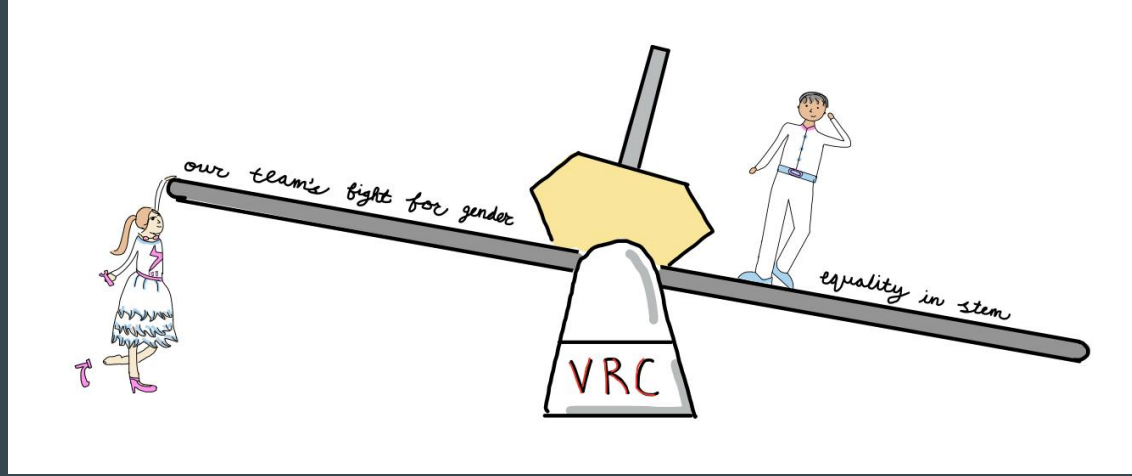


The *Tipping Point* of Girl Powered



2022 **Girl Powered** Online Challenge Submission

The Vexcellent Girls - VRC Team 47114A

If you are girl powered, you are never truly alone.

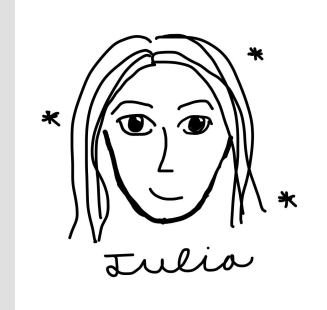
We believe in this because the phrase “girl powered” itself has created a **community** of people who fight for **equality** in every way possible. There are people who organize rallies for women’s rights around the globe, people who make hosting a workshop easy so that thousands of girls can be introduced to STEM, and even people who design sparkly t-shirts emblazoned with motivational quotes. If you are girl powered, any one of these amazing communities are **open** to you. What they could offer you—support, encouragement, and a learning experience—is so valuable that it’s the first thing that comes to our minds when we think of being girl powered. What you can learn from these opportunities can be the **tipping point** that opens up more roads of possibility for you.



Our team



Chloe is the team captain, programmer, builder, and driver. She also manages the engineering notebook. She's in eighth grade and enjoys baking and reading.



Julia is the researcher, builder, and driver. She's also in eighth grade, and likes to draw and play the violin.

Preloading Our Past

VIQC

Ringmaster

We received the STEM Research Award, qualified for the state competition, and learned a lot to set the stage for subsequent seasons.

2017-18

VRC Tower Takeover

After winning the Judge's Award, we were able to take our second annual Girl Powered event to our local library.

2019-20

VRC Tipping Point

Currently ranked as the #1 middle school team in NYS, we were also able to restore our Girl Powered Workshop to our local library.

2021-22

VIQC Next Level

We took home a total of seven trophies, including Robot Skills Champion at States, and placed in the top 33% at Worlds.

VRC Change Up

Due to COVID-19 and VEX going remote, we were unable to compete this year, but we persisted and hosted our Girl Powered event online.

2020-21

2018-19

Girl Powered Workshops

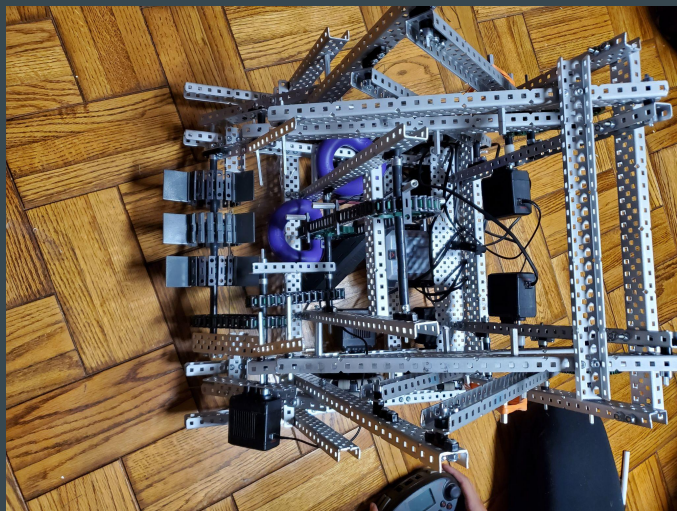
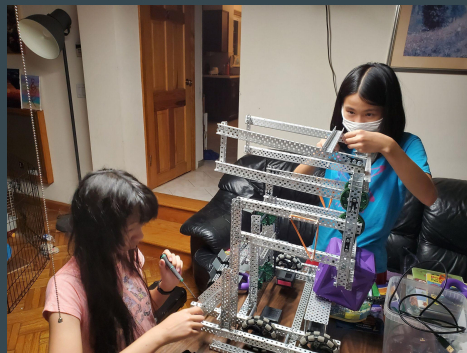
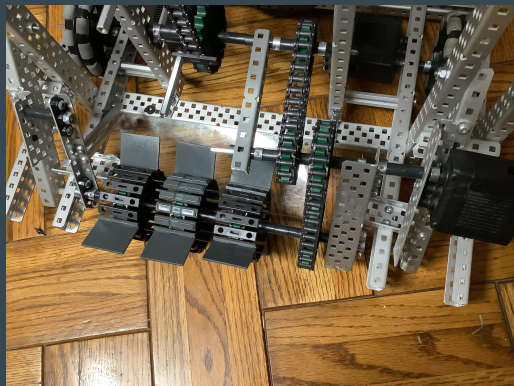
Our team has been hosting Girl Powered Workshops for four years. While we originally started these workshops to introduce other girls that are interested in STEM to robotics, we ended up learning from these events as well. One example is when our workshop in 2018 inspired the formation of another VEX IQ Team—65432A, The Bald Eagles. We were able to meet up at competitions and encourage one another there.



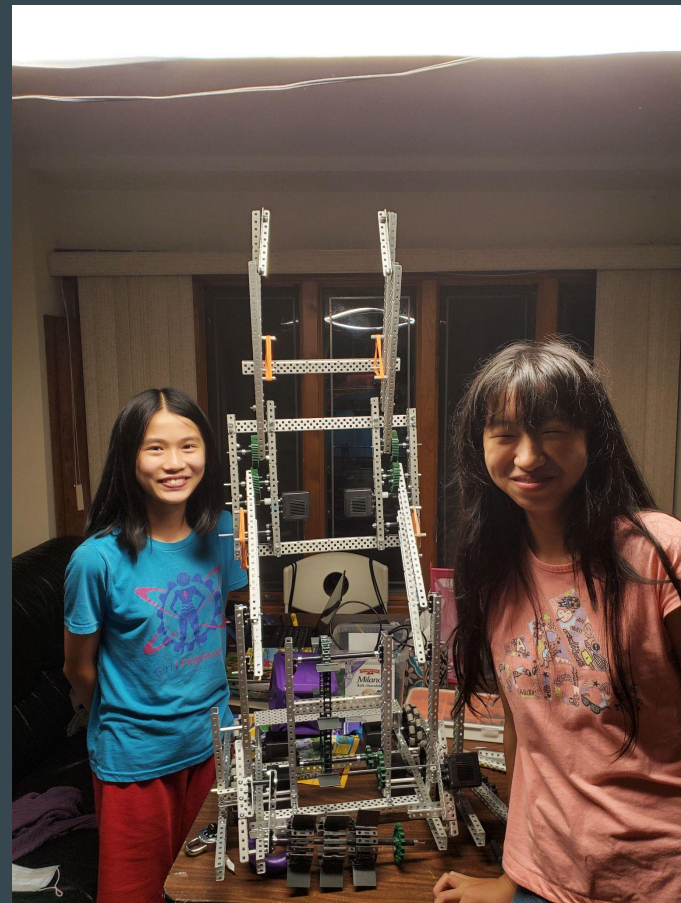
Robotics has always been **team-orientated** for us. There are so many different aspects to it that it's nearly impossible—and certainly much less fun—to do it alone. While we've learned a lot from our years in VEX, we've also had so much fun as a team, because robotics is more than building a robot. It's also about **problem-solving** and working together when something inevitably breaks. We've always been an independently-run team, so the familiarity we had with The Bald Eagles was something completely new. Robotics was able to bring us together.

This aspect of VEX is a huge part of why robotics is so fun and why we continue to do it today. The bonding that can occur over borrowing micro USB cables and complaining about malfunctioning controllers is truly astonishing.





“At least 70% of all student participants indicated that participation in VRC had made them more interested in each of the STEM areas.” - 2011 VRC Evaluation



Staying *mobile* to achieve our *goals*

We've learned a lot through our years of robotics, and our team has changed a lot to reflect that. When we were first starting out, we had a larger team of five people. We currently have a team of two people, which is less than we want to have, but due to COVID-19 we've been forced to narrow down our team to continue participating at all.

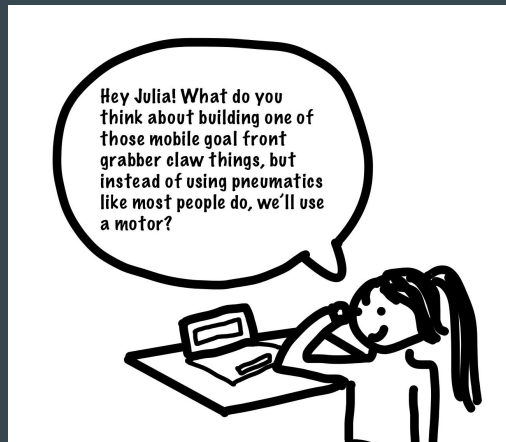
We had no idea what our roles on the team would be in our first year, so we started off by letting everyone **explore** and try everything. We took turns driving at competitions and passed the robot among ourselves every week to take turns building. This wasn't the most efficient way to run our team, but after a few years we each found our **niche**. Julia, who took up scouting the Instagram and Robot Events pages of teams voluntarily in VEX IQ, became the researcher. Chloe has filled at least five notebooks with math notes and was glad to take over the Engineering Notebook.



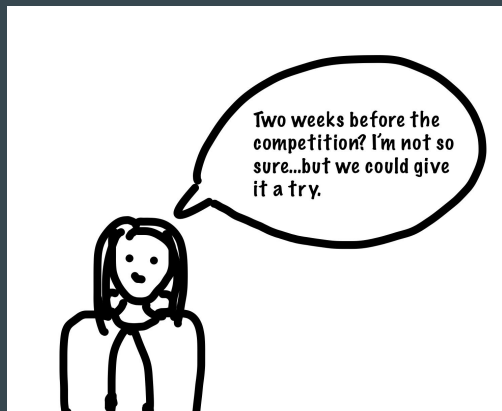
A Chance to *Score* for Every Idea

Another thing that we've learned over the years is to always be **open** to new ideas. There are many things that *sound* absurd when you first hear about it, but once you give it a chance, it can be genius. One example of this was when our initial robot design wasn't working out—we had spent hours working on it, but it was just too complicated and still wasn't coming together as the competition date drew nearer and nearer. We had seen a type of front “clipper” design for mobile goals many times, but they were almost always made with pneumatics. We didn't have much experience with them, so we simply added a motor and it worked out really well. It was surprising to us how something as abstract as a **diverse perspective** could impact something as tangible as our robot design.

robotics meeting



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Balancing the platform of gender inequality

Our team has taken initiative to attract a **diverse** group of students by not giving into typical **stereotypes**. The majority of students in VEX are male (23% as of 2018), and even girls that are in VRC are usually forced into **non-essential** roles such as the notebooker. However, our team is composed of **all girls**, so every single role is filled by a girl, whether it be the notebooker, builder, programmer, or driver, proving that it can be done and done just as well. In addition, we host a Girl Powered event every year at our local library. That's where we introduce girls interested in STEM to VRC and teach them some basics of robotics. We do this each year to help girls gain more **exposure** to STEM, because while there is a gender inequality in the STEM workforce, boys and girls show an equal interest in the subject area in Kindergarten. This proves that the problem lies in the stereotype that girls simply aren't suited to STEM, which leads to the lack of exposure and decrease in interest. Because we are working to solve this problem not only through our annual workshops, but proving our point through our own team's success, girl powered is something that motivates us and leads us through our journey.

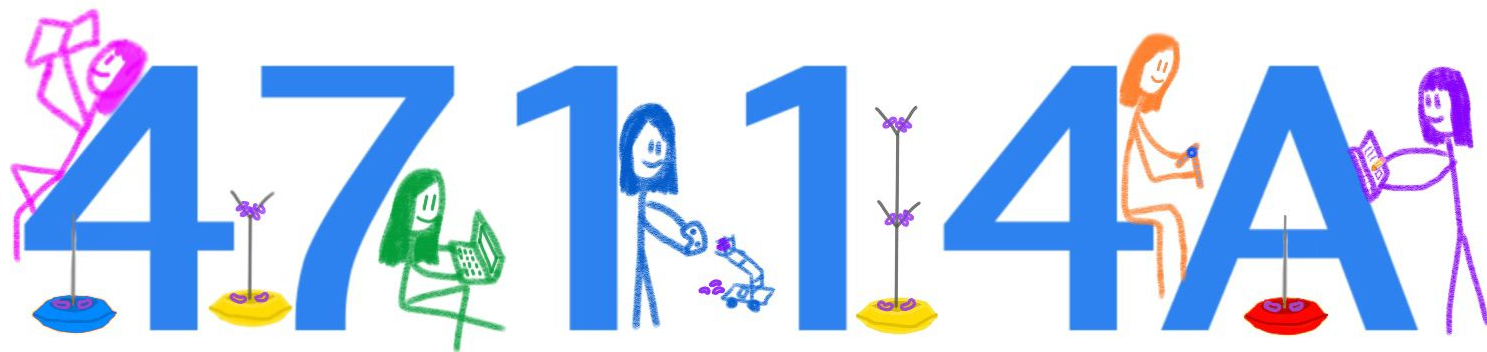


Emily Calandrelli

Emily Calandrelli is the author of the Ada Lace Adventures—a chapter book series about a girl in STEM—and the host of the Xploration Outer Lab at FOX. She also spoke at the Girl Powered Event at 2019 VIQC Worlds.

While her educational background in engineering is impressive, she is our team’s STEM role model because of how she has always prioritized **reaching out** to young girls—her book series, her tv show, and many of her speeches are all dedicated to that. In her website, thespacegal, she states how one of her primary missions is to “make STEM a more **welcoming environment** for everyone.” (<https://www.thespacegal.com/about>)





The VEXcellent Girls

Credits

Submitted by: Middle School VRC Team 47114A - The Vexcellent Girls

Great Neck, New York

Title: The “Tipping Point” of Girl Powered

Entrants: Chloe Ning and Julia Xu