Leadership Through VEX Robotics

Robotics became my passion after I received a robotics kit on my eighth birthday. This kit opened an exciting opportunity for me to build with Lego pieces, test what each sensor can do, and program the robot to do different functions. I finally found something that I could apply the math and physics knowledge that I gained in my studies. In my research to find different ways to build robots, I discovered a whole world for robotics optimists. However, I couldn't do what I wanted to by myself as a homeschooled student. Therefore, my mother posted a request for other robot enthusiasts on an e-list. Within the day of her request, Mr. Saenz, who is a Physics teacher and coach for the Cypress Spring High School STARS of Cypress robotics club, surprised us with an invitation to visit his team. Joining the high school robotics team shaped my life. Mr. Saenz readily took a chance, overlooking my age, and saw only my excitement for robotics. As a result, the high school students accepted me as a peer.

Consequently, I was introduced to VEX Robotics by Andrew Lynch, the coach of the Discobots, who invited me to watch his team compete in the 2010 VEX World Championship. I was so inspired, seeing how much effort competitors put into their robot, and how much one could learn from robotics. After the World Championship, I was eager to begin competing, to learn the skills I needed to be successful in robotics. However, due to budget constraints, the STARS of Cypress team could not afford the materials for VEX. When Mr. Lynch gave me the offer to compete in the 2010-2011 VEX Robotics competition with his team, I took it up immediately. This meant I was member on two robotics teams.

Competing in VEX Robotics had a significant impact in building a solid foundation for my academic path. I have learned valuable leadership skills, teamwork, decision making, engineering processes, building skills, and community outreach through various competitions.

These experiences played a big role in the high school students' decision to elect me, a ten year old, as the President and Team Captain for the STARS of Cypress robotics club. I acquired more authority as a team captain; though the position came with more responsibilities. On one occasion, our robot began to malfunction; causing my team to panic. Everyone looked to me for guidance, as I was the team captain. Despite the situation at hand, I was able to calmly assure the team and assign specialized tasks to each member using the leadership skills I learned. Ultimately, our team pulled through to win several awards through team work and determination. Additionally, I learned that applying math and physics in the construction of a robot is crucial if one wants a successful robot. Although math and physics were not factored in to our robot designs during my rookie year, I implemented the use of the Engineering Design Process to organize our tasks when I was elected as head of the design team.

More so, community outreach and mentorships are especially rewarding for me. By showcasing our robots at various public events, we generate interest among young people and offer firsthand experience by giving them the opportunity to drive and learn about the robot. An occasion that really stood out was when we demonstrated our robot to middle school girls at the Sally Ride Festival at Rice University. At the beginning, they were so afraid to touch the robot; some have never heard of robotics, but once they were shown how to drive the robot, their faces lit up with enthusiasm, eagerly waiting for their turn at driving the robot. On that occasion, I had so many girls come up to me to ask how they can join a robotics team at their school. It was exciting to see the impact we made just by sharing our robot. On the other end, I also have the opportunity to go to many companies like Shell, GE, and ExxonMobil to demonstrate our robots to professionals to generate interest in mentoring robotics team. It is very rewarding when professionals in the field agree to mentor our team or other teams after learning about the various

competitions for middle schools and high schools. Additionally, I was able to share the experience I learned from VEX Robotics in the seminars I co-presented at the local community colleges. At the Houston Community College Southeast STEM Symposium, my mentor and I introduced "Building and Sustaining An Afterschool STEM Program" and "Taking The Fear Out of Robotics" to teachers and professionals. At the Star College Star Tech Symposium, my team and I gave a seminar on "Mentoring Robotics Teams in Elementary through High School to Promote Higher Education." Through these various community outreach, we have introduced robotics to many professionals in the field attaining their commitment to mentor STEM clubs.

As a mentor, I have given many classes in robotic design, building workshops, and programming to other teams. As a homeschooler, my time is flexible so I am able to travel to the teams' school. I also donate my time to tutor elementary through college students in math and science. I have tutored students in basic multiplications through Calculus and basic science through Physics.

It gives me great joy to share the knowledge I have learned with others. I was very fortunate to have found two great mentors, Mr. Sam Saenz and Mr. Andrew Lynch, who have given me the opportunity to pursue my passion – robotics. VEX Robotics competitions and outreach opportunities have influenced my decision to pursue a degree in Mechanical Engineering, with an emphasis on Artificial Intelligence & Robotics with a minor in Mathematics.