"I didn't succumb to the stereotype that science wasn't for girls."

We took this advice from Sally Ride, physicist and first American woman and LGBTQ person in space. In addition to these prestigious accomplishments, she is also our team's STEM role model.

Diversity and representation in all aspects of life is very important to us. Seeing people like you succeed in fields you are interested in is extremely empowering. It gives you the mindset that you can accomplish these tasks as well. This is why we chose Sally Ride as our STEM role model. Seeing her succeed as a diverse woman inspired us to succeed as well. Her image pushes us to be a voice for other girls in robotics by promoting the positive and fun experiences we've had.

Only about 7% to 18% of the women that pursue engineering careers are mechanical engineers and only about 12% to 18% are electrical engineers. Our team wanted to change this. The boys on our team recruited us, having worked with us before in middle school. We made a great addition to the team, adding our input and solving problems from different perspectives when they arose. They helped us as well, introducing new concepts we weren't familiar with and adding a different point of view. To us, inclusiveness was about providing a positive and uplifting environment where all people could work together. Our team accomplished just this by providing a fun space where everyone felt welcome and accepted. No one was afraid to express their



thoughts or opinions on what would be best for our team.

But working with boys had its challenges as well. Our ways of accomplishing tasks weren't always the same as theirs. Both parties had to learn how to adjust in order to cooperate with each other. We think this is a key point in having teams be Girl Powered: learning to cooperate with people who are different from you. Rewiring the way you think isn't the right answer--it's embracing your differences and incorporating them into your everyday life and into the work you do. Acknowledging and accepting that people don't

always look and think like you is an important part of making spaces more inclusive.

Girl Powered to us means that girls are behind some of the major breakthroughs that happen in our society. For example, when sending a man to the moon, African-American female computer programmers were instrumental in calculating the flight paths. Oftentimes, women, people of color, and LGBTQ people are erased from history. Too often, men, especially men in STEM fields, assume that people who are different from them are incapable of completing challenging tasks. Without minorities, many important breakthroughs and inventions would not have been a reality. To name a few, Ada Lovelace developed the first computer algorithm, Dr. Grace Murray Hopper invented the first user friendly computer software program, and Stephanie Kwolek invented Kevlar which was later used in bulletproof vests. Alan Turing, a gay man, was instrumental in cracking the Nazi code, and later developed a blueprint for the first store-program computer. Mark E. Dean, a black man, helped invent the first IBM computer, and Madam C. J. Walker invented caller ID technology. Ellen Ochoa, a latina woman, invented optical analysis systems, and is credited with being the first Hispanic astronaut in space. Jabir ibn Hayyan, an Islamic scientist, discovered a way of distillation, and al-Zahrawi, a Muslim man, is responsible for current surgery tools, such as scalpels and forceps. Girl Powered to us means challenging stereotypes and "traditional" viewpoints by breaking out of the box and making changes for the better.

While the boys had a large impact on us, we had a major impact on them as well. We challenged them to rethink the ideas they introduced to us, ranging from robot design to organizational methods. Even though it sounds stereotypical, we introduced a new form of organization to the boys and it helped the team for the greater good. We were able to locate the objects we needed faster, which increased the time spent working on the robot. We were able to add on to the robot instead of wasting time looking for parts. We took on "non-traditional" roles as well, proving that the handy work wasn't just for boys. We cut parts, assembled the robot, and took part in programming. This hands-on work helped us to better understand how to create a sturdy and stable structure for our robot. We learned how to conceptualize the robot before it was even built and how to adjust our prototypes so they could work properly. We added a toolkit to our system on the necessary steps of creating a robot.



Different communities and cultures approach problems differently. Sometimes, a lack of communications between different communities can have deadly consequences. In the past, airbags were designed with only men in mind. The measurements made were fit for a man's body, but not a woman's. Many women died because the airbags were not made to protect them. This same concept applied to our robotics team. Obviously, our competition robot wouldn't

end up killing anyone, but our design changed drastically when girls were introduced. Our rat's nest of wires connected to the cortex ended up organized and untangled. Our grabber was mostly built by girls and was the first part of our robot that ended up working. Our team chemistry was improved as well. We were able to get along with each other despite our differences. We all found ourselves laughing and having a good time. But most importantly, our ability to succeed was increased. Every single member brought out the best in everyone else. Working together to solve challenges united our team, and we worked toward a common goal. We pushed our differences aside, and we just *were*. We didn't worry about divisions our society had created, we had a fun time just being people. And that's what was most important to us in robotics: having a good time despite our differences. Every single person on our team was different, and we all introduced our own ways of accomplishing tasks. We incorporated everyone's ideas into creating the best robot we could. Our differences didn't divide us; they brought us together.





Since we've had so many positive and fun experiences in robotics, we want other girls to be involved in that as well. At first, it may seem frightening and uncomfortable to stand out, but over time, we learn to embrace what makes us unique.



Credits: Ellie Sundheim Emily Franks Lily Burtis 1069E

The Strengths We Carry Word Count:1097