

SUMMER 2023



# STEM MIDDLE SCHOOL EXPLORERS 2023

KEY PARTNERS AND FUNDERS





# PROGRAM OVERVIEW

## LEARN ABOUT STEM



Millhill hosted the STEM Explorers Summer Program for 30 Trenton and Mercer County middle school youth. STEM Explorers engaged in 6 weeks of hands-on science activities on various topics such as robotics, coding, engineering, nature, energy, and chemistry. The program included weekly field trips, guest speakers, and culminated in an expo.

## LEARN ABOUT YOURSELF



The program focused on developing important social emotional learning and life skills to support youth in their growth. The skills focused on this year were: growth mindset, teamwork, resolving conflict, and empathy.

## THINK ABOUT YOUR FUTURE



Building an understanding of potential career choices for the future is an important pillar of this program. STEM Explorers investigated careers in the STEM field. In addition, the program ended with a career fair in which 15 STEM professionals connected with STEM Explorers about their career journeys.

## Our Program Goal

We are committed to supporting our STEM Explorers on their journey to success, with a long term goal of building a pipeline of minority scientists coming from Trenton and Mercer County.

# PROGRAM COMPONENTS




Experiments

Social Emotional Learning




Science Expo

Professionals in the Field




Career Exploration

Up to \$300 Stipend



## Weekly Field Trips

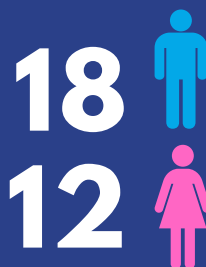


# DEMOGRAPHICS



**STEM EXPLORERS**

## SEX



## RACE/ ETHNICITY

- 13 AFRICAN AMERICAN
- 14 LATINX/HISPANIC
- 3 AFRO-LATINX



**10 SCHOOLS REPRESENTED**

## GRADES



## INCOME

**23/30**

STEM EXPLORERS  
QUALIFY AS LOW/VERY  
LOW INCOME



# 1

## Nature and Social Emotional Learning Week



STEM Explorers learned about nature this week by getting outside! They walked to Moody Park, did scavenger hunts, and observed the intricate details of nature around us. Campers participated in team building activities and got to know each other.

### Watershed Institute Highlights

- Catching crawfish
- Walking in the stream
- Constructing shelters
- Testing water pH levels
- Catching butterflies



## SOCIAL EMOTIONAL LEARNING

STEM Explorers learned about crucial aspects of social emotional learning so that they could apply these skills in the program and to their everyday life.



**Growth  
Mindset**

**Teamwork**



**Resolving  
Conflict**

**Empathy**



### Youth Feedback

"I learned at the watershed that I really love nature. I hope to find myself working in the environmental field one day." - Julianna

# 2

# Renewable Energy Week

## Princeton Plasma Physics Lab

STEM Explorers paid a visit to a plasma lab to learn about this important state of matter. We discovered that the lab is at the forefront of science and engineering in the advancement of fusion technology, which promises to provide a clean, safe, and boundless energy source.



## Hands-on Projects

- Solar-powered cars
- Mini motors
- Make your own magnet
- Bottle rockets
- Solar ovens and s'mores



## Team Building Activities

Princeton Blairstown Center paid campers a visit to engage them in fun team building activities.



## Princeton Neuroscience Institute Highlights

- Tour of labs
- Learned about eye-tracking and participated in experiments
- Saw an MRI machine

## YOUTH FEEDBACK

"I LOVED OUR VISIT TO PRINCETON UNIVERSITY, I MIGHT CONSIDER IT AS ONE OF MY COLLEGE OPTIONS."

- ALEX G.



# 3

# Chemistry Week

## Janssen Pharmecauticals

STEM Explorers enjoyed an amazing visit to Janssen, which included:

- A mock clinical trial
- A chemistry experiment: elephant toothpaste
- A tour of their working farm with a visit to the solar panels and cows



## Guests this Week



Bristol Myers Squibb™

Career panel with 5 scientists



Learned about the Delaware River Watershed and water chemistry



## Chemistry Topics

- Elements and the periodic table
- Solubility
- Surface tension
- Covalent bonds
- Osmosis

## YOUTH FEEDBACK:

"I loved looking at phytoplankton through a microscope and learning about the different types."

- Nzuri



# 4

# Robotics and Coding Week

## Robotics Highlights

STEM Explorers played with programmable robots called Sphero, making them move around the room using ipads. We built our own robots, making doodle bots, bubble machines, and balance bots. It was a fun challenge!



## Coding Highlights

Campers learned to code using Python, experimenting with the program by creating:

- A fill in the blank game with user input
- A calculator

## The College of New Jersey Highlights

- College and admissions tour
- Tour of the robotics lab
- Engineering project with college professors and students

## Youth Feedback



**"Building my robot this week taught me that you should always ask for help when needed."  
- Malik**



**"Something that I learned by building my robot this week was trial & error. Sometimes things don't go the way that you imagine but it's okay in the end."  
- Jolaan**





# 5

# Engineering Week

## Rutgers Makerspace and Labs

STEM Explorers visited the Rutgers Makerspace and Engineering labs at Rutgers University. While there, we got to see the woodshop, 3D printing room, and laser cutting lab. We learned about different engineering majors in college.



## Projects This Week

- Egg drop
- Computer Aided Design
- 3D printing
- Cricket cutter
- Arduino boards



Visit from STEAM Innovation Specialist from the NJ DOE, Mike Buttitta

## YOUTH FEEDBACK

"I gained the knowledge of planning before I do something. I know now that there should always be a plan before you start anything. I am thankful for the knowledge." - Alex

"I loved and learned about the Arduino boards this week, even though it was hard. I didn't get to just have fun with it, but I found it interesting trying to figure out the problems of it."

- Kamani





# 6

# Careers Week



## STEM Career Fair

STEM Explorers learned about various STEM careers based on their interests.

At our career fair, 15 STEM professionals engaged in discussions with STEM Explorers, giving campers the opportunity to gain insight into their future careers.



## Liberty Science Center

We explored an amazing & interactive science museum. Exhibits included:

- Wild About Animals
- Microbes Rule!
- Cosmic Portal
- Our Hudson Home
- And much more!



## YOUTH FEEDBACK

"I didn't know what I wanted to be when I came into this program. Now, at the end of the program, I know what I want to be in the future, a mechanical engineer." - Aaron J

"I wasn't aware of all the careers that I could have." - Aniyah



# SCIENCE EXPO

The STEM Explorers had the chance to showcase what they gained from their experience in the program.



## PRESENTATIONS

STEM Explorers prepared posters and presentations to share about their journey as a young scientist throughout the program. They did amazing!

## AWARDS

They were awarded a certificate, a science medal, and up to \$300 scholarship for their participation in the program, based on attendance.



# PROGRAM OUTCOMES

THE STEM  
EXPLORERS  
REPORTED  
HIGH SCORES  
IN **SCIENCE  
KNOWLEDGE  
AND CAREERS  
IN STEM.**

**93%**

of youth reported an increase in their general knowledge of STEM modules.

**93%**

of youth reported learning investigative science skills (questioning how things work or trying new approaches).

**96%**

of youth reported greater awareness of STEM career fields and can see science as a career opportunity in their future.

**89-96%**

of youth reported an increase in social awareness skills such as relationship building, self awareness, and conflict resolution.

**96%**

of youth reported learning something about themselves after completing the program.

THE STEM  
EXPLORERS  
LEARNED  
VALUABLE  
**SOCIAL  
EMOTIONAL  
LEARNING SKILLS.**



## Program Insights

"I learned that STEM isn't all about just science, it's also about problem solving, and it can also be fun. I learned that I like problem solving more than I thought I did, and I also learned that I'm more social than I thought I was. "

- Aniyah

"I learned that communication was a skill that I really needed, so that I could create opportunities for myself. "

- Hannah

We asked youth...

# HOW THEY FELT ABOUT THE PROGRAM...

## Mentors

"I did feel supported (by my mentors), I feel safe around them too. All the mentors are positive and so amazing and I would love to thank them all for encouraging the STEM Explorers."

- Marlyn

## Life after STEM Explorers

"Something I will continue to learn about after this program is the careers in science or engineering."

- Kamani

"I want to continue to learn about nature so when I join college I will continue to learn about nature in the environmental field."

- Julianna

## Bonding with Peers

"My favorite thing was just being able to bond with people who shared at least 1 interest in common with me."

- Nzuri



CHILD & FAMILY DEVELOPMENT  
*Educate. Empower. Transform.*

# THANK YOU!

TO OUR PARTNERS AND FUNDERS



Princeton Area  
COMMUNITY  
FOUNDATION

