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Paul A. Trunfio is a Senior Research Scientist and Director of the Science Education Group at the Center for Polymer Studies in the Department of Physics and Fellow at the Hariri Institute for Computing and Computational Science & Engineering at Boston University. As an undergraduate student in the mid 1980s, my “light bulb” moment was in a computational science lab, creating models and visualizations of complex systems, beginning a 30+ year journey of partnership and mentorship with Prof. H. Eugene Stanley. I made my professional focus the integration of interdisciplinary science research with K-16 STEM (Science Technology Engineering and Mathematics) education, leading efforts to bridge the two by developing computer-based tools, curricula, training programs and mentor partnerships with graduate students.

In my 28-year career at Boston University, I have co-authored and co-led 20 peer-reviewed grants and other awards with \$24.4M in funding. I began my work by leading some of the early efforts to develop technology-enriched science education. At that time, the early 1990s, computational tools were practically unheard of in schools. Our solution to “move the needle” was to bring high-end computers directly into schools allowing students to compute and visually render real-time models such as the dynamics of molecular networks in fully immersive three-dimensional environments. We developed computer-based tools, led summer workshops for hundreds of teachers nationally and internationally, hosted high school teacher, undergraduate and high school internship programs and created an exhibit at the Boston Museum of Science and at other museums worldwide, where my personal project, Music of the Heart, translated a visitor’s electrocardiogram into music in real time.

Since 2009, I have been building bridges between *cyberlearning* and research in data, network and systems science. I led the creation of *NetSci High* connecting high school students who are underrepresented in STEM, and their teachers, with regional university research labs. Each year, our program begins with an intensive residential summer workshop using the new lens of network thinking to understand and find solutions to real-world problems. Students and teachers are introduced to network science foundations including graph theory, statistical inferencing, data mining, systems theory, and information visualization. On a practical level, students learn computational skills for visualizing and analyzing data using Gephi, Python, Processing and R.

We motivate and inspire through team-building activities, mini-projects, integrating STEM with art and design, non-technical interactive talks by leading researchers, public speaking opportunities, and more. We tear down the walls between student, teacher and researcher. Students thrive in this environment and by the end of our workshop, student teams are armed with tools – and confidence – to embark on a year-long journey of independent discovery along with graduate student mentors from partner research labs together with high school teacher mentors.

I am currently focused on synthesizing, sustaining and scaling these efforts in order to strengthen STEM pathways, increase capacity for broader impacts, and broaden participation. I appreciate that truly impactful STEM education enhancements must include stakeholders at all levels. Launching the initiative Data & Network Science in K-20 Education, I am exploring the best ideas and strategies to bridge university research, undergraduate education, K-12 students and teachers, school and district administration, parents, local, state and federal governments, industry, community organizations, and others.

My education background includes undergraduate studies in biomedical engineering, graduate coursework in computer science and graduate research in statistical physics, co-authoring peer-reviewed research in such journals as *Nature*, *Physical Review* and *Physical Review Letters*. I am a member of the National Association of Research in Science Teaching, American Educational Research Association, and National Science Teachers Association.

Community service is an integral part of my life. I am an active volunteer in community programs and societal issues, that are all about providing opportunities and removing barriers to growth through education and mentoring. I am engaged in bringing awareness to the long-lasting effects of child abuse, as well as seeking pathways for emotional healing regardless of the cause.