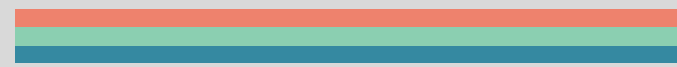


FINDING OUR PLACE



TURNING INEQUALITY INTO INNOVATION



11%

Only 11% of practicing engineers are women.

87% of women in tech fields have received demeaning comments from their male coworkers.

So, how do these statistics compare to our robotics club? and how can we change them?



Out of 24 students involved in VEX at our school, only 7 are female.



Unfortunately, 71.4% said they felt discouraged from taking part in STEM activities because of their gender.


Out of these students, 28.6% feel as though they are treated equally in STEM-related programs.

Because of statistics like these, when we first heard the phrase, "Girl Powered," we felt empowered and important. To us, this phrase means that every girl in STEM fields can make an impact, because each and every one should be listened to and taken seriously.



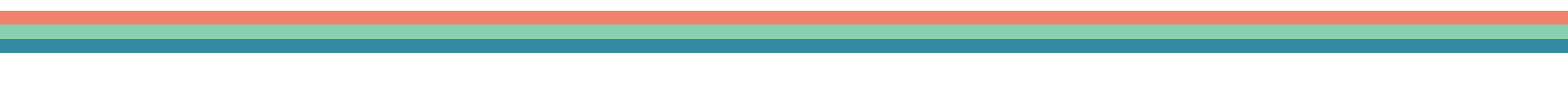
Soon, our whole team had Girl Powered stickers plastered onto the side of our robot's C-Channels, proudly showing off our GIRL-made robot.

Not only did this boost our confidence, but it showed the guys on our school's other teams that we are here and want to be heard!



With these points in mind, we knew that as the ONLY all-girl robotics team at our school, we had to create an environment in which girls would feel welcome and eager to participate. Our team's goal for this robotics season is to succeed at our competitions and, most importantly, encourage other women to join robotics in the upcoming season. We want nothing more than for others to enjoy our favorite extracurricular: Robotics!

We knew this change started with our team, so we got to know each other. We immediately saw all of our unique differences in race, religion, and appearance, and quickly found unity in the fact that we were all girls in engineering.



One **HUGE** difference we noticed was in our own strengths and weaknesses. At the start of the season, we soon realized the importance of each member's role on the team. 4 out of the 6 girls on our team were confident solely in their building abilities, which left the other two to program, strategize, and complete the engineering notebook. Eliza, unfortunately, was the only girl who walked into the club knowing how to program.

But, we saw this as a huge learning opportunity.

Eliza began to give Aanchal and Anes, both experienced in building robots, lessons on how to program using RobotC. Now, half of our team can easily write and check their own simple code, and Allison is even interested in learning to do so as well.

As mentioned earlier, there are some clear differences in each member of our team. This diversity intensifies when you look beyond the physical aspects of our team members, and listen to their thought processes and opinions.

Our strategy to solve disagreements within the team is the three C's of respect.

CEASE,
CONSIDER,
& COMPROMISE.

When there is a disagreement on the robot's design, it is easy to get caught up in arguing for your side, and neglect the other's point of view. So, whenever any of us have opposing viewpoints on any decision, each member **ceases** what they are doing, **considers** everyone's ideas, and finds a **compromise** based on what our specific robot design needs.

This system improves our respect for one another, and we come together easily on these conclusions, even if we were so set on having it our way moments before. When each member is listened to individually, it lets them know how important their ideas are to the rest of the team. And even if their idea is not chosen, it is always recorded and referred back to in our design notebook.

For example, when we decided to rebuild our mobile goal lift, each team member was very passionate about their designs, and we were evenly split.

Eliza and Anes pitched the idea of a Ferris Wheel lift, considering its overall efficiency and the fact that it was an easy build.

Meilin and Aanchal set their eyes on constructing a rack-n-pinion system for our mobile lift, since we had already gotten used to having one power our scissor lift.

A conveyor belt idea was also discussed, but it was considered the least reliable and realistic option for our robot.

Finally, Pallavi and Allison thought that moving the fulcrum point of our already-built mobile lift would be the best option, since it is quick and could be reinforced to be stronger.

We were all very indecisive, even after listening to all of the research everyone did. Luckily, there is no disagreement that a design matrix cannot fix!

After seeing the scores, everyone happily got to work on creating a Ferris wheel mobile goal lift.

IDEAS	EFFICIENCY	PRACTICALITY	RELIABILITY	QUICK	DURABILITY	EASY	TOTAL
1	4	3	4	2	4	4	21
2	3	2	2	4	1	3	15
3	1	1	1	1	2	1	7
4	2	4	3	3	3	2	17

GRADING = 1-4 4 = BEST 1 = WORST
HIGHEST SCORE WINS.
WINNING DESIGN = FERRIS WHEEL!

Even in the middle of tough decisions, we all love what we do for VEX Robotics. None of these amazing experiences we have had in robotics would be possible without one truly inspiring woman.



SHELLI BRASHER


Mrs. Brasher was the STEM teacher at our school for 4 amazing years, and taught math classes for 26. She is now the REC Regional support Manager for Arkansas, Louisiana, Mississippi, and, our state, Tennessee. When she was at our school, she did as much as she could to get more girls involved in STEM and robotics. She clearly loved what she did, and got all of us to love it too.



With the inspiration we gathered from Mrs. Brasher's work at our school, each member of our team felt confident to step out onto the field and show everyone what our robot can do.

When Eliza left middle school, she was undecided on whether or not she should join VEX Robotics in high school based on some discouragement she received from some boys in the engineering programs she was involved in.


After that school year, at GEE, an all-girls engineering summer camp, Eliza met Mrs. Brasher and talked to her about her indecisiveness about joining her robotics teams. She offered her a scholarship to a VEX Robotics camp, and told her to experience it before the year started and to see for herself what she wanted to do.



At the camp, she met one of her current team members, Pallavi, and found her passion in programming and design. If Eliza had not been able to attend this camp, she definitely would not have been involved in robotics in high school.


Mrs. Brasher is the reason most of our team is involved in robotics today, and we could not be more inspired by her work with Girl Powered teams.



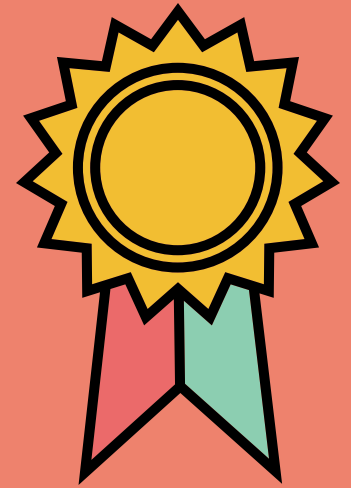


There is no other place we would rather be after school than the robotics lab, and each member of our team is so thankful to be heard and represented by the **Girl Powered** movement.

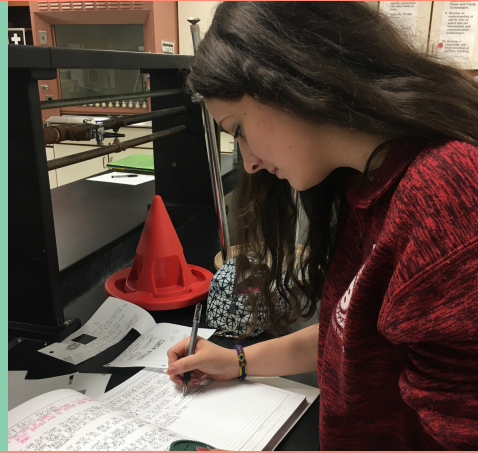
We are so grateful for the attitude shift in the mind of others regarding women's place in STEM. Thanks to people like Mrs. Brasher, and the **Girl Powered** team in general, each girl on our team feels like they are making just as much of an impact as any guy on the other teams.



We are **EQUALLY** as successful.



We are **EQUALLY** as hardworking.



We are EQUAL.



Works Cited / Credits

- Adams, Rebecca. “40 Percent Of Female Engineers Are Leaving The Field. This Might Be Why.” The Huffington Post, TheHuffingtonPost.com, 12 Aug. 2014, www.huffingtonpost.com/2014/08/12/female-engineers_n_5668504.html.
- Crockett, Emily. “A new survey explains one big reason there are so few women in technology.” Vox, Vox, 17 Jan. 2016, www.vox.com/2016/1/17/10781366/women-technology-sexual-harassment.
- “Staff Profiles.” REC Foundation, www.roboticseducation.org/about/staff-profiles/.

Created by: Eliza Reynolds

3631C The VEXENS

Meilin Melson, Allison Boers, Pallavi Singhal, Eliza Reynolds, Aanchal Singhal, and Anes Kim

Word Count: 1180