEM ENGAGEMENT (VS. 69% National Benchmark)
50% STEM IDENTITY (VS. 42% National Benchmark)
54% STEM CAREER INTEREST (VS. 46% National Benchmark)
The Imagine Science summer program at the Boys and Girls Clubs of Greater Houston typically gets off to a boisterous start. Kids sit together, excited and talkative. But that’s in a normal year.

In the wake of the pandemic, what struck Kimber Williams, program manager for the Boys & Girls Clubs of Greater Houston, was how lonely kids seemed at first. Together in a room, they sat silently and apart.

At an Imagine Science site in Indianapolis, some students at first were so unused to anyone outside their families, “You couldn’t get them to say more than two words to anyone,” said Brittany Miller, program director at the YMCA of Greater Indianapolis Bridgeport Summer Camp. “They struggled communicating no matter how hard you tried.”

But over the summer, program partners found, as kids planted gardens, built robots, conducted experiments, explored animal habitats, their social comfort and confidence grew.

“It was wonderful seeing the excitement on their faces as they went into the garden together to taste vegetables or did math or engineering activities with their peers,” said Williams. “They may not have even realized they were learning—but they were learning.”
Imagine Science’s hands-on STEM approach has served as an antidote to summer learning loss for underserved elementary and middle school students since 2015. However, the program has never been so needed as in the summer of 2021, after an academically disrupted and isolating year.

While Imagine Science continues year-round, the program has always served most of its students in the summer months—about 60%+ in a typical year. Local affiliates of the four national partners—Boys & Girls Clubs of America, Girls Inc., the National 4-H Council, and the YMCA of the USA—collaborated to deliver high-quality STEM programs from New York City to Orange County, California.

In Houston, which hosted the largest Imagine Science summer program, with 50 sites and 3,500 students, partners delivered a wide variety of programs.

The YMCA launched Nature Explore, an investigation of plant and wildlife habitats, food webs, and water ecology. Curtis Lemieux, executive director of youth development for the YMCA in Greater Houston, used it with youth in Connecticut. To adapt it for Texas, he called on Jaden Kelly, program coordinator for Texas A&M AgriLife Extension Service – Harris County 4-H.

Kelly not only revised the curriculum, he provided a virtual training for the YMCA youth workers and then visited sites to observe lessons and provide feedback.

“We would not have been able to implement Nature Explore across all our YMCA sites without 4-H, and help from an expert in Texas ecology,” Lemieux said.

Among other activities, students explored parks and fields to look for components of habitat to determine if their chosen animals could survive.

Kelly said he was impressed with the rapport YMCA facilitators built with students, and how deeply absorbed groups would get in discussion—"I’m making the whole food chain for a dolphin—what does a fish eat?" They would stay on topic and then ask if they could do it again with a different organism."
At Girls Inc. of Greater Houston, staff drew on some of the organization’s own curricula for Imagine Science—such as one where elementary-school aged girls learn about the circulatory system as they don surgical gowns and operate on a doll with internal organs. Girls Inc. of Greater Houston also used the 4-H Mars Base Camp curriculum (developed in partnership with Google), which taught students about aerospace careers. As kids solve challenges, such as constructing the tallest possible communications tower from marshmallows and toothpicks or building a Mars rover from robotic parts, they also learn about the engineering process, which involves planning, testing, and revision.

Experiencing STEM learning as a trial-and-error process helps build perseverance and confidence, Girls Inc. of Greater Houston staff observed. “Our campers were not discouraged when our rovers didn’t work. They didn’t cry they didn’t give up,” said Rebecca Cox, chief program officer for Girls Inc. of Greater Houston. “To see a girl go from shutting down and feeling frustrated and defeated when they first try to not wanting to give up and feeling confident that they can solve the problem—that’s what we live and breathe for here.”
The summer months are the perfect time for kids to get their hands in the dirt, planting vegetable gardens to learn about plant science and nutrition. Some Boys & Girls Clubs in Houston used the Learn, Grow, Eat, & Go! program, an evidence-based curriculum of the International Junior Master Gardener® Program, with implementation support from 4-H.

“Kids in underserved communities, they eat a lot of processed foods,” noted Williams. “Through our program, they’re exposed to healthier foods and learn how food impacts their bodies.”

Nine-year-old Leonardo helped plant a garden of eggplant, pickling cucumbers, pumpkin, and cherry tomatoes at his Boys & Girls Club, and even took an okra plant home. “I learned about vitamin A and vitamin C and that some fruits and vegetables help you heal cuts,” he said. “The interesting thing about gardening is that it’s bad for a plant to fall over because it might not get enough water, and if a plant gets too much sunlight the food might be rotted or some of the leaves will fall off.”

In Indianapolis, where Imagine Science partners delivered curriculum on similar topics as the Houston sites, eight-year-old M.J. was interested to learn how many foods like cauliflower, wheat and corn were plants that grew from the ground just like trees. “I thought corn was corn made in a factory,” she explained, “until I noticed that corn was a food that you can grow.”

Miller said she believes that Imagine Science’s hands-on approach makes a difference in the amount of information students retain. “Hands-on is huge for kids.”

M.J., who attended the YMCA of Greater Indianapolis Bridgeport Summer Camp, agrees. She said she liked Imagine Science because “you learn about more things than in school and actually do it yourself to experience it. You get to feel what it’s like instead of watching it happen.”
Indianapolis partners have a unique approach to staffing their Imagine Science summer programs. Purdue University Extension 4-H trained older teens through Teens As Teachers to deliver STEM curricula on topics including food science and coding at Boys & Girls Clubs of Indianapolis, the YMCA of Greater Indianapolis, and Summer Youth Community Sites supported by 4-H. The teens get summer jobs, and training on networking, interviewing, and launching a career. The students get role models from their own communities who are interested in science.

“The teens loved the information they were teaching, and the excitement transferred to the kids and got them even more interested,” said Isia Williamson, program director at the Keenan-Stahl Boys & Girls Club in Indianapolis. The teen teachers at Keenan-Stahl said they found the experience rewarding. “I liked seeing the kids happy and learning,” said 17-year-old teacher Tatyana Hobbs, who is considering a career in animal science. At the end of each lesson “they really wanted to keep going,” she said. “They did not want it to stop.”

In the fall of 2020, six Imagine Science sites across the country piloted a data science program for kids featuring a novel, The Case of the COVID Crisis, by Dr. Pendred Noyce. In each chapter, a group of teens travels to a different time period to learn about a new pandemic. Following each chapter, kids use an online platform to create charts and graphs related to the topic that they can analyze like epidemiologists. Implemented in partnership with Science Education Solutions, Inc. and Tumblehome Books, Data Detectives Clubs were recently funded by the National Science Foundation for implementation at additional sites.

As part of the program, kids got to videoconference with a working epidemiologist. At Girls Inc. of Greater Houston, Francesca, age 12, peppered the doctor with so many questions about her career and how she pursued it, that the doctor promised her an internship when she got older.
Francesca said that “I really didn’t like the idea of science,” before but the data science program “captivated me.”

“They told me about a bunch of viruses that I never knew like the Ebola virus. I found out about their structures, how people still wonder about them, how they actually infect the body, how COVID goes into the cell and manipulates the cell,” she explained.

Her mother, Olinda, said that Francesca and her 10-year-old sister came home from Imagine Science every day talking about what they learned. After a year of mostly remote learning, the program’s social aspect was important too, she said. “They really craved interacting with others, having time to talk to the teachers. It was a relaxed science atmosphere with discussion.”

She thinks the opportunity to ask questions “and not be shut down” is what sparked her oldest daughter’s new interest in science. “In school they are like, ‘we have to move on.’ They have benchmarks,” Melendez explained. “Imagine Science made her feel, ‘They are listening to me and what I say matters.’ It felt inclusive to her.”
Imagine Science is a collaboration of four leading national youth organizations formed to bridge the STEM gap by igniting the imaginations of historically under-represented youth. We believe that prolonged, informal exposure to STEM increases a child's interest and builds a foundation for proficiency through high school and beyond. To learn more or make a donation visit, www.imaginesci.org/