

Project Reflection by Keiko Charif

- **What kind of Project did you do? How did you decide what to pick?**

I have already been engaged in Santa Clara County's Initiative: Math, Science, and Computer Science Cross-Curricular Lesson Local Implementation Team. This summer, we visited the Science Department at San Jose State University, where we learned how to select a local phenomenon and use it as a starting point to design a lesson unit. Together, we brainstormed around the theme of Wildfire Science.

I find this work especially exciting as it represents an emerging area of STEM education. I want my students to be exposed to real-world problems that will spark their curiosity and inspire them to take action on local challenges. I strongly believe that agency and empowerment come from engaging with authentic, local issues.

Since the 6th-grade science curriculum includes Weather and Climate Change, I decided to focus my project on this theme, integrating Micro:bit technology. This work will be supported by the award money I received from the 49ers Education Foundation.

- **How does your project use external materials/equipment to your Micro:bit, like radio communication?**

Since I have been teaching computer science with Micro:bit for more than three years, both during summer programs and in my classroom, I have a full class set of Micro:bits. Recently, I also received Arduino starter kits from vendors at the County's STEM fair. As a result, I already had a humidity sensor, and I purchased a soil moisture sensor, which was previously planned and approved by the 49ers Education Foundation.

- **Describe something in your project that you are really proud of getting to work.**

Since I have been teaching computer science with Micro:bit for over three years, both in summer programs and in my classroom, I have a complete class set of Micro:bits. Recently, I also received Arduino starter kits from vendors at the County's STEM fair. Through this, I already had a humidity sensor, and I purchased a soil moisture sensor, which had been previously planned and approved by the 49ers Education Foundation.

- **Describe a difficult point in the process of designing this program, and explain how you resolved it.**

I found that using an alligator clip and a female jumper wire does not necessarily provide a research-quality, reliable connection to the sensor's connectors. Next time, I would buy a Micro:bit extension to make the wire connection more stable.

- **What feedback incorporate into your enhance prototype based on students peer feedback during the in person class?**

I haven't received any feedback yet, but I will definitely make the wire connections more secure for use in science class. Also, the distance between the two Microbits may not be practical. I must do more research on how far the two microbits can communicate, and if we can solve this problem with external add-on materials.

- **How might things have been different if I programmed the assignment in Python?**

Given only two weeks to complete this project, I don't think I could have finished it using Python. The soil moisture sensor and humidity sensor were already available as modules, so I didn't have to build code from scratch. However, since the Microbit temperature sensor only displays in Celsius, I realized I needed to create a Python program to convert Celsius to Fahrenheit.