

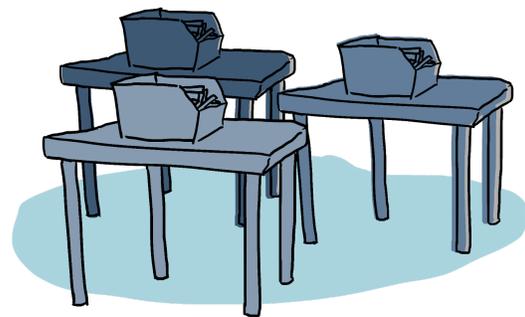
**Title:** What Makes Us Girl-Powered

**Team Number:** 11577R

**Contributors:** Emma Benyaminy, Sarah Crabtree, Lindsay Fabricant, Yeji Kim, Ashley Mazarin, Dina Nabavian

Tables were set with boxes of metal parts, gears, and tools. Chattering filled the air as groups of students huddled over each table. I glanced around the room looking for where to begin and spotted a table nearby. The students there seemed to be preoccupied with scavenging in the boxes.

“Hi, I’m new to robotics. What are you guys up to?” I approached the group. I hoped to make some friends who could help me learn more about this club and further my knowledge of robotics.



However, I am surprised to find that I am met with no response. I awkwardly stand and watch as the people at the table continue to work on their robots without even sparing me a glance.

Again, I look around the room for another group to work with. I spotted a group not too far away from where I stood, and they seemed approachable and experienced, so I walked over there.

“Hi! I’m new to robotics. What are you guys up to?” I greet them.

“Oh, we’re just trying to build a robot right now...,” a boy from the group responds, not looking up from the project.

“Cool! Can I help?” I ask hopefully. A response! I had the absurd notion I may actually be included.

The group members exchanged glances. “Um... we kind of already started, so maybe you can work with those kids over there--,” another person gestures to a table in the corner. The group occupying that table seemed to be in an enthusiastic conversation, so I headed on over.

As I approached the table, I realized that the group was not in a conversation, but a disagreement.

“That’s not how this works! We’re supposed to be building it this way-- see?” one member jabbed a metal bar on the chassis of the robot to demonstrate.

I peered over at the robot-in-the-making, then cleared my throat. “Hello! I’m new to robotics, but what are you guys up to? I would be happy to help!” I desperately plead once more.

The group turns to look at me, then exchange quick glances at each other in a way I’ve become far too familiar with.

“I couldn’t help but overhear the conversation you were having. Maybe there could be something I could help with?” I add in.

“Oh, I think we’re fine... actually, maybe you can help us by logging in our progress in the journal for us,” a different member of the group responded.

“Are you sure? Maybe I could also help out with designing and building the robot? I am actually enrolled in engineering courses and-”

“We don’t need your help. We know what we’re doing.”

Letting out a sigh of disappointment, I settled myself down in a seat at the table and took out a pencil and a sheet of paper. I thought about what I just witnessed, and it dawned on me:

Nobody in this club wanted me to be involved in their group. Was this how robotics is supposed to be? Was it normal to be excluded like this? If this is how it is, I don't think robotics is for me after all...

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This anecdote is a compilation of our experiences in the STEM field. Sharing our stories, we realized that we had a common upbringing in our STEM journey: A curiosity for technology and the disappointment of being disregarded in the community. We also persevered past these obstacles to where we are now. Unfortunately, however, many people bear witness to the same experience, and to some, it is enough to ward one off of the STEM path even before having the chance to really try it.

Having experienced this first-hand, we have come to learn the importance of being inclusive. This is why we, now as a team, strive to welcome all those who express interest in Robotics, regardless of gender, experience, and their backgrounds.



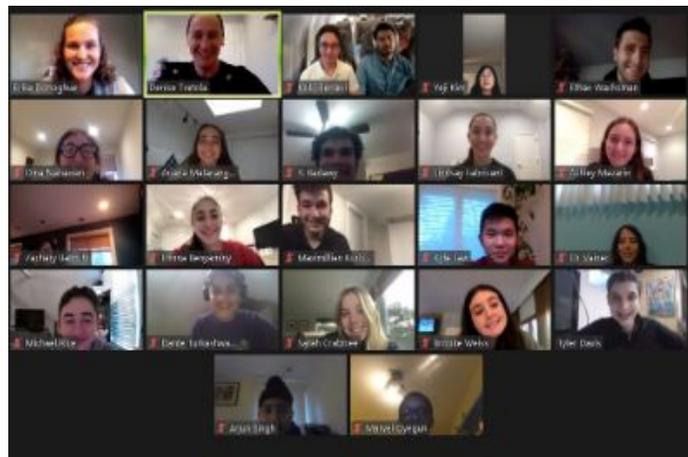
Katherine Johnson, Mary Jackson, and Dorothy Vaughan (from left to right)

Our role models -- Katherine Johnson, Mary Jackson, and Dorothy Vaughan -- all share this experience with us. These three women had all begun their careers at NASA as computers. At the time computers were people who had checked over the work of others. However, they were discriminated against because of their gender and race. Katherine Johnson had started off by checking over the work of white men. Her brilliance was disregarded and her ideas had been shut down. It took proving her intelligence by going up and solving a complicated equation to be

acknowledged. After this, she became a successful mathematician for NASA. Mary Jackson had begun her work by checking over the work of engineers. She had always wanted to become an engineer herself, but segregation laws made sure that there were no engineering schools for her to attend. Rather than give up the idea of becoming an engineer, she brought it to court. She saw victory, and ultimately became an engineer for NASA. Dorothy Vaughan worked in the west computing office of NASA, which was segregated from the better facilities in NASA. She overcame many challenges this brought her, and became a great programmer.

It has been about seventy years since Katherine Johnson, Mary Jackson, and Dorothy Vaughan worked at NASA. Yet, minorities and women still face challenges in the STEM field. Just as we felt unacknowledged when we first walked into the Robotics club, these women must have felt the same. But they did something about it. They persevered. They made a change. They proved to the world that anyone can be phenomenal when given an opportunity.

As girls in STEM, there have been several times where we have felt like a minority on the team. However, these experiences have taught us the importance of stepping up as leaders on our team to bring new changes and create a more inclusive environment than years prior.



Last year, there were only two girls with leadership roles on the team. This year, Ashley, Lindsay, Yeji, and Emma all hold positions on the board. To us, “Girl Powered” reminds us of these experiences we had to overcome. It reminds us that we need to bring change so that others do not have to suffer through what we did. It reminds us that we have a voice and can make these changes.

Our approach was to attract as many new students as possible. With a larger team, new students of any gender would learn to work together and collaborate from when they first begin working on the robotics team. These students are the future leaders of our club, and we see in these students the potential for a more inclusive team in the future. We envision a diverse community in our club, where with members of different ages and backgrounds, we learn what each member on our team has to offer.

We went from girls who were barely acknowledged to making up half of the advisory board. Given this responsibility, we have made it our mission to create a much more inclusive environment for students. So far we have assembled several active underclassmen who are eager to learn and participate. Those who are inexperienced are taught how to strengthen their abilities rather than be advised to leave. We still have a long way to go but will continue working tirelessly to invoke this necessary change.



