

## More Than a Game

This essay has two parts: Savannah and Kayla. Savannah, currently in 9th grade, is participating in her second year of VRC on #9447A. She led her team (the school's first team) to world in her first year of VEX IQ. Kayla is currently a 12th grader who has led her team to nationals each year. She started her school's first VRC team and introduced VEX IQ the year after. Savannah and Kayla are currently working together on Team Toss Up! (#9447A) with their teammates, Jake and Duncan. We love our team. Each member has unique experiences that contribute to our *successes and failures*. Savannah and Kayla both have different experiences and to write them as one would demonstrate the exact problems they faced.

### Savannah

I've learned many things from Vex that I never thought I would. I was taught how to share, to trust, to think, to problem-solve, all basic skills I thought I already had. It was rough at first, and even more confusing, but in time I've come to think of my few years in Vex as the best experience I've ever had.

My Vex journey really started in Vex IQ. Two years ago, when I was in seventh grade, I switched schools. This school was odd, to say the least and it still is. In previous grades, I had competed in FLL, though none of my teams had ever been functional enough to make it past regionals, but, at this new school, there was only a high school program, Vex, and a middle school program, Vex IQ. Since I was not eligible for Vex, I joined IQ, eager to start with a clean slate. I quickly learned that this robotics program was in its first year and no one really knew what they were doing.

I joined a team with three other girls and one boy, all of whom were rookies like me. In the beginning we planned our approach to the season, or at least tried to. We thought a simple, reliable robot would do best. We built the robot using the instructions given with the kits and added a little difference here and there. We finalized our robot early on and focused more on driving and programming. The role of leader first fell on one of the girls who loved taking charge and had grown used to always being out front. As our team began building, however, I unconsciously started to take that away from her as I had more experience in building robots and took charge in that area. Later on, when we decided to choose who would drive the robot, the girl wanted to drive badly and it ended up being me and her as the two main drivers.

After our first competition between the four teams in the state, (yes, there were only four teams in the state at the time, and all of them were at my school) the girl decided to give up her position as a driver to another girl who couldn't participate in any other way because of me. I should have given up my spot as a driver but I was too controlling to trust anyone but myself and at the time I didn't know how to share roles on a team.

Though my team was full of drama I unknowingly caused, we beat the other three teams in my school and made it to worlds. We made no changes to the robot to make it better and did not change our tactic in the challenge. We thought since we had done well against our school's rookie teams, we might do well against teams around the world. We were dead wrong.

We were destroyed at worlds. We only ever got in the way of the higher ranked teams and ended up being third to last place. We were devastated and to make things worse, one of our male mentors crudely said we would have done better if we had actually tried. I realized then that if I hadn't taken control of things, had actually let everyone help me, we might of gone further in the competition, but instead I only ended up pushing everyone away as I had done in FLL, though for good reason then.

The next year I chose to forget my past troubles and go into Bankshot, the new Vex IQ game, with a clear mind. Of course, that's when everything was turned upside down and I was offered a chance to be in high school Vex instead. As an eighth grader, I was terrified to think I would be on a team with high schoolers, and I refused at first. Later on that same day, with a little persuasion, I decided I would take a chance and join this mysterious club I knew nothing about, though not without continuous inner turmoil over yet again throwing myself into unknown waters and basically starting over for a second year in a row.

I wasn't alone in this decision as four other eighth grader girls also joined Vex. At first they wanted to create an all eighth grade team. I knew this would be a bad idea as we would be destroyed by the other, way more experienced teams. As I was too scared to talk to them about this directly, I went to our lead mentor and explained the situation. She told me she would require each team to take one eighth grader so that wouldn't happen, but of course this only started more conflict as each of us vied to be on the best team in the school, 9447A. Though I didn't know much about this team, I knew they had gone the farthest in the competition and so it was the team I wanted to be on. Fortunately, I was chosen to be on 9447A.

At first, I was very confused by the new pieces and rules, and the concepts of the game were completely different. I had to be taught everything from what a bearing was to how fly wheels worked. I became frustrated quickly because I was not able to offer a lot to my team because I was so new. The control I had been so used to having had been completely wrenched away, leaving me feeling vulnerable and useless.

Just as I began to feel like that was going to be a horrible year of me sitting on the side doing nothing, my team began to encourage me to share my ideas, no matter how unrealistic or illogical, and shared the different roles of the team with me. They trusted me to build and design things therefore allowing me to trust that they wouldn't abandon me. Their trust in each other, though thin at times, showed me what a real team was supposed to be like. A real team is supposed to trust that everyone can play a part and that no single person has to do everything if others are willing to step up and help.

9447A also taught me that you can't approach a challenge with the simplest answer, for example, using the robot they give you in the instructions that come with the kits, because you will never get any farther than regionals. To stand out in a crowd you must ask yourself what the best robot would be not the easiest to build. I also learned that even though simple isn't always the way to go, unrealistic ideas aren't either and that problem solving didn't mean trying one thing and giving up but trying one thing several different ways until it worked.

Looking back on that year, that was the best I had ever done on a robotics team. We had gone to state, got the opportunity to go to CREATE Open (a national competition), and went to TSA Nationals (the biggest competition I had ever been to, even though most of it wasn't

robotics). Not only that, but we had earned those opportunities, not just stumbled upon them by besting three teams.

This year, in Starstruck, 9447A continues to evolve. I have taken up an even more active role in robotics and continue to learn and change. I don't know where this team or I is going to go in these coming years, but I do know that at the end of it, I won't be able to recognize the person I was in IQ.

### Kayla

There are five building blocks that when stacked together have formed the tower of triumph of which I humbly and proudly stand on. These blocks are not present on the fields at competition, nor are they pieces of the robots I have worked on, but they represent the values I have derived from VEX. These traits are innate, but my awareness of their prevalence in myself and others would not be as strong. From this pedestal of characteristic puzzle pieces, I can review my successes, failures, and the lessons surely inherent within both necessary, nurturing experiences.

STEM in South Carolina overwhelmingly lacks gender and racial diversity. As a Filipino female, I stuck out from the crowd and I could not help it. As the rate of my success grew, I was able to embrace sticking out from the crowd as a deserving winner which only grew my passions. There were times, however, when I would experience prejudice from mentors or other teams. I recognized that my behavior and presence was being strictly evaluated. As a leader I was required to express *integrity* — a trait of paramount importance to me. More importantly, I am aware that I can set new goals for others to aspire to by serving as the role model I lacked in the earlier stage of my education.

The VEX program and my experience has fostered *confidence* that I will surely carry through the rest of my educational career, work endeavors, and personal life. I did not always outwardly wish to be an engineer, but my VEX mentor prompted me to consider it. The thought of being an engineer, especially a female engineer, seemed a daunting task. Success appeared to be a privilege, but I have learned that it is an opportunity that requires self-assurance and motivation to those around you. Learning to be honest about failures and motives has been difficult. *Self-forgiveness* has been a major role in my ability to rise after a failure or not fulfilling an expectation. This is a true test of success and has only allowed me to continue growing limitlessly. Success is typically viewed as a linear, unfaltering path to the top. This far from explains the journey I have encountered. I have fought every step, trudging to success. My mentor has not shielded me from hardship, but instead has taught me how to cope with and guided me through difficult circumstances. I have dedicated a lot of time and effort and for my *perseverance*, I have been heavily awarded.

My mentor's generosity and matched dedication allow me to supply the time necessary to put into this project. I have also witnessed *generosity* between teams, my peers, and from my mentors. I have been a part of developing a culture at PSA and the spread of knowledge will only continue to grow the program's influence.

I am the team captain of #9447A and contribute primarily to the strategy, design, and mechanics of the robot. I enjoy constructing new prototyped ideas and determining the best way to incorporate them to the robot. However, I can also program in RobotC and am a main contributor to the team's Engineering Notebook. VEX has played an immeasurable role in my

desire to pursue a career in the field of engineering and sciences. In 9th grade, I wanted to be a biomedical engineer — but only because I thought I needed another discipline (medicine) to hide behind in order to succeed as an engineer. I always wanted to engineer solutions but never felt I had the gumption to do so successfully.

Mrs. Voigt, my mentor, introduced this highly competitive competition to Palmetto Scholars Academy (PSA). As a first year team, we won the Palmetto State Champions Tournament and went on to compete at Nationals (Technology Student Association) in Washington, D.C. where I developed strong engineering, teamwork, and programming skills. The Toss Up challenge was my first year with VEX robotics. It was challenging and it made my education exciting. This was the first time I was able to combine skills gained from my core studies into an extracurricular activity. The competition itself begged me to be more ambitious. It became evident after my first competition that schools with more funding for their robotics programs would perform better. I wanted others at my school to not be discouraged over this detail that they could not control and so I took on a leadership role to bring positivity and productivity to the team. To be at the same level as these other teams, we would need to work harder and be smarter. VEX became the backbone behind my ambition, drive, and determination. VEX Robotics was the start of it all and it is all due to a little nudge from my school's robotics mentor.

My involvement with VEX soon led me to participate in other STEM projects at my school: high altitude balloon launches with the Trident Amateur Ham Radio Club (TARC), experiments designed for the International Space Station, Math Meet, Cubes in Space, and other activities. One of my VEX mentors offered me an apprenticeship with SPAWAR where I was introduced to larger scale robotics projects. Since then, I have independently explored the world of web design, programming, and tech-based applications by conducting mini projects or experiments. I attended the Lowcountry Tech Academy summer camp for engineering using the VEX robotics platform and helped teach a summer course for basics in engineering design, construction, and programming. Each year since my first year of VEX, I have helped teach this class and am thrilled to see how much a student can learn in just a week of activities and challenges.

In the second year, Skyrise, I faced other challenges. After being first handedly affected by the lack of STEM opportunities offered by my new school, I tried to influence other kids — both middle and high school students — to join the robotics program and witness the impact these experiences have on major and career decisions. I assisted in the creation of South Carolina's first VEX IQ teams at my school in order to allow students to get introduced to engineering sooner. Since then, I have served as a mentor to these teams, facilitating aid as requested. Each year my team, 9447A, has had a wide age-range of members from 8th to 12th grade. It has been my responsibility to lead my team, maintain communication, make decisions, and make sure we meet our objectives. I came up with a complex design that my team was anxious and gumpitious enough to build and we attended yet another national competition and received several awards for our performance and engineering notebook.

The third VEX challenge, Nothing but Net, taught me more about electrical systems, circuits, and programming methods than the two games prior. In VEX, there are teams who created a successful robot by chance and teams who dedicated their time to the design and testing of their robot. In this competition, judges could more easily discern between the two and I believe it is for this that my team has been so successful this year. A team of individuals produces a solution to a challenge and this product, our robot, must perform. Everyone asks me if I am nervous. In place of a stomach full of butterflies, I feel pure, unwavering confidence. I know that

my team and I are ready. I, myself, can only be in awe of the group's efforts. An 8-hour competition is the culmination of lessons we have learned — through calculation or trial-and-error — the obstacles overcome, objectives achieved, and the thousands of hours each member has logged. It was, after all, more than just a game.

In the coming year, it excites me to impart the knowledge I have attained through experience to the younger students at my school whom are involved in either VEX IQ or VEX. Each year I compete, a trail of younger students are bright-eyed and eager to join the program. Each time we win an award, it encourages students of varying demographics to join robotics. It humbles me that I have been a part of the introduction, success, and growth and development of the robotics program at my school.

## Outline:

- Hello! Who are we?
- Toss Up: First year EVER
- Skyrise/ Team Integration IQ's first teams
- Nothing But Net: Things get technical
- Starstruck
- Now, we have another dream: get to world.

## Things we learned:

- This challenge is about creating a Girl Powered story focused on an aspect of your robotics experience. Your story must contain a clear beginning, middle, and end.
- 12 pages in length (online resources include but are not limited to: Shutterfly, Snapfish, SmugMug, Photobox, Wattpad or Quotev).
- credits section which includes the name of the entrant or entrants, the registered team number, and the name of the storybook, plus any other information the creators want to include (software used, recognition of sponsors, etc.).
- The story must have a clear beginning, middle, and end. It should include graphics and photos and result in a product that the students' peers would enjoy reading.
- The final layout of the project should be easy to read, well designed, and engaging, and be no more than 12 pages in length.
- The prose and quality of writing.
- The subject matter should reflect the items listed above, namely a challenge the team faced, what was learned in the process of designing, building, and programming a robot or how the robotics experience inspired girls to pursue STEM and/or education fields/careers.
- Be sure to make it fun and engaging with a clear beginning, middle, and end. Would a fellow student want to listen to your story read aloud?
- What have you learned about designing, building, and programming a robot?
- When you hear Girl Powered, what comes to mind? How is it reflected in your team's approach to robotics?
- Failure is an option in engineering. Did you fail? What did you learn from it?
- What have you learned about teamwork and communication?
- Has participating in robotics changed or enhanced your view of engineering and possibly pursuing STEM or education fields in college and beyond?

1. Introduction
  - a. ToC
2. Kayla's story (state champions)
3. Starting IQ
4. Savannah's Experience
5. Joining teams (approach to teach and learn from each other. How important it was to create an environment where confidence, creativity, and ambition could thrive.)

6. Prevalent vs invisible failures (slow but steady, testing and learning-- just what got us into robotics in the first place.)
7. Reward at TSA, Nationals, and from our community.
8. How it's affected our career paths
9. How we wish to influence younger students and create an environment of learning
10. How we can be Girl Powered
11. Influence of Vex. Thank you to all that we have learned. (Possible reflection as a visual of the building blocks?)
12. Credits/ Images / Team info
  - a. The members of 9447A are currently working to refine this story even more and to create an interactive story webpage.
    - i. Roles:
      1. Duncan:
      2. Jake: Layout Designer
      3. Kayla:
      4. Savannah: Story Manager
      5. Each member will be involved with the coding, creation, and implementation of this story.
    - ii. Objectives: normalize the presence of girls who participate, have talent, and are successful in STEM.

Our successes both in and out of VEX.

We speak about our experiences with both \_\_\_ and eagerness to \

To convey our leadership.

Study failure to cultivate solutions.

Though Savannah thinks she is unfit to be a leader due to her quiet nature, her ideas and contributions to the team have lead us to success in competition and in the robotics community.

Our team's varied experiences and styles of robotics lead to fun and exciting, although hard and tiring meetings.

We harbor different stories, yet they contain similarities that seem to hold up to many other girl's experiences with robotics programs.

In fact, learning to be an integrated member of y

Our team and how to most effective share your unique perspective is the best thing to do.

This video was taken at the state championships of my first year in VEX robotics (2014). We were all girl's team. It was most difficult for me to pick an item that could properly display all that I have learned, the ideas constructed, designs calculated, and programs executed. I chose this video with the hope that it shows something apart from the other components in this portfolio- - my passion. I am the girl in cyan with goggles pointing and directing as coach. The robot on the blue alliance with simple, folding arms in a triangular design is mine, team #9447A's first robot. If you do not spot it, at 1 m 37 s it knocks the other team's red ball of its post and cheering, excitement, and tearing up ensues. We were simple yet we were the only team who could de-score this way. At this moment, we knew we won and that we would advance to nationals. In this moment, our hard work was rewarded. In this moment, I realized that I enjoyed robotics and wanted nothing more than to pursue it.