Philadelphia Regional Institute for STEM Educators

P R I S E

STEM Educator Conference

Exploring and Expanding Ways to Make STEM Relevant

SATURDAY, OCTOBER 28, 2023
9:30AM - 3:30PM

SAINT JOSEPH'S UNIVERSITY

600 SOUTH 43RD STREET, PHILADELPHIA, PA, 19104



Location

McNeil Science and Technology Center (MSTC)
Saint Joseph's University
4308 Woodland Ave, Philadelphia, PA 19104



Parking

Campus parking lots can be accessed by entering 42nd Street (one-way street that loops around several buildings) from the corner of 42nd Street & Woodland Avenue. Neighborhood street parking is also available, please be mindful that some areas have time limits.

Schedule

09:00 am - 09:30 am: Registration & Light Breakfast - MSTC Atrium

09:30 am - 10:15 am: Welcome & Keynote Speaker - MSTC 145

10:30 am - 11:15 am: Workshop Sessions 1

1A. Introducing Histematics: Using African-American History to Teach Mathematics - MSTC 145

1B. Empowering teachers to eCLOSE into Teacher Scientists - MSTC 137

1C. STEM Nature Journaling - MSTC 237

1D. Bridging History and STEM Towards A Sustainable Future - MSTC 337

1E. Some Physics Demonstrations and Experiments in Renewable Energy for the K-12 Classroom - MSTC 204

11:30 am - 12:15 pm: Workshop Sessions 2

2A. Leaping over the Carbon Footprint - MSTC 145

2B. Beyond Textbooks: Innovations in Health Science Education to Empower Community Health - MSTC 137

2C. Coding with Robotics in K-5 - MSTC 237

2D. Physics Misconceptions and Implicit Bias - MSTC 337

12:15 pm - 01:15 pm: Lunch & Resource Tables - ARCR MPR

01:15 pm - 02:00 pm: Student Panel - MSTC 145

Samantha Sandhaus, President of Feeding Philly

02:15 pm - 03:00 pm: Workshop Sessions 3

3A. Title: The Way of "STREAM", Bridging STEM and Entrepreneurship - MSTC 145

3B. Empowering Financial Literacy Through a STEM and Social Justice Lens - MSTC 137

3C. These are a few of My favorite things: Engaging Scholars as the Scientist They are - MSTC 237

3D. Using DBH Measurements to Calculate Tree Biomass: Connecting the Classroom and Connecting to Community - MSTC 337

03:00 pm - 03:30 pm: Closing & Raffle - MSTC 145

Keynote Speaker

MSTC 145

Devon Perkins
Science Content Leader
Cristo Rey Philadelphia High School
PRISE USTRIVE Cohort 2



Devon Perkins has taught several STEM courses from 9th to 12th grade teaching Integrated Science to 9th graders. To him, teaching is a practice of incentivizing learning by providing spaces for students to see themselves in the content they encounter in the classroom and use the course skills as tools for solutions to relevant issues.

Cristo Rey Philadelphia High School STEM Program

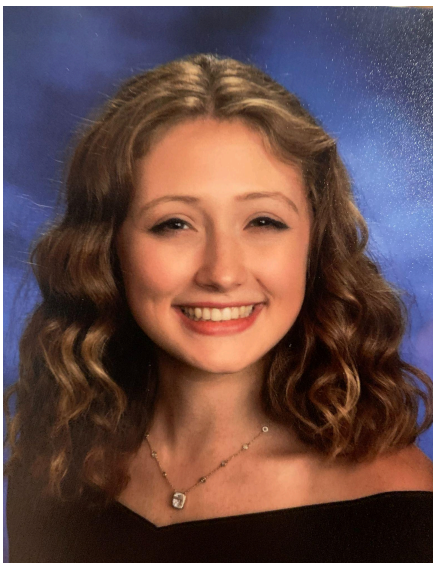
The Cristo Rey Philadelphia High School STEM program provides opportunities for students to receive diverse instruction in their first two years, in order to make informed decisions on a more focused Pathway as an upperclassmen. While being exposed to a variety of content and careers in life science, engineering, and data science, students gain a realistic perspective on how their aptitude and interests can inform their future course and career decisions. Students encounter real-world issues that require an understanding of the fundamental skills and content within their course to provide tools for authentic solutions to local problems.

Student Panel
Impactful STEM Experiences
1:15 PM - 2:00 PM

MSTC 145

Samantha Sandhaus

President of Feeding Philly



Samantha Sandhaus is the founder and president of a student-led organization, Feeding Philly, based out of her high school in Philadelphia. Feeding Philly works to address food waste and insecurity in Philadelphia schools and communities through mutual aid and educational empowerment. Her organization is now a nationally recognized non-profit that has recruited over 400 student volunteers to serve more than 4,000 people and repurpose more than 2,000 of food. She is the president of her school's Voter Engagement Team and National Honor Society, as well as the Vice President of her senior class and an intern at Philly Thrive, a local grassroots climate justice organization.

Keith Gillespie

FRN Sustainable Students Side Hustles



Kieth Gillespie is a current senior at The U School and a part of the side hustle program called sustainable side hustle with their coach, Samuel Reed. With their side hustle being selling 6 different types of tea. They sell peppermint, spearmint, lemon, lemon verbena, chai tea, and rooibos tea. Kieth is also in a tech program called launchpad, where they code using python (TechSmart).

Raniyah Lawrence-Ashford

FRN Sustainable Students Side Hustles

Una Liu

Design Lead & Cabinet Member of Feeding Philly



Liu is a current senior at Central High School. They joined Feeding Philly in the summer of 2022 and have become a part of the cabinet where they lead the design team. Beyond Feeding Philly, they have worked with other non-profit organizations like Princeton Learning Experience, Feast of Justice, and hotpot! Philly. They address the lack of access to education, food insecurity, and Queer API (Asian-Pacific Islander) activism. Liu is also the president of my school's competitive business club, DECA, and the Japanese Cultural Club called Otaku Central, and vice-president of the National Honor Society.

Saif Mestour

SLA CTE Engineering



Saif is a freshmen at Thomas Jefferson University Majoring in Mechanical Engineering, and fluent in 3 languages: English, Arabic, and French. They were a Student in the CTE Engineering where they were a Teachers Assistant in their Makerspace. CTE helps Students find their interest in the STEM field. It allows students to get more hands on projects to use not only physically but also challenge students to think on how to solve a problem and what tools will solve the problem whether building something from scratch or making adjustments to a prototype.

Shayna Sit

Physics Wonder Girls Program at SJU

President for SJU's Society of Physics Students



Shayna Sit is from Bensalem, PA. She is a junior physics major at Saint Joseph's University with minors in Chinese Language and English. She is a teaching assistant for an Astronomy Lab, participates in undergraduate research on non-Newtonian liquids, the current President for SJU's Society of Physics Students chapter, as well as established a Women in Physics club on campus.

Carey Sykes

We Love Philly



Carey Sykes an Philly native and an alumni of We Love Philly who is now taking his teaching and living an entrepreneurial lifestyle. He has open up his clown company by the name of LJ Da Clown Entertainment. Carey also continues to give his free time when needed to We Love Philly.

Abigail Valentin

Fiber Arts for Our Future

Workshop Descriptions

Workshop Session 1

10:30 AM - 11:15 AM



Location: MSTC 145

1A: Empowering teachers to eCLOSE into Teacher Scientists
Presenters: Ebony Dyson, Alfonse Bowman, Dara Ruiz-Whalen
Organization: eCLOSE Institute

Workshop Description: eCLOSE provides basic laboratory skills, experience & advice in setting up a classroom laboratory, learning modules that integrate into existing curricula, and collaborative partnerships with peers and scientific mentors.These 90-minute workshops are designed to introduce K-14 science teachers to work with fruit flies in the classroom and get them ready to have their students complete a dietary screen, testing the impact of healthy vs junk food, as part of their traditional curriculum. This workshop will be based on exploring the behavioral aspects of our friends- the fruit fly kit

Presenter Bios: Ebony Dyson is from Philadelphia, PA and received their undergraduate degree from South Carolina State University majoring in Biology with a Chemistry minor and my graduate degree from Cleveland State University with a Masters in Secondary Education. An experienced Teacher-Scientist skilled in laboratory techniques, youth development, public speaking, teacher training, and program development. Ebony is passionate about making sure black girls have a voice in the classroom as well as the lab space too. They believe representation matters and paving a way for younger black girls is essential in their development and progression in the world we live in today. In Ebony's spare time, they enjoy dancing, journaling, community service and coaching cheerleading.

Alfonse Bowman is a certified Biology teacher in the School District of Philadelphia where he has worked @ Martin Luther King H.S. for the past seven years. Alfonse has taught Biology, Environmental Science, Anatomy, and Physiology for 21 years. Mr. Bowman's passion is providing students of Color (particularly Black) an authentic

hands-on Science experience. Mr. Bowman received his undergraduate degree in Biology from Virginia Union University. Alfonse also has two Masters degrees in education from Arcadia and Gwynedd Mercy Universities. Mr. Bowman is a father of three brilliant children and has been married for 22 years. Mr. Bowman has been a part of many science programs in his teaching career. He is most proud of the work he has done with eClose Institute. Mr. Bowman joined eClose as a summer program for teachers wanting to implement more hands-on activities. Making science tangible to students of color is paramount. Students of color (particularly Black) do not always get the opportunity to have a rigorous science experience. eClose has helped Mr. Bowman provide his students with an authentic and rigorous science experience.

Dara Ruiz-Whalen develops collaborative partnerships between scientists and teachers in urban-based high school areas. In 2013, what had started with the Immersion Science Program (ISP) at Fox Chase Cancer Center (FCCC), with 16 high school students grew to over 1,000 high school students, in 2018. Each contributed scientific data through projects completed in their classrooms. In 2019, Dara with her science colleague & co-founder Alana O'Reilly decided to secure funding to start their own non-profit entity: eCLOSE Institute. Since 2020, eCLOSE has launched a variety of in-school and OST programs to support all learners, including the pivot of the programs to a fully virtual platform while retaining the authenticity of research during the peak of COVID. As a PhD candidate, her research focuses on science teachers during their training with scientists, the implementation of culturally significant research in their classrooms with the goal of supporting science teachers through future grant writing.



Location: MSTC 137

1B: Introducing Histematics: Using African-American History to Teach Mathematics

Presenter: Akil Parker

Organization: All This Math

Workshop Description: In this workshop, Professor Parker will describe his teaching methodology of Histematics, its 5 elements and how to develop math content using this approach to interdisciplinary learning and how to math more culturally relevant and relatable to historical experience of African-Americans

Presenter Bio: Akil Parker is a Black man playing his part by teaching mathematics in the Black community. He has been a mathematics teacher for 18 years in

Philadelphia. Currently, he serves as an adjunct professor at the HBCU, Cheyney University where he teaches math courses.

He is also founder and CEO of the educational services company, All This Math, LLC. Through All This Math he provides private math tutoring, educational consulting, teacher coaching and free online math instructional content via YouTube. He has recently published his first book entitled 'How To Use All This Math, Vol. 1'' which is a simplified guidebook parents can use to teach fundamental math skills to their children in the home, car or wherever they may be. The company also offers a YouTube channel that provides simplified and detailed math instruction in a culturally-responsive manner with videos infused with Black History and Culture. The channel is a resource for teachers as a coaching tool and instructional resource; for students as a homework help and test prep resource; and for parents so they can be empowered to learn the so-called "New Math" in order to be able to provide homework help to their children.

Raised in Baltimore, MD, Professor Parker attended Roland Park Elementary/Middle School before attending Baltimore Polytechnic Institute for high school. He later earned a bachelor's degree in Finance from Morgan State University and later a Master's Degree in Educational Leadership from Lincoln University while serving as a teacher in Philadelphia, PA..

He is a father of three children and lives in Philadelphia, PA where his company All This Math, LLC is based. He has committed himself to improving the Black community he is part of by way of mathematics education.

Website: allthismath.com
Presentation Resources: youtube.com/@allthismath



Location: MSTC 237

1C: STEM Nature Journaling
Presenter: Hilary Henwood
Organization: John Moffet Elementary School
Workshop Description: This workshop will explore how to create a STEM Journal to be used in and outside of the classroom
Presenter Bio:

Hilary currently teaches at John Moffet Elementary school in the Fishtown section of Philadelphia. She teaches 3-5th grade Autism Support with a heavy influence in STEM

Website: sites.google.com/philasd.org/moffet-mwee/home

Presentation Resources:
docs.google.com/presentation/d/1mebHCnIV9t7IqUfqscgq9WzAjUOgA9L8WWvlQab5ZSE/edit?usp=sharing

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Location: MSTC 337

1D: Bridging History and STEM Towards A Sustainable Future

Presenter: Freda Anderson

Organization: History Teacher in The School District of Philadelphia

Workshop Description: Battling climate despair while teaching Gen Z is difficult work. Helping students to imagine a future of land stewardship rather than extractivism is crucial in building hope, and transforming that hope into climate action. Too often the focus of imagining a sustainable is solely on new and emerging technologies which can be hard for students to vision. It is true that new technology will be crucial to ensuring our future, but there is also a wealth of knowledge to be gained from looking at past and traditional civilizations for practices of Earth stewardship, so that we can build upon their wisdom and replicate their practices in our future. When students are able to see concrete evidence of human beings who have lived in positive relationship with the Earth, they are able to imagine a world in which this is possible. Learn how to make these connections and bring them into our curriculum, regardless of what subject you may teach.

Resources:
docs.google.com/presentation/d/1npUmHGsbQpFByNnMNpyPRm_zWcSxMgUns3uayM3v-oU/edit?usp=sharing



Location MSTC 204

1E: Some Physics Demonstrations and Experiments in Renewable Energy for the K-12 Classroom

Presenter: Dr. Roberto Ramos

Organization: Saint Joseph's University / Physics Wonder Girls Program

Workshop Description: Classroom Hands-on Experiments and Demonstrations in Renewable Energy will engage teachers with activities they can use to teach STEM in the context of Renewable Energy. The activities will make STEM community members aware of how renewable energy works and how it can be taught to K-12 students. The understanding of renewable energy is important in an economy that is transitioning from fossil-fuels to more green technologies. Participants will: 1. Build a solar-powered fidget spinner. 2. Perform simple science experiments on solar energy or wind energy. R. Ramos acknowledges the support of Constellation for the work discussed in this workshop.

Speaker Bio: Dr. Ramos is Professor of Physics and Co-Director of the Center for Undergraduate Research at Saint Joseph's University. He received the Christian R. and Mary F. Lindback Award for Distinguished Teaching in 2023 and is Founder and Director of the Physics Wonder Girls Program. His research is primarily in quantum materials, quantum computing and ultra-low temperature physics and is teaching Intro to Renewable Energy to first-year students at SJU. He received his BS Physics degree from the University of the Philippines, MS and PhD degrees from the University of Washington and postdoc from the University of Maryland College Park. Website: https://sites.google.com/sju.edu/physicswondergirls

Workshop Session 2

11:30 AM - 12:15 PM





Location: MSTC 145

2A: Leaping over the Carbon Footprint

Presenters: Maggie Osman and Maya Bhagat

Workshop Description: Anthropogenic Climate Change isn't in debate. The question that remains is: Who is responsible for tackling climate change? You, me, politicians, energy producers or manufacturers?

As adolescents are poised to establish lifelong habits, in solutions based teaching and learning, our focus has been on mitigating greenhouse gas emissions and carbon footprint in order to empower students to identify their personal zone of influence, and take action therein. We now explore expanded, more nuanced methods for understanding and assessing the ecological impacts of daily lifestyle choices on a personal, regional and global scale with this important target group for promoting high-impact actions, beyond the carbon footprint.

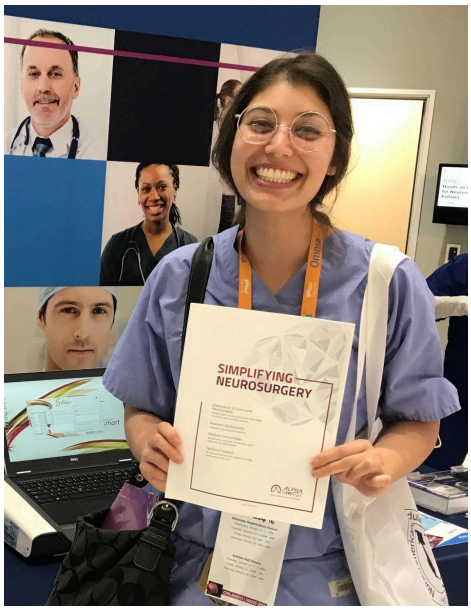
Presenter Bios: Maggie and Maya are Science Educators with over a decade of teaching experience with SDP.

Both were participants of the Education for Sustainability - before it became a thing. They are excited to share their learnings through the process.

Website: SDP: School District of Philadelphia philasd.org







Location: MSTC 137

2B: Beyond Textbooks: Innovations in Health Science Education to Empower Community Health

Presenters: Nilsa R. Graciani, Mashaal Syed, Manuel Marrero

Organization: Esperanza College of Eastern University

Workshop Description: Our team would like to provide an interactive demonstration of a few cutting-edge technologies that support education in the health sciences. Our workshop will introduce attendees to virtual patient simulation via the Body Interact software and real human anatomical data using the Anatomage tablet. We will also showcase the capabilities of immersive virtual reality and 3D printing for supplementing health science education. We have used these resources in both our STEM courses at Esperanza College, as well as in our outreach programs that emphasize diabetes awareness and prevention in the North Philadelphia community. Presently, our team has begun developing a community garden to support our fight against diabetes. We would like to share our experience with the audience who may also be inspired to cultivate community gardens of their own.

Presenter Bios:

Nilsa R. Graciani, Ph.D. is the Chief STEM Officer of Esperanza and the Director of STEM and Medical Assisting at Esperanza College. A native of Puerto Rico, she obtained her Bachelor's in Science with a concentration in Chemistry at the University of Puerto Rico. She continued her studies in Organic Chemistry at Texas A&M University, where she earned her Ph. D. After graduation, she held senior

scientist positions in the pharmaceutical industry. Her research included work with peptides and small molecules in various therapeutic areas including cancer, cardiovascular, inflammation, infectious diseases, and women's health.
She serves as the chair of the Philadelphia Communities Conquering Cancer's Stakeholder Advisory Board and is a member of the Community Advisory Board for Fox Chase Cancer Center. She is on the Advisory Board for Cities Changing Diabetes, Philadelphia. She also serves on the Occupational Advisory Committee of four local high schools. She has been instrumental in bringing STEM and health related programs to the Esperanza community including science clubs and summer camps, robotics club, diabetes club, and the HOSA Future Health Professionals club among others. She was honored in 2014 as Community Partner of the Year by the Society of Hispanic Professional Engineers. In 2015 she received Esperanza's Step Above award. In 2018 she was nominated for the Al Dia News "Women of Merit" award. In 2017 she spearheaded the "Minorities in Health Sciences Symposium" at Esperanza College which has become. Her role at Esperanza allows her to impact younger generations by sharing her passion and developing in them a love for becoming professionals in STEM and health related fields.

Mashaal Syed is an Adjunct Professor at Esperanza College of Eastern University and also concurrently works as a research associate with Thomas Jefferson University's Department of Neurosurgery. Her formal education includes both Biomedical Engineering from Drexel University and Public Health from the Philadelphia College of Osteopathic Medicine (PCOM). Over the past decade, she has garnered a wide breadth of research experience spanning topics such as neuroprosthetics, rehabilitation, surgical simulation, surgical robotics, neuroimaging techniques, smart fabrics, and the applications of 3D printing for improving healthcare in marginalized communities.
At Esperanza College, one of the courses Mashaal teaches is the research-intensive course "HSCI 210: Engagement in the Sciences." Originally a wet-lab course focused on experimental interrogation of diabetic-induced Drosophila Melanogaster (fruit flies), Mashaal sought to enhance the course by incorporating elements from both her engineering background and public health capstone project. During this capstone project, she reviewed initiatives that provide those with physical disabilities equitable access to resources, and worked with a woman diagnosed with multiple sclerosis to design 3D-printable solutions for specific challenges she faces in her day-to-day life. Through this course at Esperanza, she hopes to inspire students to be creative and leverage technology to make a difference in the lives of others.

Manuel Marrero is a student at Thomas Jefferson University. He is studying cytology to help people fight cancer before it's too late. He received an Associate's Degree in Health Sciences from Esperanza College of Eastern University. While at Esperanza, he was blessed with many opportunities where he discovered his passion for STEM. He joined the Diabetes Club, and helped create a mobile app for people in the community to stay active and healthy. He participated in the STEM Hope Pathways Summer Experience, learning biomedical laboratory skills while working with the model organism Drosophila Melanogaster. He was a teaching assistant for "HSCI 210: Engagement in the Sciences" course. The course includes both a wet-lab component and a dry-lab component, where 3D printing is leveraged to design an assistive device for a loved one impacted by diabetes. Additionally, he served as the treasurer for Esperanza College's *HOSA-Future Health Professionals* chapter. Through these opportunities he became more passionate about STEM, and realized the range of accomplishments within reach with dedicated effort and support. He loves STEM and wants to inspire other students to feel the same.
Website: esperanza.eastern.edu



Location: MSTC 237

2C: Coding with Robotics in K-5

Presenter: Mike DeMeno

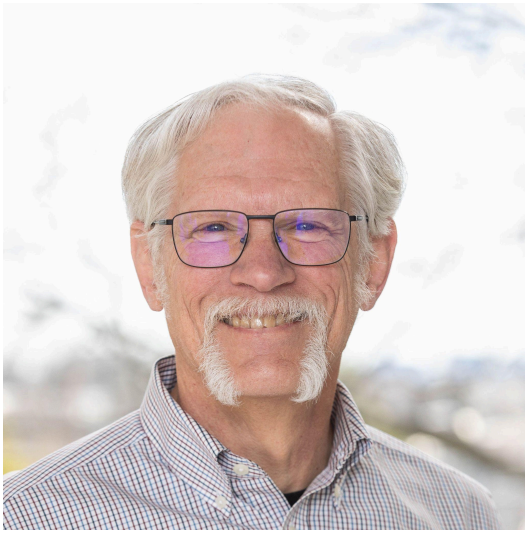
Organization: John Moffet Elementary School

Workshop Description: Hands on experience with various code-able robots. Coding resources and funding opportunities will be shared.

Presenter Bio: M. Ed. Computer Science, BS Art Education. Senior Career Teacher in Philadelphia School District 16 years. Classes on Digital Literacy, Makerspace, STEAM. Clubs: Podcast, Makerspace, Girls Who Code, Nature STEM, Music STEM, Video Game. Lindback Award Winner 2023, Bob Thompson Excellence in Energy Education Award Winner 2023, CS4Philly Long Term Impact Award 2022

Website: moffet.philasd.org

Presentation Resources:
docs.google.com/presentation/d/1rdP3sQ2hi7-8hNDE5wuCaS01cRpDRiB6P-aSOSO4-aA/edit?usp=sharing



Location: MSTC 337

2D: Physics Misconceptions and Implicit Bias

Presenter: Douglas Kurtze

Organization: Saint Joseph's University

Workshop Description: There is a strong correspondence between the prior misconceptions that hinder students' learning science and implicit biases. This suggests that the tools we use to try to overcome the former might be useful in overcoming the latter. It also suggests that broaching the subject of someone's having implicit bias can be made easier by first showing how easily and innocently misconceptions can arise in the far less emotive context of science.

Presenter Bio: Dr. Kurtze has been a member of the SJU physics faculty since 2001, having taught before then at Clarkson University and North Dakota State University. He holds a BA in Mathematics and a BS in Engineering Physics from Lehigh University, and MS and PhD degrees in Theoretical Physics from Cornell University. His research interests are in nonlinear problems, particularly pattern-forming systems and some geophysical effects related to climate.

Website: sju.edu/departments/physics

Workshop Session 3

2:15 PM - 3:00 PM



Location: MSTC 145

3A: The Way of "STREAM", Bridging STEM and Entrepreneurship

Presenter: Brandon Washington

Organization: The STREAM Engine NPO

Workshop Description: The Way of "STREAM", bridging STEM and Entrepreneurship will be an interactive presentation that will explore leveraging entrepreneurial practices and concepts into the classroom. At the beginning of the presentation, I will discuss my experiences and reasoning for said practice.

Website: thestreamengine.org



Location: STC 137

3B: Empowering Financial Literacy Through a STEM and Social Justice Lens

Presenter: Lisa Quattlebaum

Organization: Cityschoolista

Workshop Description:

"Empowering Financial Literacy Through a STEM and Social Justice Lens" is designed for educators and high school/undergrad students. We'll explore the inherent connection between mathematics and financial literacy within real-world contexts.

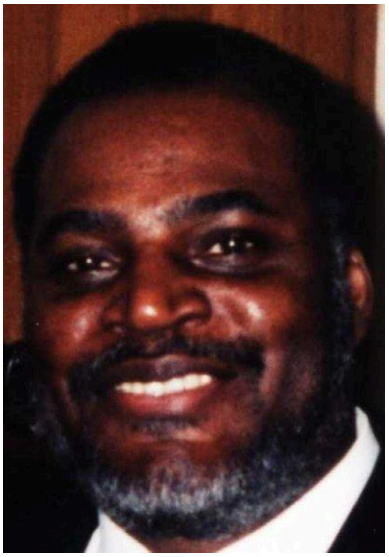
Participants gain valuable insights into the intricacies of financial decision-making through experiential role-playing, including an interactive real-world Monopoly game. Additionally, you'll discover accessible resources and tools to enhance financial

literacies in and outside the classroom. Expect to deepen your understanding of how financial literacy is entwined with social justice and its real-world implications, including generational wealth, financial security, gender pay gaps, and the pressing concerns of student loans. The workshop's key takeaways include new ways to approach this STEM subject and a commitment to addressing the disparities affecting us all, fostering a path towards a more equitable future. Don't miss this enlightening learning opportunity at our conference.

Presenter Bio: Lisa, a Philadelphia native recently returned from a decade in Asia, is an advocate for social justice through education, STEAM, media, wellness, and reimagining success. She combines academic expertise with practical application with degrees from Sarah Lawrence and NYU/ICP and executive certificates in values-based leadership and social impact strategy from DePaul University, University of Pennsylvania/Ortner Center, and Cornell University.
An artist, writer, well-being strategist, former IB (International Baccalaureate) educator and current consultant, Lisa's work centers on girls' empowerment, ending violence against marginalized communities, and expanding STEM to be more inclusive and grounded in real-world experiences. Her fellowships with 4.0 Schools and VELA New Normal have honed her skills in driving social change and she's excited about expanding her work in her Mellon Foundation Unmapping Fellowship with Drexel University.

Website: cityschoolistagirls.com

Presentation Resources:
cityschoolistagirls.com/rhblog/why-teaching-financial-literacy-to-girls-will-close-the-gender-wealth-gap khanacademy.org/ everfi.com/k-12



Location: MSTC 237

3C: These are a few of My favorite things: Engaging Scholars as the Scientist They are

Presenter: Michael Barney

Organization: Bethune Elementary School

Workshop Description: This workshop demonstrates several participatory scientific experiments/demonstrations that are that allow scholars to do science in inexpensive way that is easy to understand

Presenter Bio: Michael is "retiring" into a teaching career after working over 40 years as a software developer/data analyst. He currently teaches 7th grade science and math at Bethune Elementary School. In his spare time he masquerades as "Sir Michael, Earl of Science and Magic" presenting STEM table at Community Centers, School and cultural events. These tables are a combination of science presentation and activities designed to engage scholars of all ages in science.
Michael is an alumnus of Princeton (1982) and Rutgers (1990). Michael is an advocate of lifelong learning and encourages people to embrace education from any stage of their life. He resides in Germantown Philadelphia with his wife and youngest of two sons.

Websites: Steve Spangler's Science stevespanglerscience.com
FaceBook: Mike's Sandbox facebook.com/groups/363321404200
Mobius Strip: youtube.com/watch?v=vLgCq4ikl78
Processing.org processing.org

Presentation Resources:
Fractal 3-D Magic by Clifford A. Pickover -Must have book
Good Overview of Science (reference books)
The Math Book by Clifford A. Pickover
The Biology Book by Michael C. Gerald and Gloria E. Gerald
The Chemistry Book by Derek B. Lowe
The Physics Book by Clifford A. Pickover
The Engineering Book by Marshall Brain
The Earth Book Jim Bell
The Psychology Book by Wade E. Pickren and Philip G. Zimbardo
The Medical Book by Clifford A. Pickover
The Space Book by Jim Bell
The Drug book by Michael C. Gerald
The Computer Book by Simson L Garfinkel and Rachel H. Grunspan
Programming

Getting Started with Processing by Casey Reas and Ben Fry
Processing 3 by Casey Reas and Ben Fry
Getting Started with Arduino Massimo Banzi and Michael Shiloh
Kit:
Mega 2560 Starter Kit youtube.com/watch?v=-DjAdRnclUE



Location: MSTC 337

3D: Using DBH Measurements to Calculate Tree Biomass: Connecting the Classroom and Connecting to Community

Presenter:
Jennifer Skirkanich, PhD

Organization:
Bryn Mawr College, Biology Department

Workshop Description: In this workshop, teachers will learn to guide students in a hands-on activity about urban forestry and tree canopy benefits, while learning about the disparity in tree coverage areas in Philadelphia, its negative effects on health, the environment, and stormwater management. Students will learn how to calculate tree biomass using allometric equations, and determine the impact of each tree studied on the sequestration of carbon dioxide in the atmosphere. With this information, students can make a map of their own community's tree coverage and tree-based carbon storage. In our workshop, teachers will be engaged in the lesson about the background for the lab, and then teachers will measure trees in the local community where the workshop takes place. This lab module is really eye-opening about the benefits of trees and the unequal distribution of trees across Philadelphia, and how urban forest inventories can help shape the future of trees in Philadelphia.

Presenter Bio:
Dr. Skirkanich is a Senior Lecturer in the Biology Department of Bryn Mawr College. After completing her PhD in Cell and Molecular Biology and the University of Pennsylvania Medical School, she went on to become an NIH-funded Penn-PORT post-doctoral fellow studying the molecular mechanisms of human disease using worms as a model system. During this time, she also studied STEM pedagogy with a focus on higher ed MSIs (minority-serving institutions), and taught in the Biology Department at Lincoln University. For the past ten years, she has worked at Bryn Mawr College where she teaches Introductory

Biology laboratories and Stem Cell Biology and Regenerative Medicine. During this time, she has held roles such as Biology Major Advisor, Director of the undergraduate Summer Science Research program, Assistant Dean, and is currently the STEM Posse Director and Director of the STEMLA Fellows Program. Her current research focuses on STEM identity, sense of belonging, and self-efficacy in STEM among students who are first in their family to attend college or come from limited-income families.
Website: STEMLA Program:
brynmawr.edu/inside/academic-information/special-academic-programs/stem-liberal-arts-fellows-program

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Resource Tables

ARCM - Seperate Building

Ambler Arboretum of Temple University
The Ambler Arboretum of Temple University is an outdoor classroom and a living laboratory. You are invited to bring your students here for a field trip. We have a variety of guided tours available for your group or we can work with you to customize a program that fits within your curriculum and best suits the needs of your group.
Website: ambler.temple.edu/arboretum
Contact: Samantha McGuriman (STEM Programs Specialist)
samantha.mcguriman@temple.edu, (267) 468-8030

Center for Aquatic Sciences
The Center for Aquatic Sciences provides unique learning experiences that empower youth to lead the way in understanding, appreciating, and protecting the environment.
Website: aquaticsciences.org
Contact Info: Jennie Payne jpayne@aquaticsciences.org

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eCLOSE Institute
To make medically relevant scientific discoveries using an educational platform that embraces equality and empowers participants to contribute ideas, life experience and experimental data to improve disease treatment.
Website: www.ecloseinstitute.org
Contact Info: Dara Ruiz-Whalen dara.ruiz-whalen@ecloseinstitute.org

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Philadelphia Robotics Coalition
Philadelphia Robotics Coalition's mission is to build an ecosystem that supports the next generation of STEM and community leaders through skills development, collaboration, and mentorship. We foster equity and diversity within STEM education, ensuring that under- resourced urban schools can sustain high-quality robotics

programming, and creating a pipeline to STEM careers for youth historically excluded from the STEM sector.
Website: roboticscoalition.org
Contact info: Dr. Dia L. Jones, dia@roboticscoalition.org, (610) 785-4849

Philadelphia Education Fund and the Philadelphia STEM Ecosystem
The Philadelphia Education Fund creates equitable access to opportunities for students by providing resources and expertise that build paths to college and career success. The Philadelphia STEM Ecosystem, one of its STEM initiatives, encompasses the rich environment of STEM programming, education, and opportunities throughout the Greater Philadelphia area. Our goal is to promote just and equitable access to STEM opportunities for children and youth.
Website: https://philaedfund.org/ and https://www.philastemeco.org/
Contact Info: Betsy Payne, Philadelphia STEM Ecosystem Manager, spayne@philaedfund.org

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Physics Wonder Girls Program at SJU
We will provide information on the Physics Wonder Girls Program, showcase some energy-themed physics demonstrations and describe how the program promotes renewable energy and physics to the Greater Philadelphia community. The physics outreach program aims to sustain interest of highly-talented middle school and high school girls in science through hands-on physics demonstrations, research lab tours, industrial plant trips, physics-based games, career talks, and select research opportunities.
Website: https://sites.google.com/sju.edu/physicswondergirls
Contact Info: Roberto Ramos, PhD (Founder and Director), Email: rramos@sju.edu

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Saint Joseph's University Department of Physics
4-year Physics & Education program (with certification) at Saint Joseph's University
Website: https://www.sju.edu/departments/physics
Contact Info: Douglas Kurtze, dkurtze@sju.edu

Saint Joseph's University - School of Education and Human Development
SJU offers teacher certification programs at the undergraduate and graduate levels that are approved by PDE. Undergraduate programs include Early Childhood and Elementary Education PK4, Middle Grades 4-8, Secondary Education 7-12, and Special Education PK12. At the graduate level, we offer MS programs leading to certification in Secondary Education 7-12, Elementary PK4, Middle Grades 4-8, Reading Specialist, Special Education MS for certification, Special Education MS for Deaf and Hard of Hearing, and Applied Behavior Analysis MS. Our secondary education programs will prepare you to teach in one or more content areas: Math, Biology, Chemistry, Physics, General Science, Social Studies, Citizenship, and English. We also offer certification programs in Art Education and Foreign Language PK12, and an ESL program certificate leading to a PDE endorsement. All our certification

programs will prepare you for a rewarding career as an educator in PK12 schools. Through our undergraduate programs, you'll earn a solid education in the liberal arts, engage with local communities and gain the knowledge you need to earn certifications and credentials in your field. Our undergraduate offerings include adult learner programs and accelerated, 4+1 pathways to a master's degree. Our accelerated graduate education allows you to work/teach in schools while taking courses and will provide you with the background and tools necessary to meet the wide-ranging needs and learning levels of diverse middle school and high school students.
Website: sju.edu/school-education-human-development
Graduate Education Contact Info: graduate@sju.edu
Undergraduate Education Contact Info:
sju.edu/visit-us/contact-admission-team#no-back

Sir Michael Earl of Science and Magic
Techniques and references for engaging Science Experiments/demonstrations
Contact Info: Michael Barney, mbarney@ix.netcom.com, 215-605-4141
docs.google.com/spreadsheets/d/13EHEWtUom9qGmTKpy9wYy5NPaSmNuF8kIAusqdQT3kM/edit?resourcekey#gid=676030723

TGR Learning Lab
TGR Foundation is partnering with the Cobbs Creek Foundation to enhance access to education and provide opportunities for youth in Philadelphia through a new TGR Learning Lab on the Cobbs Creek campus. The campus will support the community through innovative education programs to empower youth to discover and achieve their fullest potential. Opening January 2025.

Website**:** https://tgrfoundation.org/philadelphia/
Contact Info: Meredith Foote, Executive Director, mfoote@tgrfoundation.org

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U School AFRN Program / SriiiConsulting
AFRN Sustainable Students Side Hustles
Websites: learn.sriiiconsulting.org
Contact Info: Sreed@Uschool.org

We Love Philly
We Love Philly provides holistic transformative education to underserved youth by providing students autonomy through positive community experiences and the learning of essential professional skills.
Website: welovephilly.org
Contact info: Carlos@welovephilly.org

Conference Feedback Survey

Click here to take the survey

Philadelphia Regional Institute for STEM Educators (PRISE)

Supporting STEM Teachers in the Philadelphia Region

PRISEPhilly.org

PRISE builds on 10+ years of partnership among 10 institutions of higher education in the greater Philadelphia region Arcadia University, Bryn Mawr/Haverford Colleges, Community College of Philadelphia, Drexel University, La Salle University, Saint Joseph's University, Temple University, University of Pennsylvania, Villanova University and West Chester University as well as regional STEM stakeholders including The Philadelphia Education Fund (PEF) and the School District of Philadelphia. This partnership grew out of common efforts to implement the National Science Foundation Noyce Scholarship program.

We recognized that we can do more together than we could do individually to ensure equitable, high quality STEM teaching in the Philadelphia region. All students in the Philadelphia region should have equitable access to high-quality STEM instruction. Supporting both the recruitment, retention and ongoing development of diverse and highly effective teachers is a critical element of supporting STEM education in the region.

PRISE Strategic Plan

Click here to review plan

Current PRISE Projects Include:

2024 Summer Teaching Experience for STEM Undergraduates

An 8-week immersion introduction to STEM teaching for STEM majors attending colleges and universities in the Philadelphia region. The program will run from late June till early August 2024.

College students will receive:

- $5000 stipend
- Free 3-credit STEM teaching course
- Mentoring support
- Daily lunch and transportation support. Applications will open in January and be due by March 1, 2024.

What: Work with teachers, mentors, and university professors to deliver college preparatory STEM instruction to students from the Greater Philadelphia Region

Why: To improve equity and opportunity in STEM

Where: Temple University Main

How: Applications will open in January and be due by March 1, 2024. Apply at prisephily.org.

Flyer for the 2023 program viewable here.

The Philadelphia Regional STEM Teacher Talent Development Coalition

The Philadelphia Regional Institute for STEM Educators (PRISE) at Saint Joseph's University (SJU) will establish and lead **The Philadelphia Regional STEM Teacher Talent Development Coalition**. The Coalition will consist of science, technology, engineering, mathematics and computer science stakeholders from K-12, higher education, government, and out-of-school time (OST)/community organizations. The Coalition will strengthen the STEM teacher pipeline to increase the number of diverse STEM educators serving Philadelphia students. It will address two recommendations from the report, *Citywide Strategy for Diverse and High-Quality Teachers*: a) articulate pathways to teaching and b) facilitate early exposure to teaching for two identified high priority groups namely high school and college students.

The Coalition will conduct yearlong stakeholder convenings to develop a range of regional cross-sector partnerships and initiatives to address STEM teacher-specific challenges. The Coalition will gather data on regional STEM teacher diversity, surface financial support for pathway exploration, identify regional challenges, create a template for local and regional opportunities to diversify the STEM teacher pipeline, and develop subgroups to expand the Coalition and continue its work beyond the period of the grant.

PRISE and the Department of Education at SJU will operate as the lead partner in establishing the Coalition as a Workgroup of Philadelphia STEM Ecosystem at the Philadelphia Education Fund. The Region 4 Comprehensive Center will provide capacity-building and technical assistance. The Mayor's Office of Education, the School District of Philadelphia, the Philadelphia Workforce Development Board, and OST/community-based STEM organizations are tasked with fostering area partnerships and aligning organizational priorities to support STEM teacher talent development.

The Coalition work products will include:

- A STEM landscape analysis will surface promising practices, challenges, and gaps in the STEM teacher pipeline. The analysis will ground the work of the Coalition to identify practical goals and solutions to address challenges and to scale promising practices.
- Proposals for funding to support (1) high school and college student early teaching experiences and (2) STEM teacher certification pathways, that are aligned with Coalition proposed goals and solutions
- Work agreements among higher educations, workforce, K-12s, and OST/community stakeholders to meet the goals set forth by the Coalition
- Established subgroups to manifest the goals of the Coalition beyond the grant period

For more information about the coalition, contact Project Director, Greer Richardson, grichard@sju.edu. For more information about PRISE go to https://prisephilly.org/. The Coalition is funded by the PA Department of Education Aspiring 2 Educate grant.

USTRIVE
(Understand STEM Teaching Through Integrated Contexts in Everyday Life)
Dr. Augusto Macalalag Jr., Principal Investigator, Arcadia University



USTRIVE's 6th-12th Grade STEM Teachers Professional Development Program goal is to provide teachers with integrated professional development and learning community support. Teachers who attend professional development (PD) will also receive classroom support visits to implement these new instructional approaches with their students. To help embed and expand the use of SJSP in secondary education classrooms, a new professional learning community (PLC) will foster content-knowledge sharing and leadership development. Facilitating the transfer of this approach to others will be the creation of an open, digital repository for artifacts; we will also develop new and strengthen existing relationships with local environmental education centers to expand the availability of local community resources for teachers.

Supports are designed to address the following teacher competencies:

1. Develop, implement, and reflect on units of study that combine socio-scientific issues (SSI) and social justice STEM framework (SJSP)
1. Cultivate pedagogical content knowledge (PCK) in teaching orientation and instructional strategies with regard to SSI/SJSP
2. Acquire instructional design capabilities to develop and implement lesson plans, assessments, classroom resources, and reflections (i.e., units of study) that emphasize both STEM modeling (i.e., developing, testing and revising

models) and the discursive nature of SSI (i.e., self-reflection and scientific skepticism)
3. Foster student scientific literacy through a cultural competence and
4. sociopolitical consciousness instructional lens

Click here for USTRIVE Teacher-developed SSI and STC Lesson Plans

PRNP-S (Philadelphia Regional Noyce Partnership-Scholarship)

Dr. Tanya Berezovski, Principal Investigator,, Saint Joseph's University

Six partner institutions of the Philadelphia Regional Noyce Partnership were awarded a $1.45 million National Science Foundation (NSF) five year collaborative grant to recruit, prepare and retain STEM Teachers. The PRNP-S program partners, in addition to Saint Joseph's University, include Arcadia University, Bryn Mawr College, Community College of Philadelphia, La Salle University, and Temple University.

The project, now in its final year, aimed to recruit new STEM teachers with the goal of:

- Increasing the number of STEM majors that enter and remain in teaching in high-need schools in the Philadelphia region
- Increase the social capital of Noyce program participants at all levels
- Increase Noyce teachers' understanding of Culturally Responsive Teaching practices
- Increase Noyce teachers' knowledge of Education for Sustainability content and pedagogical practices

In addition to offering up to $15,000 in scholarships to students during their certification year, the program supports its Scholars through their active and continuous engagement in a cohort-based New Teacher Support learning community during their pre-service year and for the first two years of their in-service teaching. Scholars receive mentor support and opportunities for professional development. In exchange for this one year of scholarship support, recipients commit to teaching for at least two years in a high-need school district. Partnering with the West Chester University Woodrow Wilson Fellowship program, the project has recruited, developed and supported 59 new STEM teachers, most currently teaching in the Philadelphia area.

The project also financially supported 11 student interns from Community College of Philadelphia who participated in a summer program in which they learned about and had the opportunity to practice STEM content pedagogy, recently in conjunction with the CLES-C program summer camp.

Prior PRISE Projects Include:

CLES-C (Communities of Learners Exploring STEM-Careers)
Dr. Greer Richardson, Principal Investigator, La Salle University

CLES-C Program is funded by a PA SMART Advancing grant, 14 K-8 teachers from Philadelphia area schools engaged in professional development around the MWEE program (Meaningful Watershed Educational Experiences) over an 18 month period. Teachers developed, taught, and reflected on MWEE units in their schools and during the La Salle STEM Enrichment Summer Camp. The MWEE framework also included exploration of STEM careers as well as STEM modeling using technology tools. The CLES-C program included as partners area elementary schools, STEM environmental education organizations, and technology industry professionals.
Today's Presenters are: Hilary & Michael

STEM EFS Philly (Philadelphia STEM Education for Sustainability)
Dr. Paul Morgan, Principal Investigator (PI), West Chester University



Philadelphia STEM Education for Sustainability — Linking Schools and Communities (EFS Philly) is an initiative which aims to expand student access and engagement in "Green STEM" through the cultivation of teacher and student leaders, as well as authentic collaboration with community members and organizations. Funded by a 2021 PASmart Advancing Grant, the initiative seeks to link school-based learning to civic action, active community engagement, and introduce young people to Green STEM career pathways. We believe the best way to accomplish these goals is to make STEM learning directly relevant to students' everyday lives and material concerns. This is especially true as the burgeoning climate crisis stands to altogether unsettle the ways humans have lived and worked for centuries.
Today's Presenters are: Freda, Maggie, Maya, and Sam

Thank you to all who participated!

