



## Tabletop Session Summary

July 22, 2021

### STEM Opportunities in Summer, Out-of-School and In-School Programs

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**Presenters:** Dr. Satabdi Basu, [National Comprehensive Center](#); Mark Weckel and Gabrielle Rabinowitz, [American Museum of Natural History](#); Traci Higgins, [TERC](#)

This tabletop discussion explored STEM experiences for students and how summer and out-of-school STEM partnerships can strengthen in-school STEM education.

### Session Highlights

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- » Data Clubs are a mechanism to introduce students to the power of data. Its different program modules can be provided after school or during summer camp. The program looks for and constructs just right datasets to provide students experience with authentic data. The data must be accessible for middle school students, and tools for working with the data must be free. Based on those criteria, the program has used the Common Online Data Analysis Platform (CODAP). Participants get the opportunity to experience what it is like to be a data scientist. More specifically, they get experience with epidemiological, health and fitness, and sports injury data. The program is funded by the National Science Foundation and is a collaborative effort with TERC and Science Education Solutions as primary partners.
- » The American Museum of Natural History provides opportunities for informal education. It helps expose middle school, high school, and college students to potential careers in STEM. It has three core projects that focus on computer science. BridgeUP: STEM provides high school students with experience with Python and data analysis. The Science Research Mentoring Program (SRMP) is an internship program that provides participants the opportunity to learn about the machine learning field. Finally, Decode NYC is a summer program that teaches computational thinking to middle school students.
- » In an in-school context, K-12 computer science education involves curricular experiences for students, professional learning for teachers, and assessments to measure student learning of computer science. Computer science can also be integrated into other disciplines.
- » Science Projects Integrating Computing and Engineering (SPICE) is an example of a program geared towards elementary schoolers. It a three-week program that engages students in scientific inquiry and computational thinking. It is sponsored by the National Science Foundation and is a cooperative effort by SRI International, Digital Promise, the University of Virginia, and Vanderbilt University.
- » Similarly, Collaborative, Computational STEM (C2STEM) is geared towards middle and high school students and has computation modeling and problem solving as its focus.

### Shared Resources

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- » [Becoming Racially Literate About Data and Data-Literate About Race: Data Visualizations in the Classroom as a Site of Racial-Ideological Micro-Contestations](#)
- » [Building Teacher Capacity in K-12 Computer Science by Promoting Formative Assessment Literacy](#)
- » [Common Online Data Analysis Platform \(CODAP\)](#)
- » [NYC Science Research Mentoring Consortium \(NYCSRM\)](#)
- » [Practice Guide: Applying a Principled Approach to Develop and Use K-12 Computer Science Formative Assessments](#)
- » [Sample DecodeNYC Lesson Plan](#)
- » [TERC Data Clubs](#)

## Questions and Answers on STEM Opportunities in Summer, Out-of-School and In-School Programs

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### **What are some best practices for designing and implementing professional development for program instructors?**

TERC focuses on curriculum design and development based on proof of concept. More specifically, it looks at how lessons can use large national datasets to give students the experience of being awash with the data and how to engage students in data in an out-of-school setting. TERC has served mostly as facilitators collaborating with teachers through afterschool programs. It also partners with teachers who already have knowledge of data literacy. Supports for teachers without a data science background are currently being developed.

### **Have any panelists worked with youth on projects that build racial data literacy or projects that address the inequities that might exist when working with data?**

Race and power in STEM are topics that the American Museum of Natural History (AMNH) is increasingly discussing when new curricula are introduced. The Science Research Mentoring Program specifically looks at the issue of underrepresented youth in STEM careers and diversifying not just the workforce, but also thinking about how welcoming and inclusive spaces like scientific institutions or academic institutions are to people of color or women.

Regarding data visualization, the AMNH is developing a course called Anthobytes, and it is part of the Science Alliance Program. Lead Educator Gabrielle Rabinowitz is designing the course with the Cultural Anthropology Educator at the AMNH. It looks at inequalities and inequities in the food landscape in students' communities. It will also examine a dataset of black owned business (i.e., where they exist in the city and where they do not).

TERC is also currently designing a curriculum through a partnership with NetApp to develop a data explorer program for middle school students that focuses on sustainable development goals. The program starts out looking at United Nations health and education data and identifying the inequities there. Then, it looks at state and national county data, zooming in on indicators of health and educational outcomes. There is a lot of rich data that TERC is considering how to explore with kids in a safe environment, but also in a way that empowers them to look at the data.

