



STEMteachersNYC

Science • Technology • Engineering • Math



PROGRAM REPORT SUMMER 2019

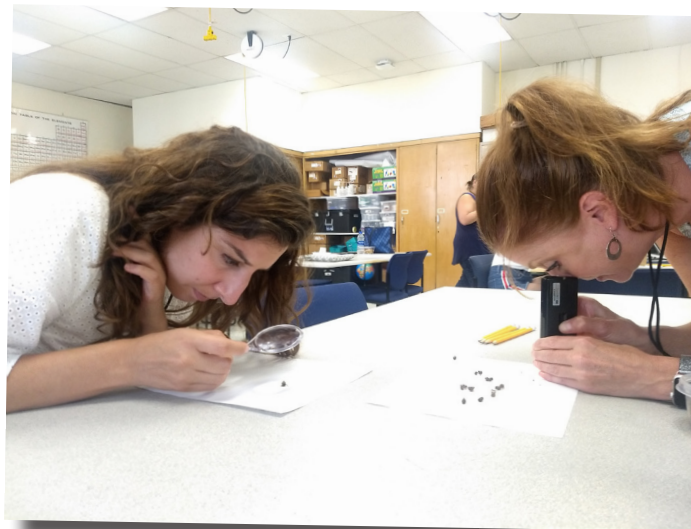
FOR TEACHERS, BY TEACHERS, ABOUT TEACHING

STEMTEACHERSNYC.ORG     @STEMTEACHERSNYC

SUMMER 2019 HIGHLIGHTS

This summer **STEMteachersNYC** engaged with 151 educators from around the world through hands-on professional development in STEM for teachers, by teachers. This year we listened closely to our members and organized a collection of 2 day and 3 day workshops to accommodate teacher's busy schedules, and to pilot several new formats and topics. **STEMteachersNYC** partnered with the Columbia School of Engineering to launch a new workshop focused on design, engineering and maker cultures, centered around new approaches to harnessing emerging technology and design in the STEM classroom. Our biology team also conducted a new 3-day workshop focused on Biotechnology exploring the use of living systems for research in the development of new products, genetic engineering and more.

The Summer STEM Institute was also an opportunity to help educators around the region prepare for the ongoing transition to the Next Generation Science Standards, which are



being rolled out in NYC and New York State over the coming years. Our Unit Planning with NGSS and Phenomena-Based Learning workshops were quite popular, and offered a space for teachers to develop engaging unit and lesson plans that help students think like scientists, engineers and designers.

Our partnership with the NYC Department of Education also continued with a 2 day workshop focused on the fundamentals of active learning in STEM, bringing together a cohort of new teachers working in the Bronx. **STEMteachersNYC** assembled a fantastic team to engage the group in a variety of hands-on experiments and experiences that covered physics, biology and chemistry in new ways.



A LOOK AT THE NUMBERS...

STEM WORKSHOPS 2019

WORKSHOP TITLE	No. of Teachers
Standards Based Grading and Assessment in STEM	13
Intro to Active Learning in STEM	7
Biology and the Living Environment via NGSS	12
NGSS and Phenomena-Based Learning	10
Seeing Science Everywhere: Best Practices in Elementary STEM (K-5)	13
Unit Planning & Curriculum Development with NGSS	26
Design, Engineering and Maker Cultures	23
Computational Thinking & Coding in Physics	7
Introduction to Biotechnology	9
TOTAL	120

SPECIAL PROGRAMS 2019

WORKSHOP	No. of Teachers
NYC DOE Teacher Career Pathways: Intro to Active Learning in STEM (HS teachers)	16
Kid Talk, Teacher Talk in Elementary Science	15
TOTAL	31

WHAT TEACHERS ARE SAYING ABOUT STEMteachersNYC...

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ASSESSMENT & STANDARDS-BASED GRADING IN STEM

It was the best PD I have had in 14 years of teaching. I like that the leaders are teachers who have been working to implement the ideas, and that they engaged critically with the concept, and encouraged participants to do the same. The interactive nature of the workshop was also very helpful. Adopting SBG is a challenge, and working with the instructors and fellow participants helped me to find a way to begin to make it happen. Too many other PD programs that I have participated in are either not very informative, offering platitudes and aphorisms in place of critical analysis of the ideas presented, or are run by people who are not practicing teachers.

I appreciate that the instructors have thought so deeply about SBG and were able to discuss it and engage in critical discussions with the participants. I found that their ideas, philosophies, and the ways that they spoke about the concepts of SBG resonated with me. My hope for the future of my teaching is that implementing the concepts of SBG into my teaching will allow my internal light to shine more brightly and help guide students to more fully appreciate the beauty of science.

Because it is such a complex topic, and because there is no “right” way to implement it, I would love to be able to participate in a more advanced seminar with



these instructors and participants next year.

- Fred Oliver, The Williams School, New London CT

I truly appreciated the PD instruction being led by teachers, I believe this made the workshop experience furthermore relevant and realistic for my education practices. What was different was the fact that we were able to work on the content and get feedback during the instructional time period being offered to us.

- Elizabeth Munoz, Immaculate Conception School, New York NY

INTRODUCTION TO ACTIVE LEARNING IN STEM

STEMteachersNYC teacher-led model is unique. It works on higher order skills through questioning and by giving everyone the chance to think, prepare a WB [whiteboard], and share thoughts.

- Mehdi Mansour, Le Lycee National, Lebanon

TEACHING BIOLOGY & THE LIVING ENVIRONMENT VIA THE NGSS

Thank you for everything! I learned a lot from this training from white boarding (Claims, Evidence, Reasoning-CER) to grappling. Never regret commuting two hours back and forth for ten consecutive days. I am inspired to learn more techniques and how it's being done in class. May you continue to share your wisdom, inspire and radiate your dedication to teach towards our fellow educators. Kudos !

- Leslie Malasarte, PS/IS 66K, Brooklyn NY

NGSS & PHENOMENA-BASED LEARNING

I really enjoyed Kara's actual classroom experience. I also thought it was great that we experienced the concepts as students instead of just told the strategy/concept. There was also work time and collaboration with others. Kara was able to adapt to each of our needs in this small setting.

- Erin Kim, Bronx Lighthouse Academy, Bronx NY

SEEING SCIENCE EVERYWHERE: BEST PRACTICES IN ELEMENTARY STEM

I loved learning from other educators, and hearing their experiences with their students. I loved seeing the examples they gave of different units that highlighted these practices, and I especially loved the variety of grade levels (within elementary school) that were highlighted.

- Martina Meijer, PS307, Brooklyn NY

UNIT PLANNING & CURRICULUM DEVELOPMENT WITH NGSS

It was an extraordinary experience. It was tailored to the various levels of expertise which made us feel comfortable to engage.

- Denique Haynes-White, MS358Q, Jamaica NY

Fantastic. An enthusiastic and engaged group of teachers. Everyone seemed like they genuinely wanted to be there, which was different than PD offered at school. We were allowed plenty of time for collaboration and independent work, which was also unique to this workshop, and very appreciated! The ability to come away with some useful products made this a meaningful 2 days.

- Valerie Zumbo, New Rochelle HS, New Rochelle NY

I had a great time! It was a highly interactive blended active learning experience with personalized attention from an experienced peer instructor. I learned a great deal about a subject I only knew a little about and will be able to apply my learnings immediately to my classroom. I also got a chance to network and share experiences with other teachers in the area. Great job, Kelly! I feel like for the first time I really "get" NGSS and can now actually apply the principles in a real, tangible way. Thank you!

- Allen Powe, Hyde Leadership Charter School, Bronx NY



ELEMENTARY STEM INITIATIVE GROWS!

Our Elementary STEM community continued to grow this summer. Our Elementary STEM Initiative team - Juliette Gaurino Berg, Beverley Chang, Jenny Lee and Kate Macaulay spearheaded our first ever 3-day workshop for elementary educators this summer. Building on the success of our Seeing Science Everywhere elementary STEM series, the workshop integrated best practices in science teaching through hands-on immersive experiences, lesson and unit planning and in-depth discussion with peers. The workshop brought together local and international teachers, and included a visit to Ms. Macaulay's classroom at Hunter College Community School in Manhattan, bringing to life the practices explored through the workshop.

Our Kid Talk Teacher Talk in Elementary Science program also continued with its third cohort of teachers from around the city and region. In collaboration with PS 36 The Margaret Douglas School and its summer camp program, the cohort was able to develop hands-on lessons and pilot them with K-5 students on site. This responsive Lab School model continues to be a mainstay and essential component



I loved that the presenters are current teachers. They know what's realistic, they understand the restraints, and they have a real understanding of the different grade levels. And our four presenters were especially fantastic: creative, supportive, helpful, knowledgeable... The list goes on and on!

- Lindsey Alexander, Woodstock School, India

of the program's success allowing for real-time observation, feedback and experimentation that is essential in working with elementary populations.



NYC DOE PARTNERSHIP

TEACHER CAREER PATHWAYS



This summer STEMteachersNYC was invited by the NYC DOE Teacher Career Pathways Program to facilitate a 2-day professional development workshop focused on Active Learning in STEM for teachers in their first 5 years of teaching in the Bronx. STEMteachersNYC assembled an expert team of master teachers to lead participants through a series of hands-on labs, conversations and experiences focused on phenomena-based investigation and modeling in science.

According to the NYC DOE's website, the "Teacher Career Pathways is a strategic approach in teacher leadership. It increases access to highly effective teaching, supports student achievement, promotes teacher retention, and provides development opportunities for teachers to continually build their instructional practice." Using this as a starting point, the STEMteachersNYC Active Learning team designed a series of adaptable

labs, modules and lessons that teachers can use right away in their classroom to enhance students' understanding of key STEM concepts and models. A number of participants noted how relevant and useful the workshop was because it was developed by teachers with a working understanding of how to address the needs of diverse learners, and also an understanding of NGSS and NYSSLS frameworks.



COMPUTATIONAL THINKING AND CODING IN PHYSICS

STEMteachersNYC continues to pioneer the future of physics education with the third iteration of our Computational Thinking and Coding in Physics program. Workshop leaders Josh Rutberg and Emily Pontius co-led a 2-week session exploring applications in both computing and physics education to enhance required NYS physics regents curriculum, and also proposed novel opportunities for participants to develop model scenarios that would otherwise not be possible without a computer. The Computational Thinking in Physics team is also exploring the use of Javascript to open up the possibility of different coding languages to support the curriculum developed. We hope this will invite a diverse

community of teachers to experiment and pilot materials through a series of workshops in the Fall of 2019.

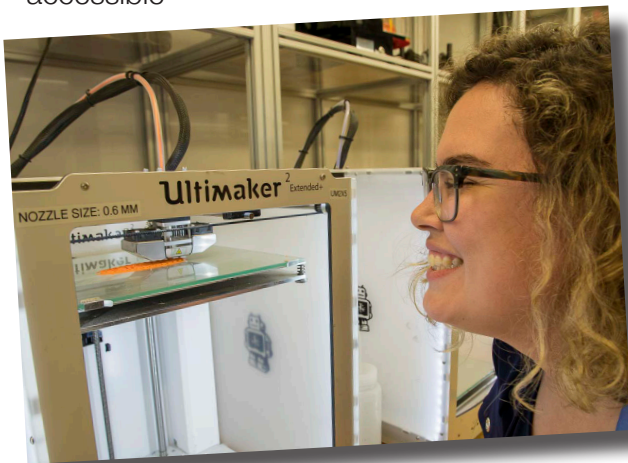


DESIGNING NEW FUTURES

Our partnership with the Columbia School of Engineering's Outreach Program led to some exciting discoveries this July, bringing together a diverse mix of teachers throughout the K-12 spectrum. With access to 3D printers and accessible

design tools like TinkerCAD, workshop leaders Michael Katz and Frances Hildalgo were able to craft an experience to meet everyone's needs. Starting with the premise that everyone designs and engineers, the workshop led participants through a rigorous design-thinking protocol anchored in a series of hands-on projects and design challenges. The goal was to familiarize participants with easy-to-find materials like cardboard, while also scaling up their understanding of how to use basic engineering design software and tools such as a laser cutter or 3D printer.

STEMteachersNYC is excited to continue growing this partnership and with the possibility of using new facilities in the School of Engineering set to open up this Fall.



STEMteachersNYC 2019 SUMMER INSTITUTE INTERNSHIP

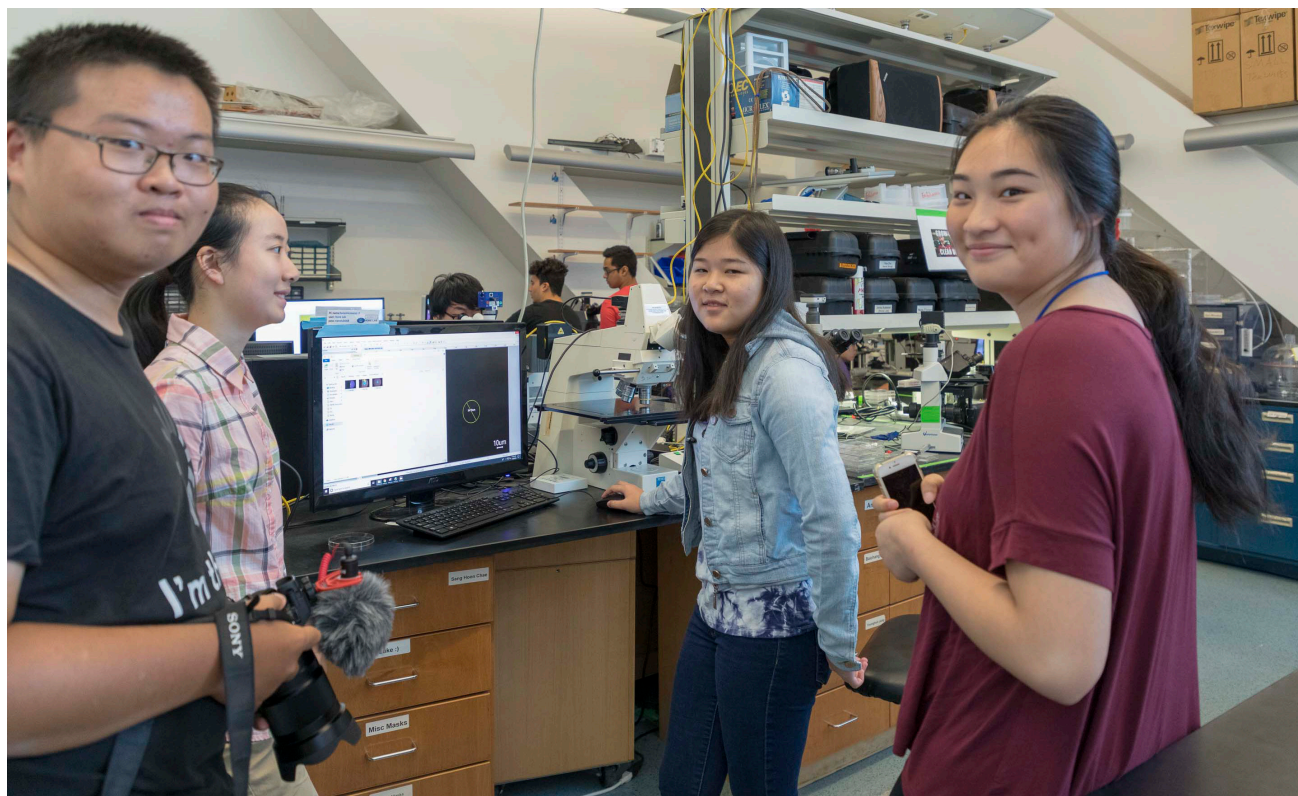
Over the course of this year's **STEMteachersNYC** 2019 Summer Institute, we hosted three interns from China and the US. The goals of the internship were to learn the structures and functions of teacher-led workshop approaches, the essentials of starting their own organization, and the development of teacher portraits using new skills in filmmaking and digital storytelling. The interns were astute, disciplined, and hard working, and they learned a great deal from the community of teachers involved this summer. The interns also received a personal tour of Dr. Jim Hone's research group focused on novel materials synthesis and device nano-fabrication.

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“I feel that being in this program taught me about how teachers incorporate concepts like critical thinking, data analysis and discussion into the forty-five minutes that I am in the classroom. I noticed that reversing the roles and having teachers act as students, finding ways to improve their curriculum and teaching, was effective in creating a consensus about what effective teaching is.”

- Sydney Zhang (Senior, Briarcliff Manor High School, NY)

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ABOUT US

STEMteachersNYC is a nonprofit organization dedicated to supporting a community of STEM teachers across the NYC region. Our mission is to cultivate excellence in STEM teaching and to promote deep understanding and success for students through innovative, teacher-led professional development. STEMteachersNYC is a 501(c)3 non-profit, and Continuing Teacher and Leader Education (CTLE) vendor for the New York City Department of Education (#3385).

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SPECIAL THANKS TO OUR PARTNERS AND SUPPORTERS!

THE JAFFE FAMILY
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