Girl Powered: **Changing** it **Up**

2496J

2020 - 2021

Girl Powered: A "**VEX**ing" Issue

"Girl Powered" is a phrase not often heard — especially within the STEM fields — where female participation has continually been lacking. Now, more than ever, the global pandemic has prevented girls from receiving an opportunity to engage directly in competition robotics.

Just as the pandemic changed the world, however, the Beckman Robotics program aims to change female participation. Girls are introduced into a setting where they can have the same experiences, and the program has only made teamwork and skill-building a more possible reality.

Amidst the **pun**demic, there is **inclusion**...

As the name holds, this season's VEX Robotics game is "Change Up," and it is evident that many changes have taken place through the global pandemic. Despite these circumstances, our team (and program) took the initiative to meet virtually at the start of the season via Zoom. This year's introduction was a little different; we typically begin with an ice breaker, but decided to do an online Skribbl.io (Pictionary) game instead!

In fact, having fun is one of the main goals in our team's approach to robotics. Having fun (both in online games and while learning) helps us to be motivated to overcome challenges in building a robot! This has been one of the continuities throughout the season as we continue to revise and test prototypes as a team. We approach challenges together, strengthening our team dynamic while making lasting memories.

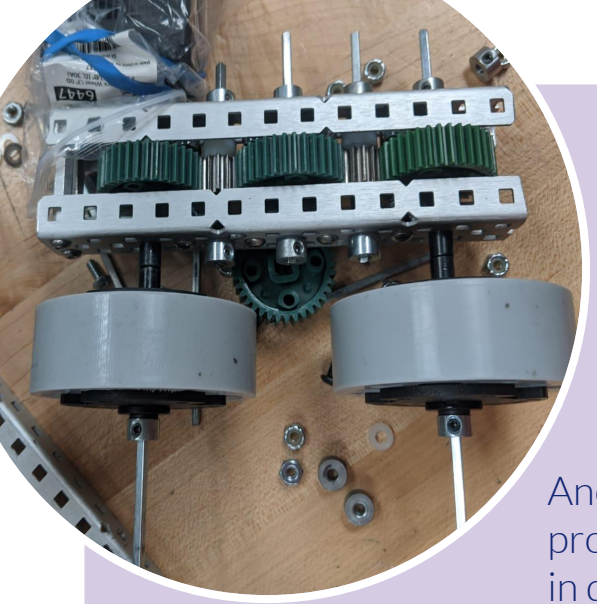
(Quaran) Teens in Discord Meetings!

Initiative, **In**clusion, **In**terests

A key aspect of our team's initiative (and Beckman Robotics as a whole) to create a more inclusive environment is our passing down of skills we have learned to newer members. Returning and experienced members often have strengths in a particular area, and share these strengths to newer members to help them explore their own interests and build on what they already know. Here, girls and boys partake equally, and the boys on our team even take their own initiatives to help everyone learn!

Becoming **Pros** in **Pro**gramming

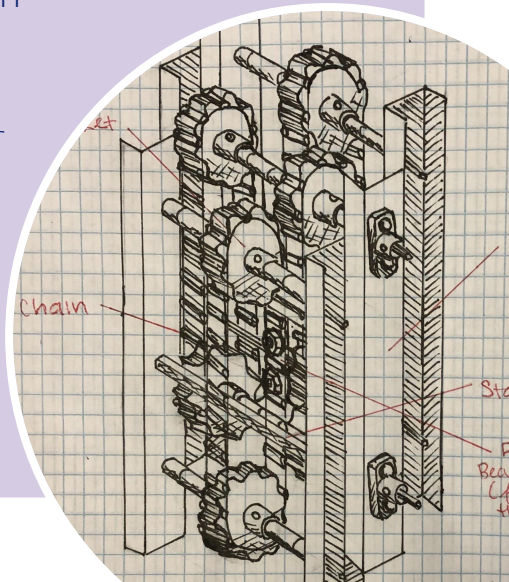
One of these skills has been programming. Both in virtual lessons and in-person meetings, our team has conducted a “programming lesson,” where all of our newer members are given the opportunity to solve a coding challenge with fundamentals they learn from experienced members at the start of the lesson. Returning members with strengths in programming (Jeffrey) advise the newer members (Lucy, Gerald, Safora, and Sasan) in coding their own programming challenges in C++, such as the quadratic formula!



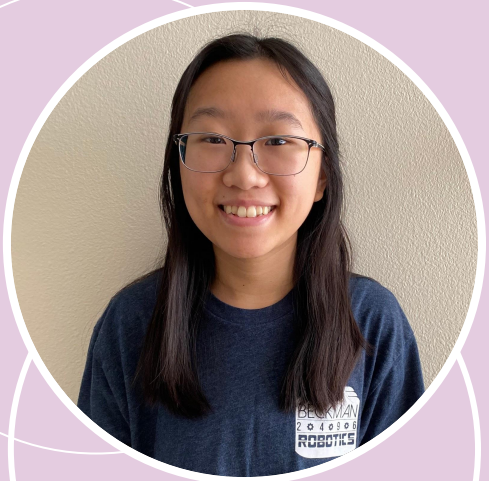
Other times, a team member may need help with building a part. Here, Jeff and Ethan, whose strengths are in building, guide team members in constructing subsystems, teaching them about screw joints/attachments, and helping them to plan the assembly of a prototype!

Another crucial aspect of the engineering and design process is documentation. VanAnh, who specializes in documentation, helps team members to outline the design process, determine the pros and cons for our mechanism considerations, and more!

Exploring programming, building, and documentation roles enables team members to try new roles, expand their skill sets, and find their strengths!



Senior “**Lifting**” Up Team Designs



VanAnh

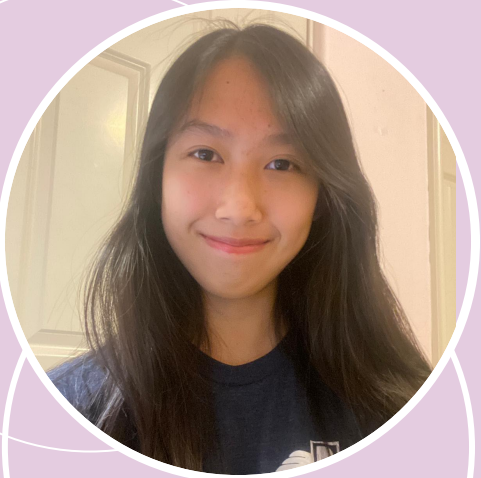
- 4th year in VEX Robotics
- Senior
- VanAnh is currently the Documentation Manager! This year, she has advised the team in design discussions, Online Challenges, and helped team members to learn HTML, CSS, and Javascript.

A Junior with “**High Strength**”

Safora

- 2nd year in VEX Robotics
- Junior
- Safora is a builder, designer, and documenter! This year, she is also learning to program in C++ through Jeffrey’s coding lessons!

“Intaking” **New** Members: **Fresh**men!

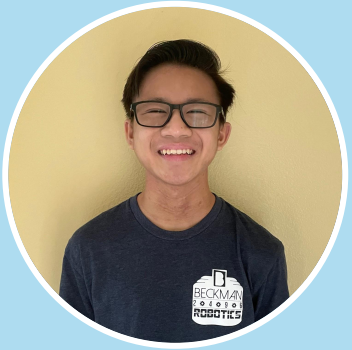


Lucy

- 3rd year in VEX Robotics
- Freshman
- Lucy is a builder on the team! In addition to building, she also designs, draws for the engineering notebook, and is also learning how to program in C++!

“V5” Smart Supporters

Jeffrey — Programmer/Code Teacher



Jeff — Driver, Builder

Ethan — Builder/Designer/Cutter

Gerald — Builder/Designer

Sasan — Builder/Designer

Through the **Safety Goggles**: Diversity of **Perspective**

robot design

Our robot design is a combination of everyone's ideas. Team members can freely express their thoughts, and we discuss together to find solutions that will meet everyone's concerns and optimize our performance in the game.

team chemistry

Team chemistry comes naturally with varying opinions and platforms. We connect via Zoom reaction emojis, WhatsApp texts, and debating on the type of fruit each team member is! Occasionally, we'll make funny nicknames for each other — for instance, Gerald is Dr. PhD!

success!

We have yet to compete in a tournament, but success can come by means other than competition! It's the learning experience that counts, and by taking into consideration everyone's perspectives, we find success in collaborating as a team!

"**Scoring**" into **Goals** of the Future

1

Maximize inclusion of girls in the **program** by having them **build**, **design** & **code**!

2

Inspire other girls around the community to join robotics by **spreading awareness** & **interest**!

3

Form our own **Girl Powered virtual initiatives** (eg. online robotics **mentorship** for girls)!

Mr. Sit

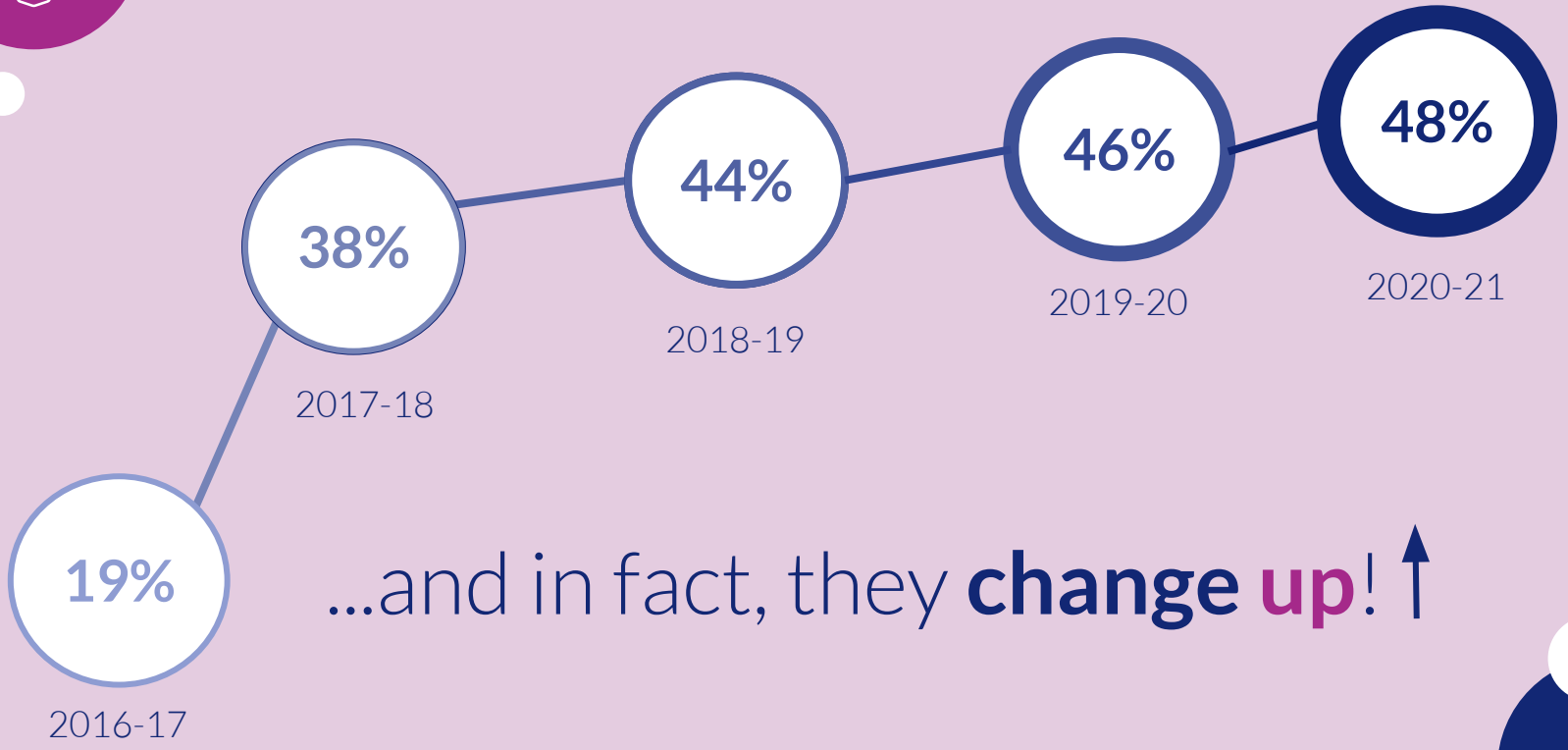
Advisor, STEM role model, and inspiration.

Mr. Sit: “Driving” the Program

Mr. Sit, our advisor, is our STEM role model. As a former engineer, Mr. Sit leads our program by scheduling meeting dates, encouraging us to explore new skills, and guiding us in programming and building challenges. Most importantly, Mr. Sit is always there to support and advise us, no matter the gender! Even through virtual and in-person circumstances during the pandemic, he continues to provide us with VEX updates, makes sure that we have enough supplies, and encourages us to collaborate to solve problems as a team!

In part, his dedication and mentorship in robotics is what makes the program grow...

The numbers continue to **change** each year...



...and in fact, they **change up**!

Our hope:

Let's *continue* to **change** it **up.**

Credits!

Names: VanAnh Nguyen, Safora Zia, Lucy Xu, Jeffrey Han, Ethan Yee, Jeff Le, Gerald Lu, Sasan Liaw

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