Robotics Service Learning At Cesar Chavez Elementary School

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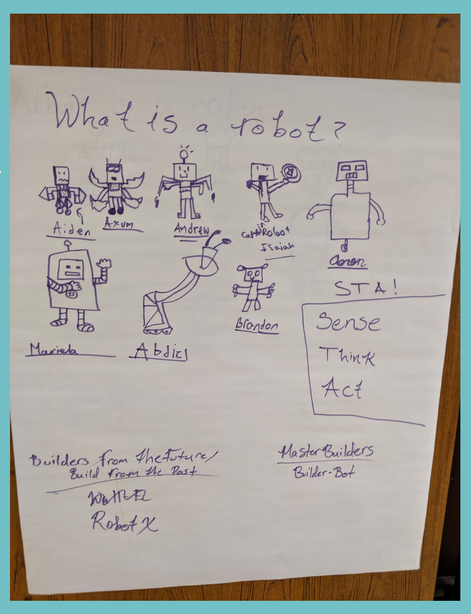
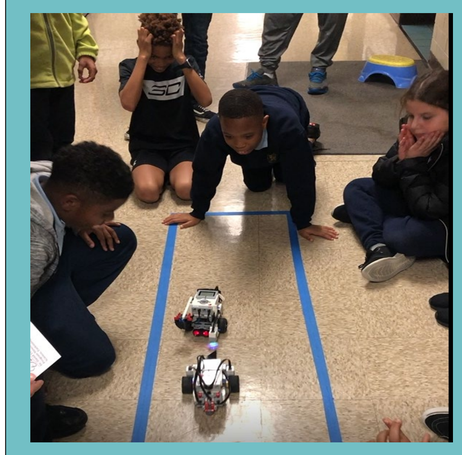
Introduction

During the semester of Fall 2019, I signed up for CPSS 240: Service-Learning Practicum, which is a service-learning practicum course offered by the Science, Technology & Society program. Together with three other students, we worked at Cesar Chavez Elementary School, where we lead the after-school robotics program there every Thursday and teach the students a variety of programming concepts through hands-on experience with Lego EV3 robotics kits.



Students' first impression on robots



The final combat robot competition

A daily session

Activities:

- Each week we have a group meeting on campus discuss the problems within STEM education and decide the plan for the week
- After Deciding which topics to cover for the week, we make up the course plan for the week and create the startup code
- Every two weeks, we have a mini-challenge, which tests the children their abilities to write and test their own programs, with the programming concepts that we have covered.
- In the end, we have a grand challenge where each group of students writes their combat robots program, applying the knowledge that they have learned during the semester

Site Information:

Name of Site: Cesar Chavez Elementary School

Address: 6609 Riggs Rd, Chillum, MD 20782

Your supervisor: Timothy Reedy

The particular goals of the site you were at: Lead the after-school robotics program here and introduce programming concepts to the students.

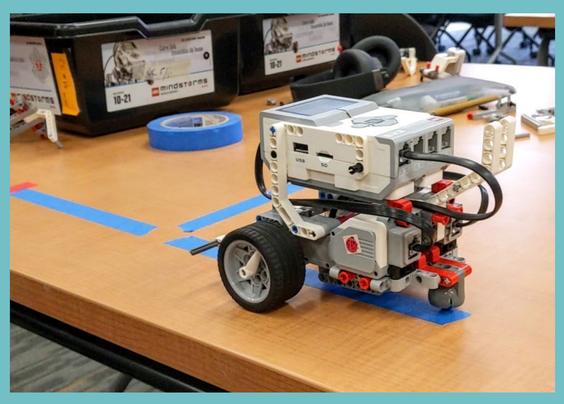
Impact:

It's an unforgettable experience for me to work with a group of elementary school students. I have learned a lot about how to improve my teaching skills, for example, how to make a good course plan, how to ask good leading questions, how to get students' attention, how to keep the pace of the course appropriate, etc.

In addition, one of the most important things that I learned from this experience is how I can convey abstract concepts in a way that people with no previous background could understand. I managed to help my students understanding those programming concepts through various hands-on experiences as they write and test their programs.

Issues Confronting Site:

- Students at Cesar Chavez don't have access to computer resources. So the five students in my group have to share my laptop every session, which limits their time writing and testing their own code.
- It's hard for elementary school students to concentrate for the whole seventy-five minutes.



The prototype of the robot that we built after the second session

Future Work: Since I would like to keep teaching in the future, I've applied for the Strauss TA scholarship from MATH department at UMD, where I could lead a discussion session of a calculus course every week. The teaching skills that I learned from this robotics service-learning experience would certainly help me a lot in the future.

Acknowledgments: I would like to acknowledge Dr. Holtz and Dr. Merck for the incredible first two years experience at Science and Global Change program and their unyielding commitments to the weekly colloquium. Their passions for this subject always makes the class a lot of fun and helps me stay motivated. Besides, I also want to thank Dr. Reddy, who provides a lot of supports for us during the semester and many practical advice on how to improve my teaching skills.