

Team 99040D

### More Than Just a Pretty Face

In the past, the STEM field shuns women. Males dominate the field and refuse to allow entry to any females. For decades, women fought to earn their positions as scientists, technologists, engineers, mathematicians. Their hard work and legacies contribute to the increasing rise of females. At the current moment, the STEM field no longer shuns women but encourage them to pursue a career in STEM. Although they encourage women to join, men still dominate the field, intimidating women from entering the field. As such, people turn to education systems for assistance. All levels of education from elementary schools to colleges provide more inclusive programs where all genders can participate freely.

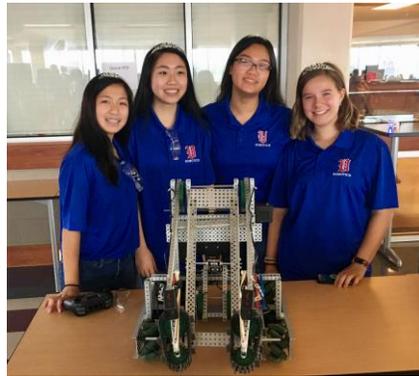
According to the dictionary of Cambridge, the phrase, Girl Powered, refers to "the idea that women and girls should be confident, make decisions, and achieve things independently of men." When I hear the phrase, Girl Powered, projects completed with female guidance or



influence come to mind. I asked my team members their opinions, and these are their following responses: Mia said "equal rights"; Nancy said "influential women"; and Jenny said "intelligent females." I agree with each of their opinions and more; however, to me, girl-powered does not exclusively pertain to young girls and women. I believe it pertains to the empowering of young women and their influence on surrounding people, including the male species.

At Vestavia Hills High School, there was always at least one girl in the robotics team. We have a higher chance of going to VEX Worlds than we do of having more than three female students on the team. However; this year is different because, for the first time since our school's

founded a robotics team, we have five girls on the team this year. Four of the five comprise of an all-girls team. That team is us: Vestavia Hills 99040D, or as we dubbed ourselves "Team Imperatrix"—fun fact: "imperatrix" translates to "empress" in Latin. Each member of the team has varying levels of experience in VEX and STEM. Each of us possesses different skill sets that contribute to our team's overall performance.



Because we are an all-girls team—in high school might I emphasize—there is bound to be drama and discord. For example, initially, we struggled to get along as a team since I was a senior and the rest of my team are freshmen. There was a power imbalance as I struggled to assert my authority as captain. After a particularly vexed competition and with some guidance, I confronted the usurper and we conversed amongst ourselves. I expressed my frustrations with her and her in-turn expressed hers. We discussed our issues and came to a compromise that dispelled the resentful atmosphere that lingered on our team. Our issues ended with no physical altercations, grudges, nor resentments. We settled everything peacefully and had a bonding experience.

In December 2019, the Vestavia Hills Robotics Team hosted a Girl Powered workshop where our teams introduced elementary to middle school Girl Scouts to coding and programming. We taught the girls to program Sphero bots using coding blocks and the Sphero

Edu app. Although most of us don't know how to program, we took the time to learn the programming features on the Sphero Edu app because by introducing the girls to STEM early, we are preparing the next generation for the technological future.



At the workshop, there were two activities: the maze portion and the game portion. At the mazes, the girls had to program their Spheros to navigate through the maze. There were four mazes, and each one had a different design. The goal of the maze was for the girls to realize that coding requires calculations and precision. The game portion is as it sounds, we taught the girls games using the Sphero Play app. There were many games to choose from but most of the groups choose golf. With golf, the girls had to make sure they swing with enough force for the Sphero to overcome an incline but not hard enough to send the bot spiraling out of sight. The game portion demonstrates that programming and robotics have a fun side as well. At the end of the night, all the Girl Scouts experienced some form of programming and enjoyed the experience.



One does not learn anything new unless they step out of their comfort zone. In our team, there are four main positions: builder, driver, programmer, and notebook keeper. Each of us is assigned a role at the beginning of the season, but everybody participates in the other three positions.

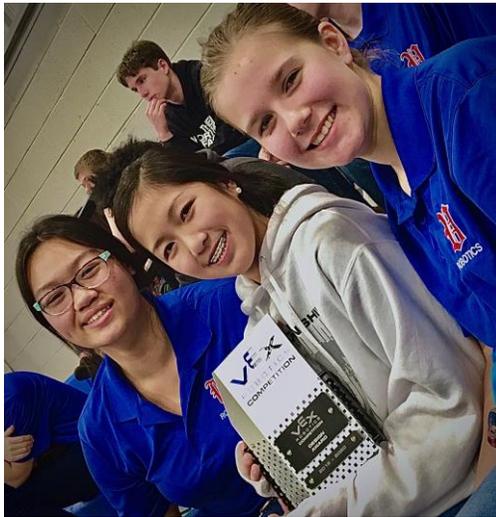


For me, it was interesting learning to program, or at least attempting. I am terrible with computers and coding makes no sense to me—it didn't help that Nancy insisted we use Pros instead of VEX. I have always been the notebook keeper and the occasional builder and driver, so I've never programmed before. Nancy knew more about robotics than I did. She's experienced every role there could be in robotics, except judging. This season is both Mia's and Jenny's first year, so they got to experience multiple roles. With building, they had Nancy and me to guide them through the process. Jenny was our main driver so she had to learn to navigate around the field and operate the robot. Mia needed to know how to program since she was our main programmer, and our coach, Mrs. Hickman, taught her along with inputs from Nancy's dad.

The one thing I learned from this experience is that we need to keep chocolates in the classroom. A team of hormonal teenage girls is bound to lead to drama. Joking aside, the main thing I learned is that it's better to have a team with all genders than it is to have a team with one gender. With one gender team, there's an imbalance in the team chemistry which affects the team's ability to succeed. I speak from personal experience, so I know each person is affected differently; however, I enjoy being on a team with both males and females. For me, the males provide a comfortable working atmosphere and social interactions that make robotics enjoyable. Meanwhile, on an all-girls team, we are more focused, organized, and goal-driven, which leads to success and organization but there's no enjoyment. Our team seems to live by the "all work, no play" motto to the point that I cannot count the numerous times the thought of quitting has crossed my mind. My social interactions have been limited through this unspoken motto and I no

longer find robotics enjoyable—this was before our team discussing and compromising our issues.

Having a diverse team opens up more creative opportunities, which leads to better robot designs and solutions. It provides a chemical balance in the team where the females provide empathic insight, acting mediator, and increasing team intelligence while the males provide raw ideas, strength, and socialization. Each team's ability to succeed depends on the team itself, but so far it seems teams of the same gender have a higher success rate than coed teams.



My 6th and 7th-grade robotics coach was my role model. He didn't discourage me when I expressed my curiosity towards robotics. He encourages me to join the robotics team at the middle school. Joining the robotics team then opened up the world of STEM to me because aside from joining the robotics team, I joined TSA by default. TSA stands for Technology Student Association, a national, non-profit career and technical student organization of middle and high school students who are engaged in STEM. Participating in both robotics and TSA gave me the privilege to meet new people, compete at different locations, exchange ideas with my opponents and alliances, and thrive as a person in STEM.

## Credits



Angela Zheng



Nancy Chen



Mia Garrison



Jenny Kong

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