VRC Girl Powered Online Challenge

2919X



Kristir BUILDING GREATNESS

Our Definition Of

"Girl Power"



When I first heard the word "Girl Power", I thought it was the attitude of confidence, independence and the belief that perseverance will bring power to overcome obstacles. VEX Robotics competitions are platforms for us to show the spirit of "Girl Power"-where we develop our mind, programming and building techniques to solve problems to create a better robot. According to the UCAS data provided by HESA(2017-2018), men are dominant in STEM fields, while women only constitute 22% of the STEM workforce. This shocks me because we all know that girls are in fact suitable for and gifted in STEM fields. However, the surrounding environment often gives girls the expectation of doing jobs or majors that are relaxing and not as innovative. There are still people who hold the stereotype that STEM is not suitable for girls because there are too many obstacles that females are not capable of. This incorrect ideology inspired me to gather a small VEX team with only females who also want to prove that girls are able to achieve great results in STEM challenges too. A famous person who has supported me spiritually is Ada Lovelace, who has been called the world's first computer programmer. This again is another proof that with "Girl Power" females can be talented in STEM fields as well.

> Builder & Designer: Jov

Girl power to me means how girls are also capable of doing things that were traditionally done by men, including things like vex robotics, and are supported by the general public.

Even though there are more and more people becoming more open-minded nowadays and starting to encourage girls to try more "boy's things", there is still a large number of people who hold the stereotype and hold doubts when seeing a girl do such things. There are still sometimes when people ask me why would I like something like this when I tell them my passion towards engineering. It might be rare to enjoy things like this among girls but it's definitely not strange. It is proved again and again by girls around the world and I think that is girl power.

Being the "odd" one among girls, I've always been very confident following my passion. I always tell myself that I can be as good as boys or even better. Being in the "girls team" 2919X participating in the vex competition, we started from nothing. We didn't have any experience in such competition, in building, programming and controlling our robot. We worked hard together as a team and we are becoming better and better in the scrimmages throughout the year. We are proving to others and especially ourselves that we are the same or even better than other "boy teams", and girls can also be great in the fields that are mostly studied by men. I guess that is our "girl power".

Story Of Our Robot



Story:

Introduction of the Story

The aim of our team is to challenge ourselves and break the traditional understanding towards girls to highlight the ideology of "Girl Power". We started off as a new team of two without any previous experience. There were a lot of things that we needed to work out on our own. We knew that we might not start off as good as some other teams, but we never doubted each other's ability. We never thought that we would need a more experienced person or a boy in our team, and we believed that we could succeed with our own power and hard work. Some friends from other teams, both boys and girls, have helped us out. We are also very open to helping and sharing experiences with a variety of different people.

1st Generation

We planned to make a very simple robot with a base, an arm and claws. Since we are a new team only starting this year, we were asked to use the vex cortex system instead of the more powerful V5. The



Photo:

base of our robot was good and stable, and had enough power for the

competition. However, we encountered some problems when building

the arm: two Vex Cortex motors were not strong enough to raise it in

its entirety. Consequently, it could not score in any tower. The claw

had one motor, but it was very loose and unstable. Another problem

was that the robot was oversized due to the length of the claw, which

needed to be adjusted as well. The good thing was that our program

for the autonomous period went well, which gave us lots of

confidence in building a better robot in the future. In this scrimmage,

2919X placed eleventh in the qualification match out of eighteen

teams, and both of us saw and learnt a lot from competing. Even

though eleventh place is definitely not good enough for us, we are

already starting to prove the ability of girls to others.

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2	2908E	17	39	87	
3	2915D Lynfield College Robotics D	17	30	121	8-2-
4	2915Z Lynfield College Robotics Z	16	36	114	
5	70591A Michael Park A	16	33	113	8-3-0
6	97255A GIS	14	51	114	7-4-0
7	2900C SymblOHSis C	13	48	158	6-4-1
8	2918G GCEC G	13	48	111	6
2	70591B Michael Park B	12	39	74	6-5-0
10	2900G SymbiOHSis G	10	42	57	
11	2919X K-Force X	10	24	84	3
	2915T				



Story:

Photo:

2nd Generation

After competing in the VEX robotics scrimmage, we came up with a better design for the claws and arms. Therefore, we decided to make changes to the gear ratio of the arm and the structure of our claw. This time, we decided to give four Vex Cortex motors to each arm, making them more powerful. The claw, now with a new structure, was easier to control and more stable compared to the old one. We also improved the cable management using cable ties to make sure that the cables wouldn't fall apart during a competition. We were aware, however, that the disadvantage of our robot in this stage was that it could only stack one cube at once and that it could not reach the highest tower. In the last scrimmage we competed in 2019, 2919X placed seventh in the qualification match out of twenty eight teams. This was a great improvement and represented our attitude of "Girl Power" in facing challenges and overcoming obstacles. Again, both of us gained more ideas on what we could do to improve our robot. We could see that we were improving a lot throughout the year from the scrimmage, and this proved to ourselves how skilled we were.





3rd Generation

After a few scrimmages, we decided to use V5 motors instead of Cortex motors to further improve our robot. This meant that we needed to pull everything apart and design a new robot with a better structure. After some calculations and CAD, we summed up our ideas collected in the past scrimmages and decided to make a robot that was able to both lift (able to put cubes into the tower like the second generation) and stack (over six cubes at once). The new design is a lot more stable than the first and second ones. We hope that it will bring us good results in the scrimmages in 2020.

The robot reflects our improvement during this year. We started from nothing, but can now see the chance of winning top place in the regional championships. We never questioned our ability and we believe that with our own "Girl Power", we can succeed. I think we have already succeeded in improving our skills and proving them to people who once held doubts.





Lillian enjoys and is better at programming, while Joy likes designing more. We therefore assigned the roles according to our ability and interest in different fields. We completed the building of the robot together, as it was time-consuming. However, this doesn't mean that only one person programmed while the other one designed; we helped and learnt from each other when performing our tasks. This allowed us to understand our robot better from different aspects and extend the breadth of our knowledge. Neither of us had experience for piloting the robot, so we both tried several matches in the scrimmages and found out that Lillian is better at this. Hence, we assumed the role that best fit our interest but also enjoyed trying out all the different tasks involved in building the robot.





During Vex Robotics scrimmages, we see that nearly 95% of the contestants are boys; there are only a few teams that have girls involved, and pure girl teams is even more rare. We hope our action of forming a pure girl team encourages more girls who love programming and engineering to step out of the comfort zone and get involved in STEM events like Vex Robotics. It is totally fine if you are the only girl because there are more girls just like you- you are not alone. Personally, we believe diversity of gender is really important because there are both talented girls and boys. Gender diversity in competitions such as Vex Robotics gives an equal opportunity for both males and females to showcase their own gifts and passion for STEM.

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Student Names:

- Lillian Yuan
- Joy Chen

Team Number:

2919X

School:

Kristin School