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Team 6546A

VEX Girl Powered Essay

When the term 'Girl Powered' is used, what comes to mind are girls being empowered to do what they want without worrying about being viewed differently, simply for their gender. The girls are motivated to achieve what they want without fear of unjust criticism while working in the team as an irreplaceable member. On our team, half of us are female, all of whom are fully dedicated members of the team. Sarah is our student coach and has assisted the team with her mechanical skills and has given advice on designs for our robot. She has led the team through our design and building processes. Jazmyn is one of our main mechanics, building the robot and being an avid participant of the design process. Additionally, she is the co-author of our design notebook. Emma is our main programmer, though that doesn't stop her from working on the CAD and the building aspects of the robot as well. Furthermore, she is a part of our Robotics Program's outreach team, spearheading Diversity, Equity, and Equality initiatives in the program. All three of them are highly dedicated, all of them having spent more than 100 hours each to the robotics program during the season and motivated to create an amazing robot for this year's competition. They're not afraid to give their opinions and have a large influence on the Robotics Program in our school, due to their dedication and love for robotics. They show evidence of being confident, powerful, and notable females, both in their robotics teams, and in the grander school community.

At our school, Singapore American School, we value all gender involvement in STEM, and encourage success regardless of gender. Although there is some gender imbalance in STEM courses and extracurriculars we make a significant effort to break down gender stereotypes and create a more inclusive environment. Team members that are already a part of VEX robotics make a conscious effort to recruit friends - girls in particular - that they feel would find success in the program. One of the biggest steps taken by our school to accomplish this task was the

establishment of Geek Girls, a club at our institution that encourages increased female involvement in STEM. Geek Girls has also taken steps in collaboration with our team to invite more girls into the program by hosting seminars, managing workshops and creating a collaborative and an inviting atmosphere for all girls that are interested in STEM. Gender equality issues are part of ongoing dialogues that we hold both in our robotics program as well as our school. We believe in a meritocratic system in which those who work hard and display merit, are awarded and rise regardless of gender. However, we recognise that there is often a lack of diversity in STEM as many people feel as though they don't belong or as if they are being discouraged to be involved. This is why we reach out to STEM clubs of all kinds at our schools, specifically to clubs that include diverse and capable students that have an interest in robotics so that we might kindle a deeper interest in Robotics.

The VEX robotics program at our school aims to position every member in a role that best fits them. Part of this process involves training, which each of our team members have gone through. VEX Research & Development, an advanced training course that was offered to robotics members, allowed all of our members to learn about the advanced techniques, concepts, and importance of specialization of each role involved in creating a robot. This program included hands-on experience in CAD, programming, and building as well as optimizing our research and development process. As a result of this experience, our members were easily able to identify their individual weaknesses and strengths in different areas. Regardless of gender, the VEX R&D training course allowed us to learn about the roles that fit best for each member, improved our problem solving, communication, and collaboration skills.

Diversity has also led to an increase in collaboration among our team. Our VEX team consists of not only different genders but a wide range of nationalities, ethnicities, and cultures. We believe that this diversity and their disparate perspectives contribute greatly to our end product. Emma Li, our programmer, brought to the table a lot of prior knowledge of coding, which outlined our limitations of what we built and the different technologies that we could

incorporate into our design. Diren Gomez, our CADer, quickly created a CAD for each of our prototype designs for us to determine if they were feasible or not. Ben Turney, Liam Kelly, Sarah Hilty, and Jazmyn Harris all had prior experiences with the VEX program, and additionally, had taken science classes where their knowledge of other concepts such as torque and gear ratios helped in the decision making phase . The combined knowledge and the varying perspectives of our team allowed us to improve on each other's ideas to accomplish a well-designed robot. During our training, we covered a brief overview of STEM history where we covered important events that led to technological breakthroughs. When we were prompted to recall a STEM role model, we knew who to select.

Our STEM role model is Chien-Shiung Wu (1912-1997), a Chinese-American experimental physicist. She is most known for disproving the then-widely accepted law of physics, conservation of parity, as well as her work with gaseous diffusion and uranium isotopes within the Manhattan Project (1939-1946). We feel that she represents important aspects of working in STEM; while collaboration is extremely important for success, questioning past ideas and methods of thinking to become aware of scientific truths and progression is just as important. Her bravery to publicly disprove a widely accepted law of physics - a field dominated by white men both then and now - as a Chinese-American woman showed her resilient belief that knowledge and accuracy were superior in importance. We feel that this connects quite deeply to our team's ideologies, as during our designing and brainstorming process, we researched a lot of designs that appeared to be mainstream, however, we didn't want to follow the norms and the standard so we sought out how to modify and alter the design so it was a new approach to the competition. She also represents a new perspective during her time as a professor in Princeton University. She was confirmed as one of the first women, let alone women of color, teaching at Princeton. She was a trailblazer for women in physics and STEM in general. Due to her incredible accomplishments and ability to pave the way for minorities in STEM, we see her as a role model for creating diversity in our robotics team. She demonstrated

that a new perspective is invaluable while confirming that anyone can make enormous strides in science, regardless of their gender, ethnicity, or background.