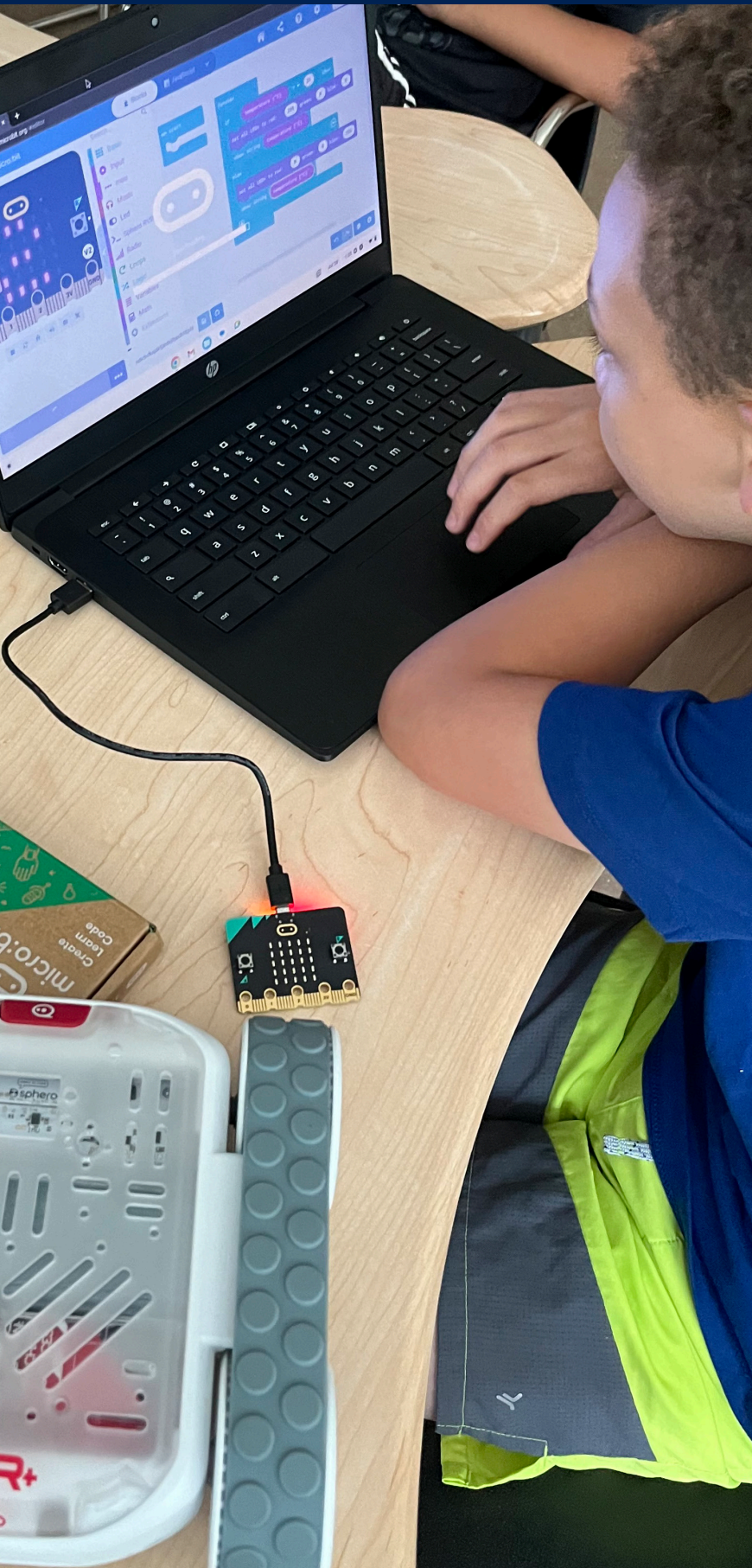
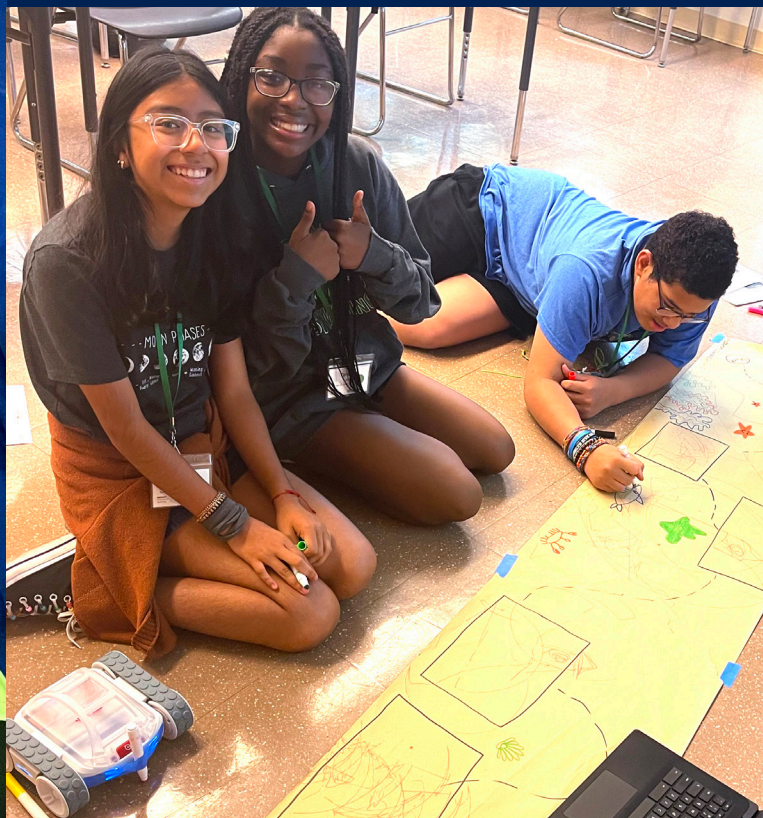




MERCY
UNIVERSITY
Center for STEM Education



2023:
A YEAR
IN REVIEW



Welcoming a New Era for Mercy University and the Center for Stem Education.

In 2023, Mercy College became Mercy University and we welcomed a new president, Dr. Susan Parish, beginning a new era of excellence for all students.

The Mercy University Center for STEM Education (MSCE) also embarked on exciting ventures, providing new opportunities for students, local teachers and the community at large.



We welcome Dr. Parish and look forward to working together to further the goals of the Center for STEM Education and Mercy University.

We also welcome Daniela Martinez as our Programs Facilitator. Daniela is a proud Mercy alumna and was also our former intern. Her communication skills – in English and Spanish – and positive attitude are a great addition to our team!

A New STEM Opportunity through Verizon Innovative Learning

The Mercy University Center for STEM Education (MSCE) was selected as a new partner site to implement the **Verizon Innovative Learning STEM Achievers** summer program for middle schoolers. While the program has been active across the United States for the last nine years, we are the first in the Northeast region to serve as a host site.

3

weeks of
summer
programming

3

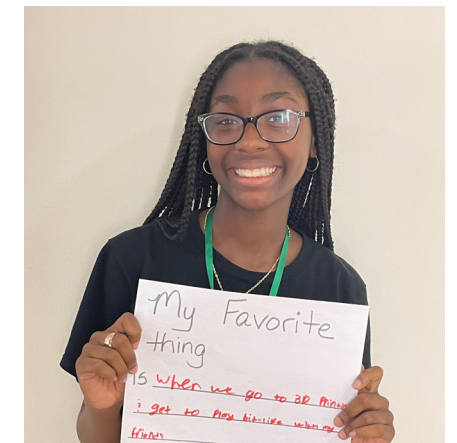
Mercy
students as
Teaching
Assistants

3

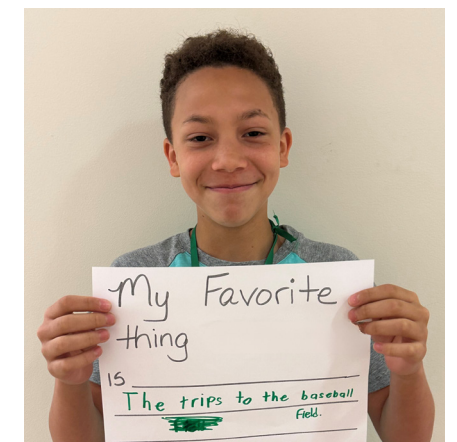
Mercy
Alumni
Instructors

1

amazing
program!



My favorite thing is: when we go to 3D printing and get to play bit-life with my friends.



My favorite thing is: the trips to the baseball field.

In summer 2023, we immersed nearly 120 students at both the Westchester and Bronx campuses in topics such as artificial intelligence, augmented reality, 3D printing and entrepreneurship.

Almost **50%** of students surveyed said their favorite Verizon Innovative Learning STEM Achievers activity was 3D printing!

“ My favorite thing was we were able to create coding and robotics in ways that I have never seen before - it was so amazing.

40
Merge Cubes



25
iPads

25
VR Headsets

25
Phones

25
Sphero Rovers

40
Chromebooks

4
3D Printers

25
Microbit kits

25
Ricoh cameras

Pictured this page:

- 1 3D Printing.
- 2 Programming a Sphero RVR.
- 3 Creating a virtual world to explore.

Having a little fun in the sun!

verizon
innovative learning

We took a Field Trip to Five Islands Park in New Rochelle to observe live video from a Remotely Operated Vehicle (ROV) in action underwater, fly drones for a bird's eye view of the local environments and even do some yoga!



(Above) ROV launch with New York State Marine Educators Association (NYSMEA).



(Above) Following the ROV in the water.



Verizon Innovative Learning STEM Achievers students visit the Mercy Health Professions Clinical Simulation and Learning Lab



Verizon Innovative Learning STEM Achievers Open House



40
Local Families

Mercy University STEM Corps for Community Outreach

Our corps of undergraduate and graduate students stepped up to help us with STEM outreach at events in Westchester, such as engineering paper rockets at the Davis Elementary School STEM Fair in New Rochelle; creating geodesic domes at the STEM Alliance's STEMtastic Fair in Larchmont; and helping in the biology lab during Saturday STEM Academy.



8
STEM Activity Centers run by

5
Mercy students and

10
local high school students



In November, we opened our doors in Westchester for a **Family STEM Day**, welcoming **40 local families** with middle school-aged children to engage in varied STEM pursuits including extracting strawberry DNA, engineering paper rockets, designing video games, robotics and coding.



The Directors' Corner

Meghan Marrero, Ed.D.

Professor of Secondary Science Education

Dr. Marrero, Co-Director of the Mercy University Center for STEM Education, was nominated to serve on the National Sea Grant Advisory Board. Established by the United States Congress, the National Sea Grant College Program works to create and maintain a healthy coastal environment and economy. The Sea Grant network consists of a partnership between the National Oceanic and Atmospheric Administration (NOAA) and 34 university-based programs in every coastal and Great Lakes state as well as Puerto Rico and Guam.

Meghan is also serving as the National Coordinator for the USA Blue Schools, a network of schools committed to improving ocean literacy and deepening their community's connections to the ocean.



(Above) Dr. Gunning with Astronaut Nicole Stott



(Above) Dr. Marrero in Tumon Bay in Guam at the National Sea Grant meeting.



(Above) Drs. Marrero and Gunning presenting with Mercy School of Education Faculty members Dr. Aki Ohseki, Dr. Roseanne Vallice Levy and Dr. Theresa Quackenbush on the interdisciplinary approach to STEM at the 2023 National Science Teaching Association Conference.

Amanda M. Gunning, Ph.D.

Professor of Secondary Science and STEM Education; Chair of the School of Education Secondary Education Department

Dr. Gunning, Co-Director of the Mercy University Center for STEM Education, was elected vice president of faculty senate, where she advocates for faculty and students. Amanda was once again invited to Cameroon to support the Summer Bridge Program offered by the Pan African Higher Education Institute (PAHEi) and teach workshops in artificial intelligence, the history of the US and technology and goal setting. Amanda used the experience to extend her contacts there and is working to support access to education with PAHEi and other organizations in Cameroon.

In October, Amanda was invited as a guest speaker at the Mississippi Infinity Science Center benefit gala "Courageous Women in STEM: From Education to Experience" along with Astronaut Nicole Stott.

NEW INITIATIVE:

Long Island Sound Schools

In collaboration with the University of Connecticut, the MCSE will facilitate the Long Island Sound Schools Network. Ten schools in the Long Island Sound watershed were selected to enact co-curricular projects that to better connect their school communities to the Long Island Sound and our global ocean.



NEW INITIATIVE:

STEM Schools Network

More than 500 teachers in our region have participated in professional development and teacher leadership programs through the MCSE. To better connect these teachers and schools across our broad network, we are excited to present the Mercy University STEM Schools Network; a consortium of distinguished schools who have demonstrated a commitment to STEM education and opportunities through the Mercy CSE. Applications are open for schools to apply for this distinctive recognition.

Benefits for awarded schools include:

- Discounted admission to our annual K-12 STEM Educators Conference
- Discounted fees for STEM professional development
- Opportunities for mini-grant funding
- Access to a STEM lending library of robotics and electronics

Our first awarded schools will be announced in June 2024!



(Left) Summer Bridge Program offered by the Pan African Higher Education Institute (PAHEi) in Cameroon.

The Center for STEM Education Draws on Rich Research Experience to Expand Work to Program Evaluation

The Research/Evaluation Team at the Mercy University Center for STEM Education consists of Drs. Amanda M. Gunning, Meghan E. Marrero, Kristen V. Napolitano, and Jennie Brotman. We have expanded our work to provide evaluation services both for internal (Mercy University) and external grants and programs.

Our evaluation team works with project directors to prepare and implement an appropriate evaluation plan using a variety of quantitative and qualitative methods. Through formative reporting, we support projects toward continuous improvement, helping to meet goals and illustrate strengths. If your project or organization needs evaluation services, reach out to the team to request a proposal.



(Above) Port Chester Fellow Lindsay Chudoba took 4th graders to the Wolf Conservancy and designed a curriculum unit on wolf habitats and animal adaptations.

(Below) New Rochelle Fellow Anny Vanegas expanded her FLORES family science nights from grades one and two to now include third grade students and coding activities – and trained colleagues to lead with her.

STEM Master Teacher Fellowship

The first cohort of the National Science Foundation STEM Master Teacher Fellows completed their five-year commitments in December 2023! Fellows initiated a variety of STEM district projects funded by the grant.



13 Fellows and 5 District Liaisons participated in the **STEM MTF program.**

Through leadership projects STEM Master Teacher Fellows reached:

54
teachers

80
families

300
students

Cohort 1: Kiowa Garcia, Richard MacLeish, Julianna Puma, Lindsay Chudoba, Johanna Vasquez



(Above) Yonkers Fellow Kiowa Garcia used Sphero robots to explore a model of the Hudson River Estuary with middle schoolers. She also supported colleagues in incorporating robotics into their science lessons.



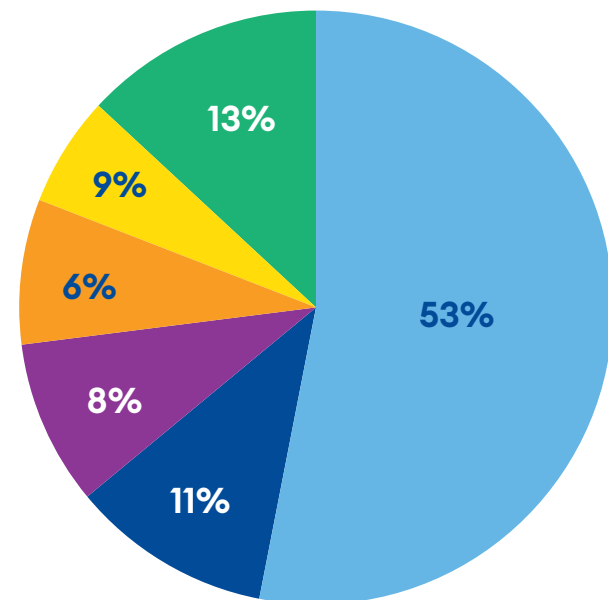
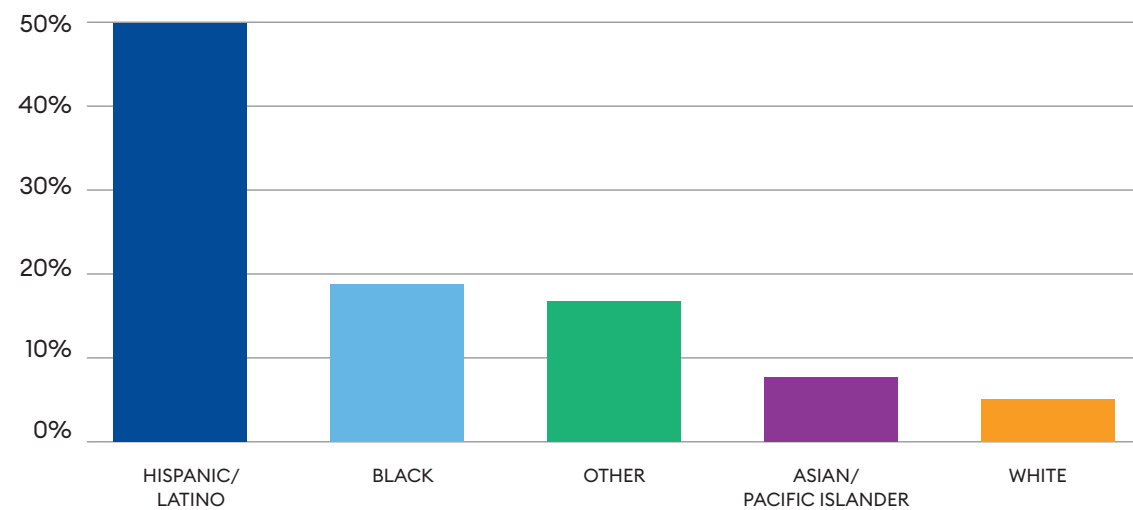
(Above) New Rochelle Fellow Johanna Vasquez led a family STEAM night for families with students in grades 2-4 with various hands-on STEM activity stations.

Saturday STEM Academy

The Saturday STEM Academy for students in Grades 1–12 has become one of our most successful programs. Thanks to Con Edison, the City School District of New Rochelle and local organizations such as SPRING Community Partners in Dobbs Ferry, **tuition for 89% of participating students was supported through scholarships.**

STUDENT STATS

Self-Reported Race/Ethnicity of Students 2023



School Districts 2023

- CITY SCHOOL DISTRICT OF NEW ROCHELLE
- DOBBS FERRY UNION FREE SCHOOL DISTRICT
- PUBLIC SCHOOLS OF THE TARRYTOWNS
- YONKERS CHARTER SCHOOL
- YONKERS PUBLIC SCHOOLS
- OTHER

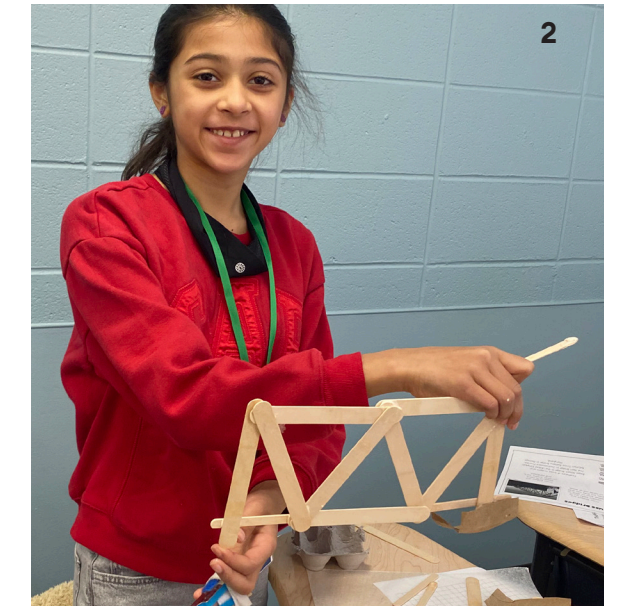
Spring 2023 Offerings:



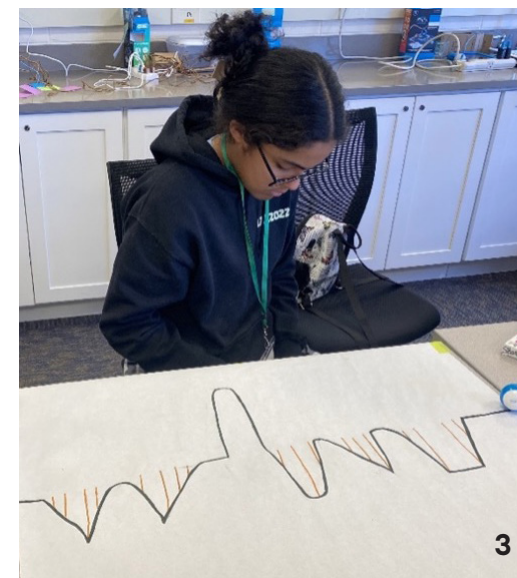
Grades 1–2
STEM with a Bird's Eye View



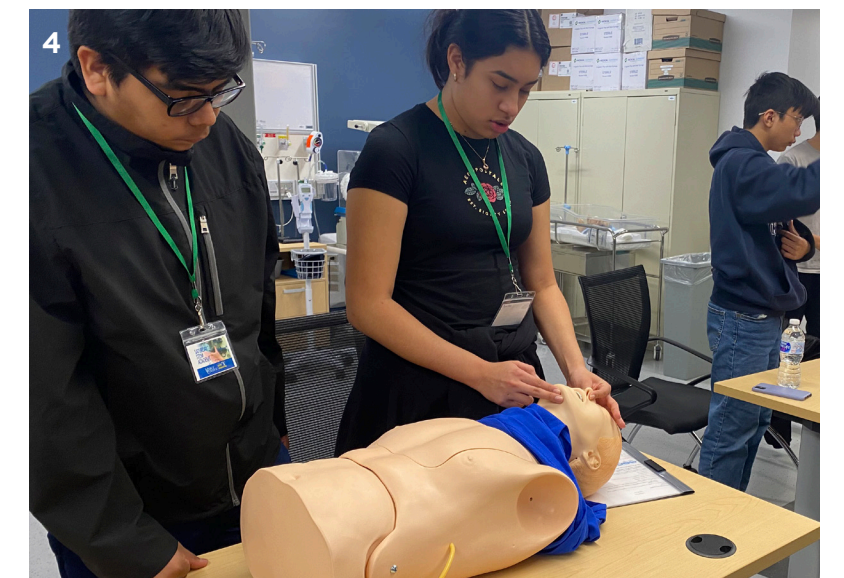
Grades 3–4
Shaping History:
Building Structures that Last



Grades 7–8
Math, Robotics
and STEM



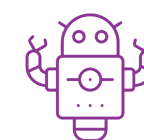
Grades 9–12
Health Basics in
the Nursing Lab



Saturday STEM Academy | Pictured this page:

- 1 Using a drone to see what a bird sees.
- 2 Designing a sturdy bridge.
- 3 Testing out roller coaster designs with Sphero robots.
- 4 Earning CPR Certification in the Mercy Simulation Lab.

Not pictured:

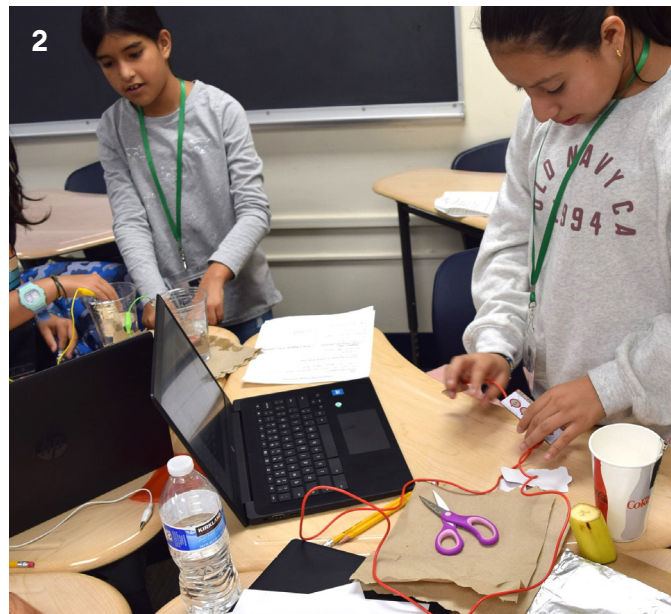


Grades 5–6
Robo-coding

Fall 2023 Offerings:



Grades 1-2
Animal Engineers



Grades 3-4
You Makey Makey Me
Want to Invent



MISTI II

Three new Scholars in the NSF-funded **Mercy Intensive STEM Teacher Initiative II (MISTI II)** project began their work in September 2023. Mark Austin (biology), Showki Zindani (biology) and Sridevi Ayloo (mathematics) began their pedagogical seminars and observations in high-need schools, along with coursework to prepare them to become certified math and science teachers.

Cohort I Scholars entered their first year as certified teachers, while Cohort II Scholars embarked on their first student teaching placement.

“ I am immersed in a wealth of knowledge and experience by the professors that I have shadowed during my volunteer work. The STEM Academy at Mercy University is a beacon of light that guides the path of equity and inclusion for all.

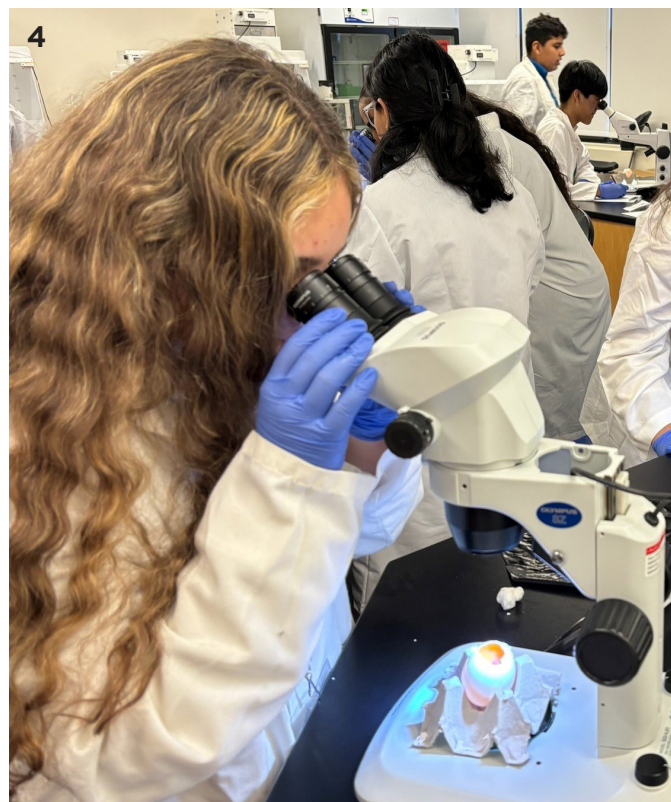
- Showki Zindani
(Cohort 3)



Grades 5-6
Survivor: Animal Adaptations



Grades 9-12
Discovering Brain Development



“ Being a part of the MISTI program has been quite an achievement! It has been preparing me to have a strong foundation within the field of STEM education.

-Michelle Rosa
(Cohort 2)

Saturday STEM Academy | Pictured this page:

- 1 Creating beaver dams and puppets.
- 2 Using bananas with Makey Makey circuits.
- 3 Observing real-life animal adaptations with Rye Nature Center.
- 4 Looking for brain development in chick embryos.



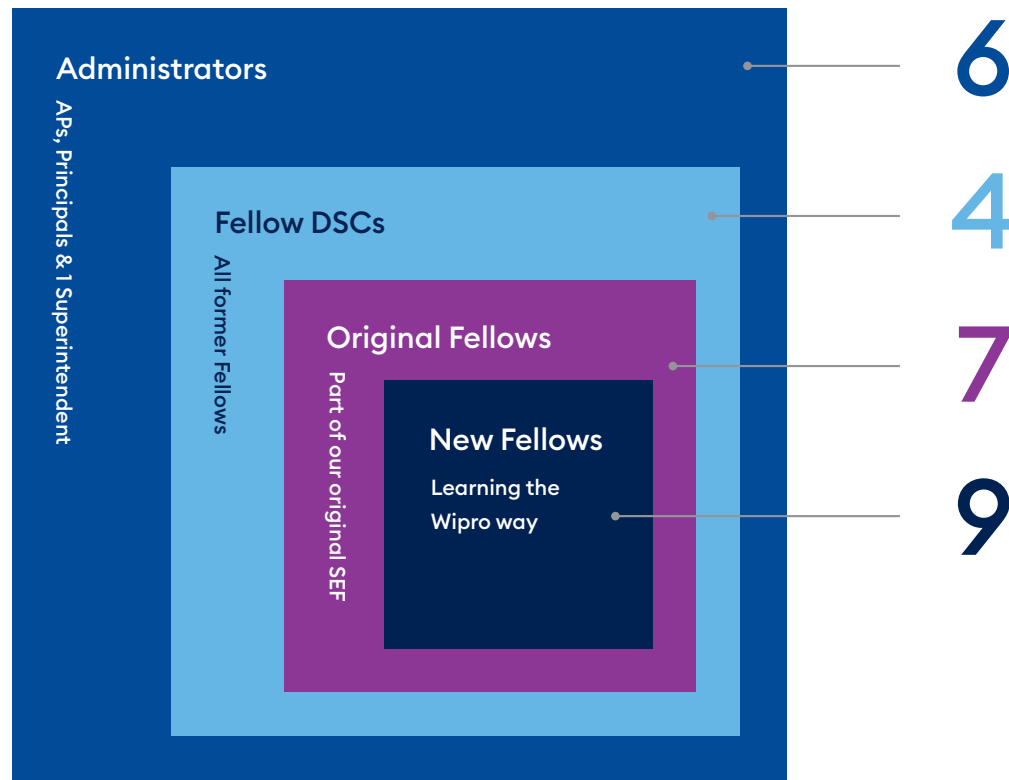
Not pictured:
Grades 7-8
The Wonders of DNA

Wipro Reimagined

How Cohort 1 Brought Change to Their Districts

Building on the success of the Greater New York Wipro Science Education Fellowship (SEF), Wipro Reimagined **supported 31 teachers** in three school districts (New Rochelle, White Plains, Port Chester) to incorporate STEM education into district initiatives.

New Wipro Projects by the Numbers



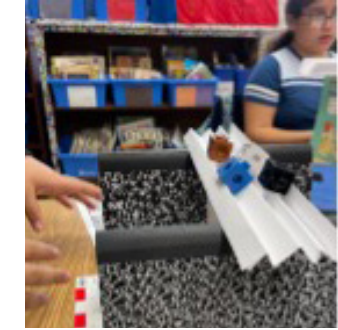
2023 Completed Projects



Vertical Integration of STEAM in Elementary School

Engineering and math for 2nd and 3rd graders.

Ali Abramo, Maria Torres, Melody Castiglia, Jill Ritacco, Johanna Vasquez, and Ann Marie Manganiello, Trinity Elementary School, New Rochelle.



Eggeptional Bridges: 4th and 5th Grade Engineering Investigations

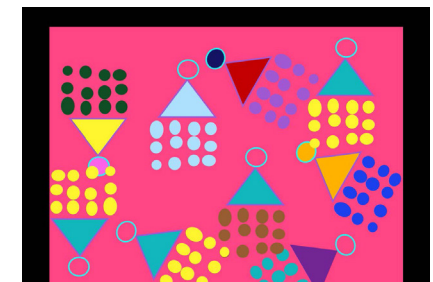
A vertical integration of engineering design inspired by a schoolwide effort to build a community garden.
Colleen Cahill, Carrie Poulos, and Georgina Diaz-Luz, Edison Elementary School, Port Chester.



Computer Science and Social Emotional Learning Fused

A community-based project dedicated to increasing access and belonging for elementary students in robotics and computer science.

Aimee Ferguson, Marsha Belton, Vicky Condello-Vessecchia, Michelle Memoli, Ashley Ramirez, Alicia Ricks and Gillian Roshinko: Jefferson Elementary School, New Rochelle.



STEM Hub: Authentic Experiences in Science and Engineering for Young Learners

A curated online resource for culturally responsive, interdisciplinary STEM lessons for elementary school.

Carmen King, Meera Rajani, Elcilia Taveras, Grizel Marquez, Pam Del Balzo, Mary Kuba and Susannah Genty-Waksberg: White Plains City School District, White Plains.



Edison's Kindness Garden: A Schoolwide Engagement

A community garden built for and with community members, it served as an anchor for integrated STEM lessons across elementary grade levels.

Marcia Manzueta, Lovely Grant, Diana Santiago and Kelly Budde: Edison Elementary School, Port Chester.



Family Learning & Outreach for Research and Education in STEM (FLORES) 2.0

An expansion of a K-1st grade, bilingual family STEM workshop series. New session integrated coding, engineering, and composting into 2nd and 3rd grade.

Anny Vanegas and Maia Starcevic: Columbus Elementary School, New Rochelle.

Of the 31 teachers in Cohort 1,
12 are also Westchester STEM Ambassadors
and 2 are STEM Master Teacher Fellows.

162 Teachers
beyond the original fellowship were reached with Wipro Reimagined.

25% of Cohort 1 Wipro Reimagined Fellows
are presenting their projects at the National Science Teaching Association Conference in March 2024.

17 new teachers
have been accepted for **Cohort 2**, with **1 additional new district** participating.



Creating engaging videos using green screens

Smart Start Programs

Smart Start is a New York State Education Department Initiative to improve computer science and engineering teaching and learning in K-8 classrooms. Mercy University CSE is the professional development partner for two Smart Start initiatives: the Westchester STEM Ambassadors collaboration between seven school districts, and Clarkstown Central School District with six participating schools.

In this third year of funding, Smart Start teachers engaged with new tools including 3D printers, Merge Cubes, AI applications, and new robots. We were pleased to expand our professional development facilitators to include Amanda Solarsh and Sabrina Avila.

“Participating in the STEM Ambassador Program has been a rewarding experience that seamlessly integrated my role as a school psychologist with the world of science, technology and engineering . . . I had the opportunity to engage students in hands-on STEM activities, fostering their curiosity and critical thinking skills.

-Ashley Ramirez,
STEM Ambassador



Amanda Solarsh



Sabrina Avila



“As an English teacher, I don’t get too many opportunities to play with robots, learn to code, or explore engineering. However, as a participant in the Smart Start program... I have learned about so many new tools and resources that I can incorporate into my classroom... exposed to an approach to teaching that encourages students to explore and problem-solve... and connect STEM learning to my own subject area in new and creative ways that I will be taking with me for the rest of my career.

-Michaela Muckell, Clarkstown



Smart Start Programs | Pictured this page:

- 1 Programming Dash robots.
- 2 Using raw vegetables as conductors with Makey Makey microcomputer.
- 3 “All About Me” with Merge cubes.

K-12 STEM Educators Conference

We hosted our annual K-12 STEM Educators Conference on September 30, 2023 at the Westchester Campus, offering an affordable registration fee for teachers thanks to generous funding by Regeneron.

Despite local flooding, 74 teachers braved the weather to attend and hear the keynote presentation of STEM motivational speaker, Aspen Meineke, who spoke on *The Future of Work: Empowering Students through STEM and SEL*.



K-12 STEM Educators Conference | Pictured this page:
 1 Dr. Arthur Eisenkraft with 18 Wipro Reimagined Fellows.
 2 Aspen Meineke, STEM motivational speaker.

K-12 STEM Educators Conference | Pictured this page:

- 3 Westchester STEM Ambassadors presented on integrating STEM in early elementary classes.
- 4 Conference attendees at the Regeneron DNA table.
- 5 Port Chester teachers presented poster on Wipro Reimagined project.



New Community Partners

Connecticut Sea Grant

Science Teachers Association of New York State (STANYS)

New York State Marine Education Association (NYSMEA)

SPRING Community Partners, Dobbs Ferry

Yonkers Public Library

Niño de la Caridad Foundation, Bronx

Teatown Lake Reservation

Sandpiper Fund

Sullivan Boces

University of Connecticut



Daniela Martinez, with Asst. Superintendent of Elementary Supervision Dr. Hernandez of Yonkers Public Schools



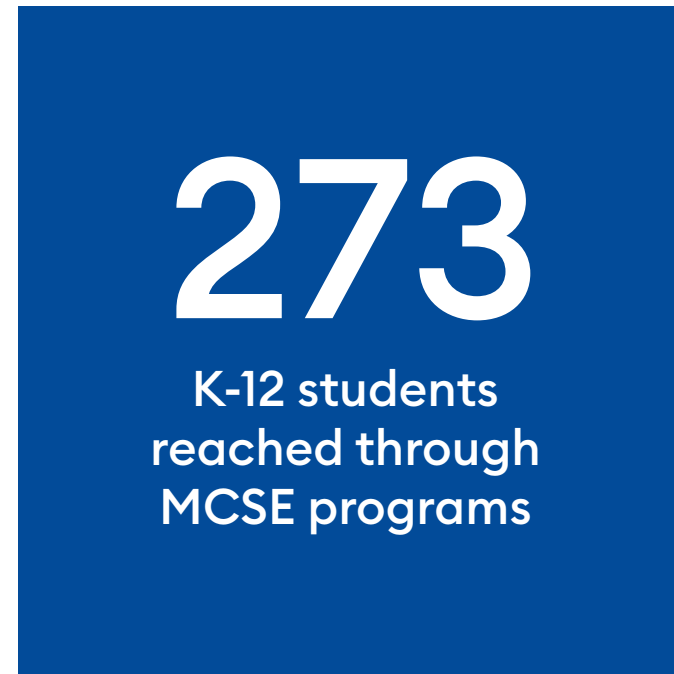
STANYS table at STEM Educators Conference

School Districts Engaged Proportionally with MCSE Programs:

New Rochelle
Rockland BOCES
Clarkstown
White Plains
Port Chester
Ossining
Yonkers
Eldred
Elmsford
Tarrytown

MCSE Outreach in 2023

By the Numbers





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