



the stars
challenge

Coding and Robotics
Fall 2018



“All students should have the opportunity to learn how to program. Computer science is the basis for modern day creativity and expression.” – Anne Wojcicki, CEO and Founder 23andMe

As a STEM educator I have the daily opportunity to observe how students perceive computer programming. Some think of coders who sit by themselves at a computer all day, but my teaching assistants (Nia, Brianna, Katrina, Laura and Rishi) and I wanted to demonstrate how coding can be a fun and interactive experience. We began our journey by introducing basic coding concepts using the block-based Scratch language developed at MIT. Our next step was to apply that knowledge to programming in Python, one of the most popular coding languages used by students and professionals today. We then entered the realm of robotics, where you used your coding skills to access and control various sensors and actuators, culminating in the remote control of a VEX robot. After having an exciting time playing a VEX-based robot game, we delved into the world of Arduino, where you not only constructed circuits using breadboards, wire, resistors, a rangefinder and LEDs, but learned how to control them via programming. The capstone experience provided you the opportunity to choose from Scratch, Python, VEX, Arduino, or a combination thereof, and develop your own idea that you could show your friends and family on the STARS Celebration Day!

I encourage you to share what you have learned and that you continue to pursue your interest in the fields of coding and/or robotics. As stated in the quote above, “Computer Science is the basis for modern day creativity and expression.” Just remember that you don’t have to do this by yourself! Some of the best (and most fun!) journeys are taken with others!

In closing, thank you for a wonderful class! Nia, Brianna, Katrina, Laura, Rishi and I had a phenomenal time working with and learning from each of you!

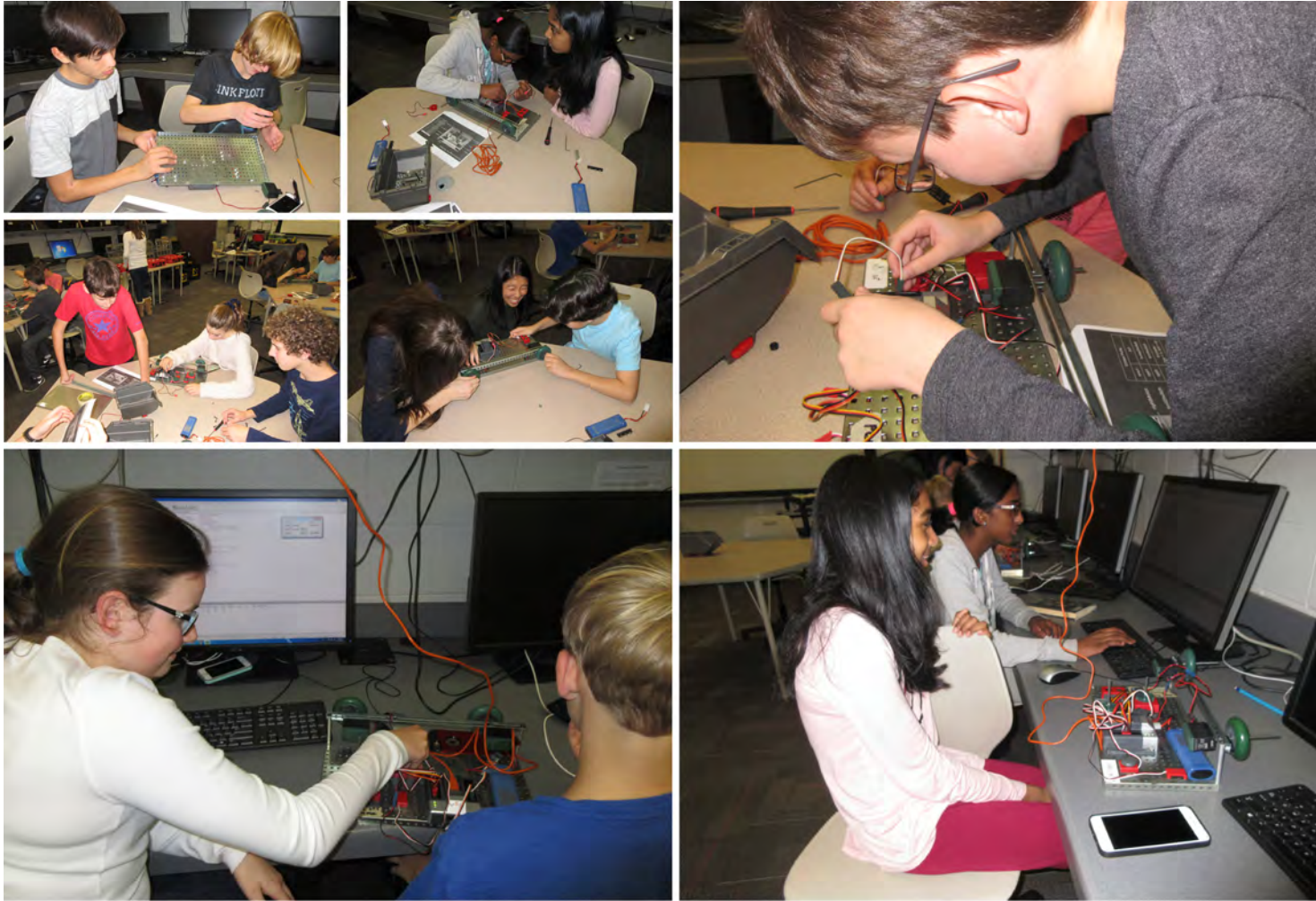
Mr. Hanas



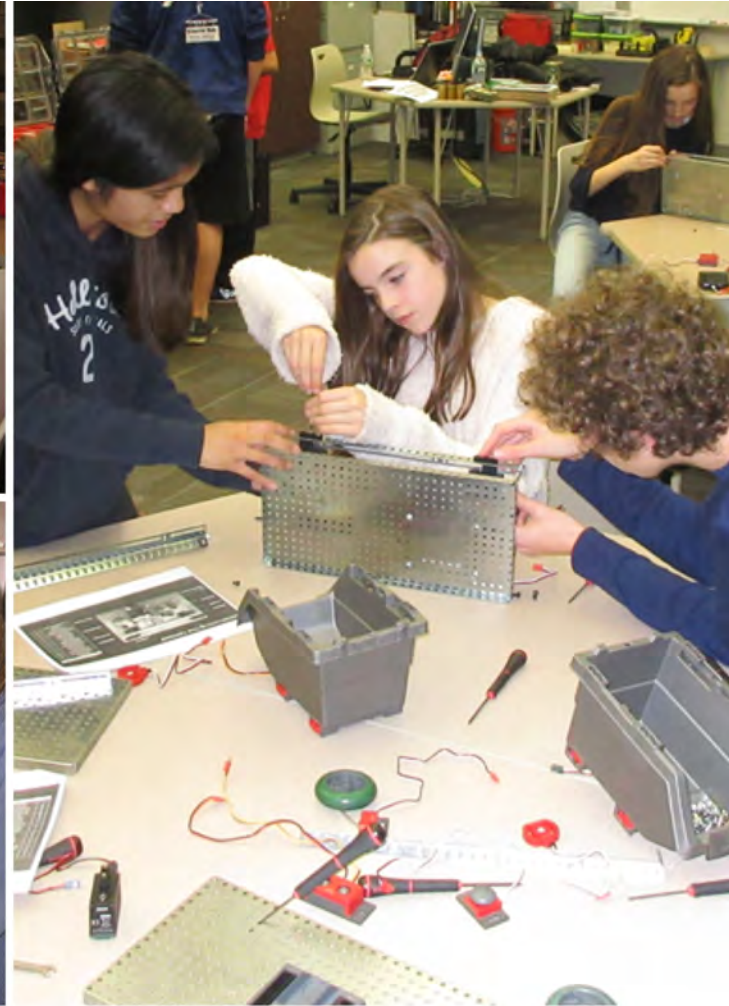
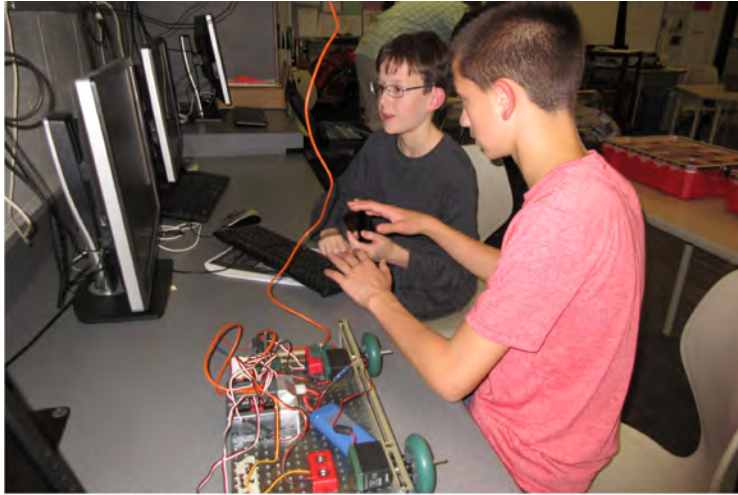
Siva, Ananya and Francesco are focused on assembling their VEX testbeds. In the center, Scarlett is proudly showing off her Python code!



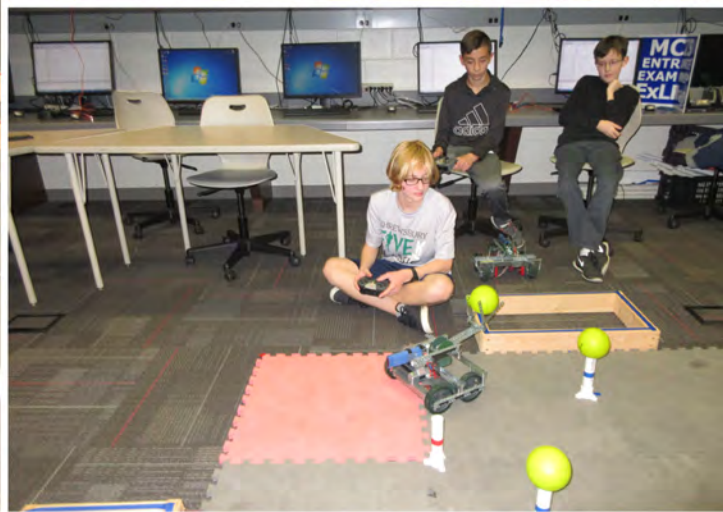
All smiles from the new Stars Challenge students! :-)



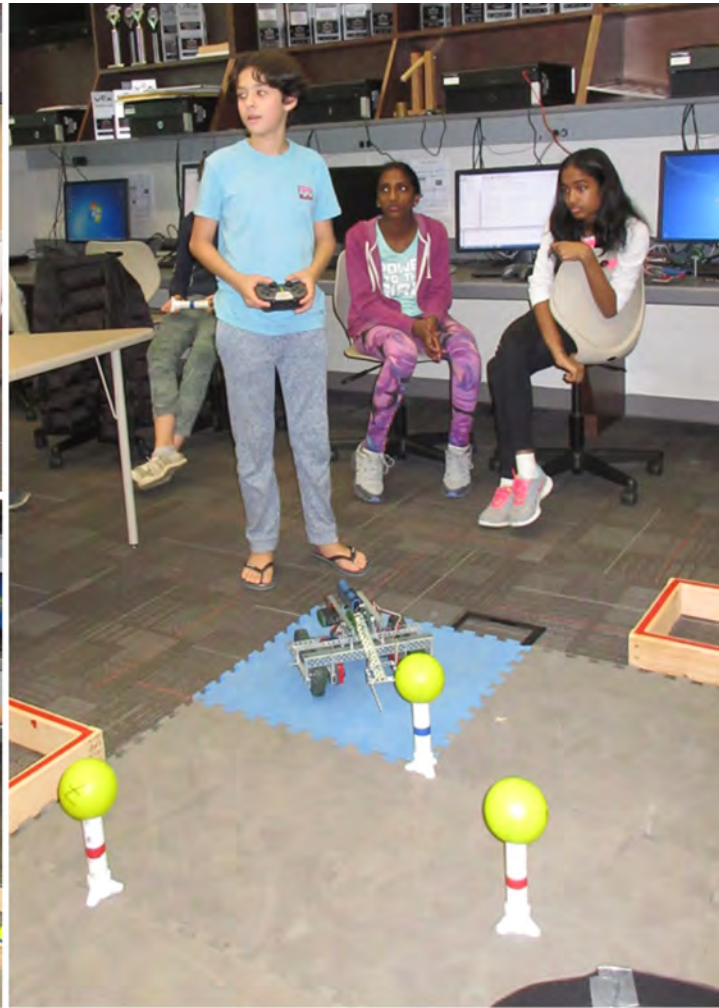
Learning about sensors is so much fun! Students build and code their own test beds to learn more about the VEX Robotics sensors. Emma, Ananya, Siya, Will and Matt can be seen testing their hardware.



"Hard" at work building VEX "hard" ware! Katrina (one of the TA's) helps students build their test beds. Naim is checking to see if everything is in the right place.



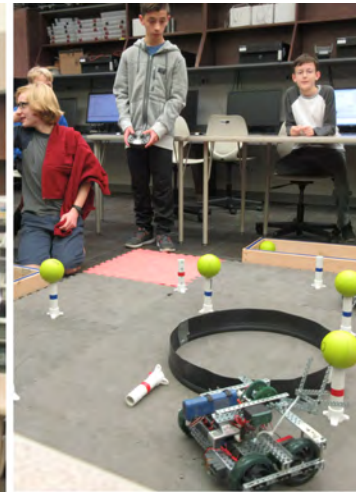
Bridie and Andrew are showing off their VEX driving skills for the first time!



The competitive spirit is evident as Elizabeth and John are about to face off! May the best driver win!



You can see the determination and focus in their eyes as each student tries to win the title of tournament champion. One of the TA's, Nia, is monitoring the Minefield game.



Elizabeth, Bridie, Naim, and Scarlett, watch Evan as he drives his robot in the Minefield game. Will he be able to score the ball?



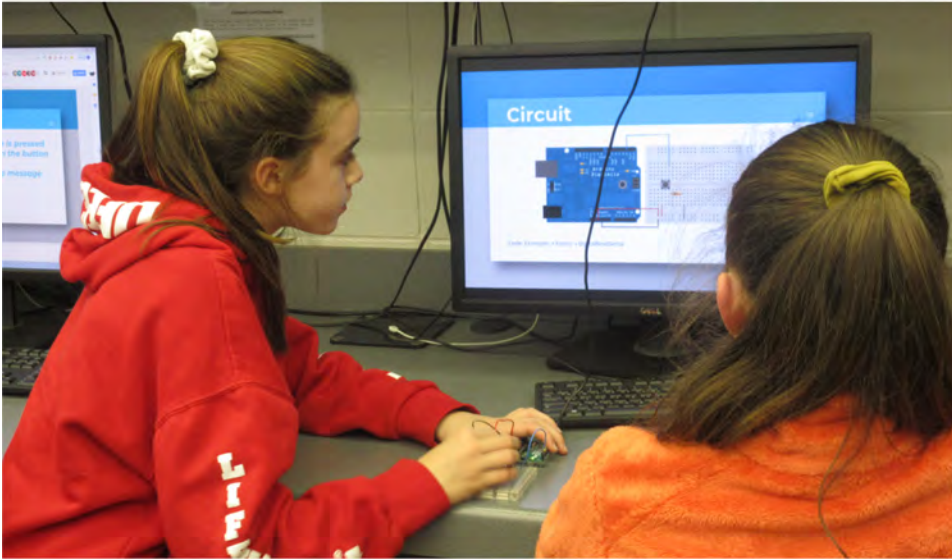
The students love participating in various robotics activities. Here you can see them engaged with VEX and Arduinos.



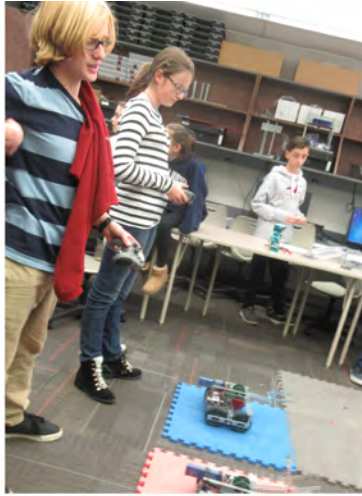
Arduino time! Everyone is working together to complete these challenging activities and learn more about circuits.



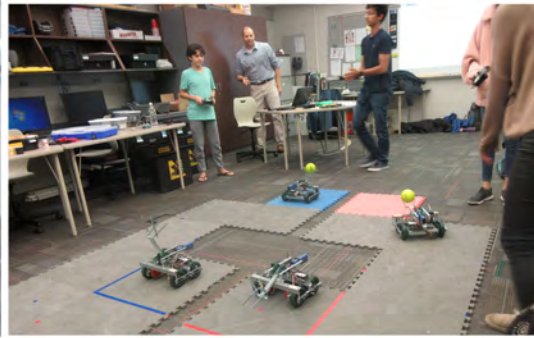
Rishi (another one of the TA's) teaches students about Arduino. Zealen and Milan are deep in thought as they prepare their Arduino circuit.



Bridie and Elizabeth are checking the schematic, while Francesco, Evan, JT, and Emma are getting some hands on action.



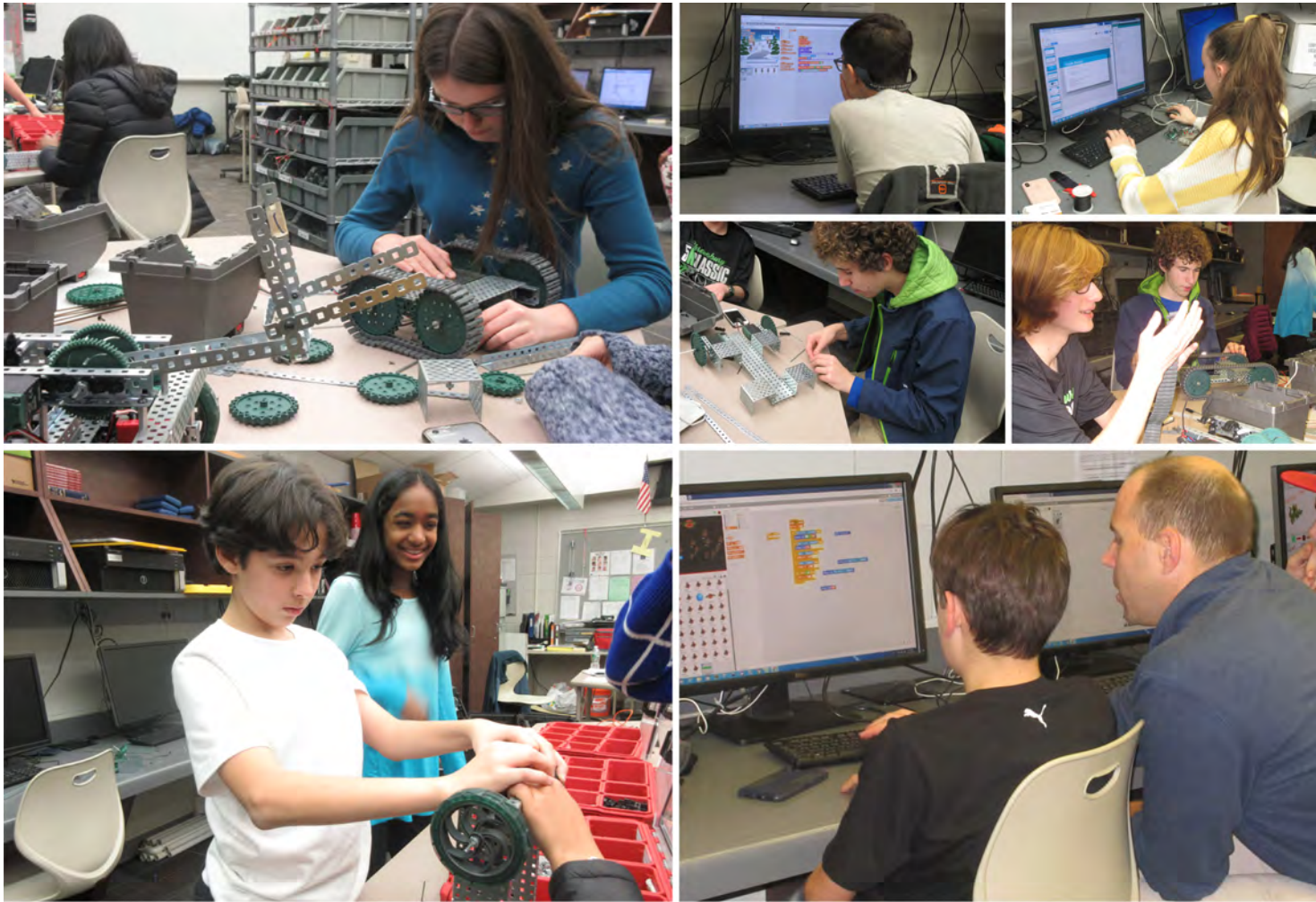
More fun with the relay races! TA's Katrina, Laura, and Brianna are referees, while helping students fix any issues with their robots.



Matt and John working together on their Arduino project.



Final project time! Scarlett built an Arduino circuit that turns an increasing number of lights on the closer an object is to the rangefinder! Andrew, Francesco and Bridie are working on drivable VEX robots!



More work on final projects! Projects range from Arduino and VEX to Python and MIT Scratch.



