From Tutus to Turning Point

By Zoe McGaha-Schletter

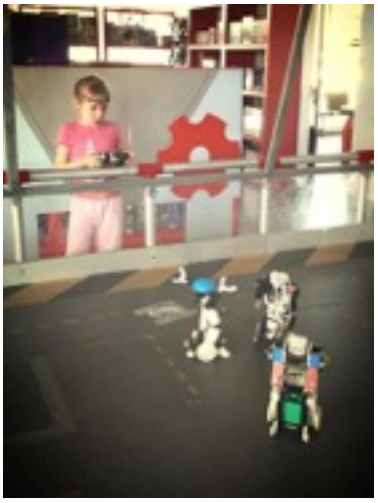
Like many little girls, I started taking ballet classes when I was three. However, I also became interested in robotics because of *BattleBots*. Before I was born, my Dad was the composer for the TV show. He would sometimes write theme songs for the robots. One of them was Mouser Mecha-Catbot, and it quickly became my favorite robot!

Mouser Mecha-Catbot

Drawing of Mouser Mecha-Catbot I made when I was four

Mouser's Album

When I was about seven, a place called Rolling Robots opened near our house. There, I battled with humanoid robots and built my own Smart Robot (with help, of course) and was quickly hooked on the fun.



Me at Rolling Robots, age seven

Years later, I went back to Rolling Robots for their summer camp, where I took the Minecraft and LEGO Mindstorms camps. It was in the LEGO Mindstorms camp where I realized robotics came very naturally to me. Everyone in the class was split into teams of two, I was paired with another girl my age. On the last day of camp, the teams' robots had a sumo battle. Placed on a black wooden circle with a white line around the edge, the two bots fought. The goal was to have your bot push the other bot over the white line to win.

Me and my partner, with our LEGO Mindstorms robot (I'm the shorter one)

We had been programming our robot to push a bot over the line, but we also got to add anything we wanted to the robot that may help with the challenge. Most of the other teams were boys, and they thought it would be cool to add "saws" to their robots. These "saws" were actually just gears, but looked similar to the saws battle bots used. My partner and I ran a practice round against one of these "saw" robots and it pushed ours off the circle. Even though the saw obviously didn't shred our robot, it was hitting our wheels and prevented it from driving. Bummer. We decided to add something to our robot to prevent the saws from hitting our wheels. We had arms on our robot originally designed to sort of grab the other robot, but once everyone added saws, they wouldn't fit. Right before the sumo battle was starting, I rearranged the arms to block our wheels so the saws couldn't hit them anymore. I didn't know this when I was building them, but these "blockers" ended up hitting the other robots' wheels, stopping them from moving completely. They were then easily pushed off! We ended up winning the sumo battle, and I was invited to be the captain of the Glendale Rolling Robots' Vex IQ team, 7700G. Yay!

Our original IQ team had six members: My brother Dash, a boy named Preston, three other boys and myself. I was the only girl and that was not the only difference. Unlike the boys, I was not enticed by the great and powerful Meme. The boys could often be found giggling in a pile by a computer screen looking at memes. I would keep having to tell them to stay focused. Anyway, our team went through many different robot designs, but eventually found one that worked quite nicely! At competitions, we did pretty well considering it was everyone's first year. We got into the Finals at all of them, but unfortunately didn't make it to States.

Me and my brother at a Vex IQ competition

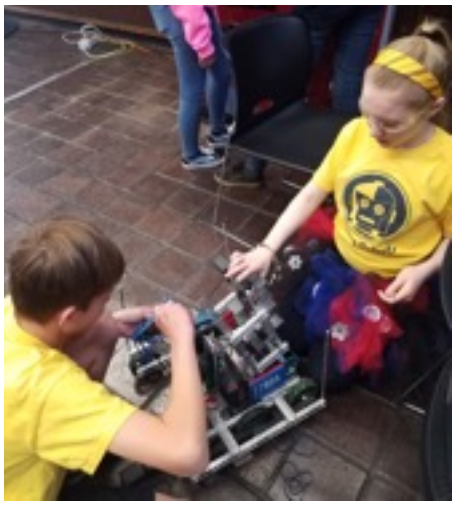
The next year, everyone moved up to the Vex Middle School team except my brother, who was too young. That year's challenge was “In The Zone,” a cone-stacking competition. Our team started coming up with prototypes. I really enjoyed this, because I could get creative. I could build whatever I wanted, and had so many different tools to do it! One of my favorite quotes is by chemist Stephanie Kwolek who invented Kevlar, “All sorts of things can happen when you are open to new ideas and playing around with things.” That is always how I feel about building.

When we were working on this new challenge, we watched a few robot videos. I saw that most of the robots had Double Reverse 4Bars. I pointed out that many of those robots ended up falling down, and that they were really heavy and complicated. I wanted to do something different, something unique. I made an arm using sprockets and chain, with a claw at the end. This did the same thing the 4Bar did, only it was way lighter, less complicated, and had a much lower chance of falling. We all did a vote, and although I didn't vote for the 4Bar (I didn’t think it would work), it still got the most votes.

It took forever to build the Double-Reverse 4Bar, and it didn’t work out. We fell over at our first competition, and it was hard to control. We took it off, and focused on scoring "Mobile Bases" at our next competition. Even though we couldn’t stack cones, a great team ended up choosing us as an alliance in the Finals. They were able to stack the cones while we scored the Mobile Bases. We did great together, and ended up winning the “Tournament Champion” award! We made it to States and Nationals! But, we knew that we really had to be able to score cones at those competitions, so we ended up using my arm idea. It worked really well! We changed the claw a couple times, and ended up going to Nationals with a rubber-band intake attached to it. Sadly, we didn’t win but we sure learned a lot from our first Vex season.

Our robot with my arm idea

This year’s competition started out with just me and Preston, everyone else from the team had left. Now that it was just us, I could see how differently we worked. At the beginning of the 2018-2019 game (“Turning Point”), we both made prototypes. I created my own prototypes. Like Kwolek, I didn’t base them off of any other robots. I just “played around with things” until I created something that would work. I thought that Preston had been creating his own, too, but I realized he wasn’t. He watched videos of other robots, saw what worked, and copied them. That way he already knew that his prototypes would work. He’s more logical, and I’m more creative. He prefers to make what he knows already works, and I like to create things of my own. Neither style is “wrong,” it actually works well together. My thinking “outside of the box” can enhance Preston’s tried and true methods. A few weeks later, we ended up getting more people joining the team. Including another girl! Yay!



Me and Preston, working on the robot

Me driving the robot with Viviana coaching

Another aspect I bring to the team is my comfort in front of crowds. I'm also an actress so I have been auditioning, performing, and taking improvisation classes for several years. I've done commercials, spots on tv shows and live stage performances (I danced the part of Clara in The Nutcracker). I've learned to keep pretty calm in stressful situations. I still get nervous during competitions (especially if I'm the one driving), but I'm usually less so than my teammates. I always help keep them calm. At our latest competition, everyone was really stressed out right before the judges' interview. I told my team that they didn't need to worry, that they just had to stay calm, relaxed, and smile.

Me, very excited about getting into the Semi-Finals at a competition!

I used to do both ballet and robotics, but it was very difficult to do both. Robotics competition season was at the same time as rehearsals and shows for The Nutcracker. Ballet kept getting harder and harder, while robotics came more and more naturally. I decided the Nutcracker at the end of 2018 when I danced Clara would be my last. Now I can give all of my attention to robotics (which I enjoyed more anyway)! Although I'm not doing ballet anymore, it's fun wearing tutus to competitions, I even decorated them with robots and gears!

So far, we still haven't advanced to States. But I don't enjoy being here any less. I really love being in the Vex Robotics Competition, and being part of the Girl Powered initiative! I believe it's important for girls to pursue their dreams, and that STEM should be full of different types of people. When things get hard, we just keep on trying. We don't give up, we keep going until we figure it out. Everyone has that ability, no matter what type of person they are or where they come from. That's what Girl Powered means to me.

Credits

Entrant: Zoe McGaha-Schletter

Team Number: 7700A, from Glendale Rolling Robots.

Title: From Tutus to Turning Point