2952D- Career Readiness

(Naperville, Illinois)
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Robotic Engineer

The stem job I picked is Robotic Engineer. The reason I picked Robotic Engineer is that I know that robots are becoming part of regular life in many ways, including factories. There are so many opportunities to join robot companies that are making groundbreaking discoveries. One of these many companies is Boston Dynamics. I want to show people all of these opportunities they have the chance to explore.

Something I found that helped learn about these professionals is their site, Boston Dynamics. It explained to me what they do every day and what their goal is. They use the engineering process to be able to make more robots to sell. They explore jobs that are very dangerous for humans and plan on what type of robot they would make, and also what that robot would do. Then they start to get information to help advertise and actually create the robot. Then they start to make a prototype and upload videos of the tests to advertise. Then they would reveal the final version on their website and on Youtube to bring awareness to the robot. They would also contact the companies that the robot might benefit in order to sell the robot to them.

How they did the steps of the engineering design process is they first ask themselves what is the problem. An

example of that is unloading trucks. Then they research the problem. Which in this case is unloading trucks. Then they imagined why not just make a robot that can unload trucks more efficiently and faster than humans. So they planned about where the robots would drop the cargo and how they would access the cargo. Then they created a prototype based on their knowledge and information. After some testing, they changed things that might have been failing and finally released this robot under the name Stretch.

In VEX Robotics, students like me use a design process when building the robot to make sure our robot is fully functioning, and it reaches its full potential. We commonly refer to this as the engineering design process. The first step is to define the problem. This year, in VIQC, the challenge is called pitching in, and this challenge has multiple different things we have to accomplish. We have to shoot balls into the high goal, hang, and clear starting corrals. The second step is to brainstorm possible ideas to solve these challenges. For picking up the balls, hanging, and clearing the starting corrals, you can brainstorm multiple mechanisms that can solve the problem, like using a claw, a bar lift, or just a bumper that you can use as a side to clear corrals and put balls in the low goal. The third step is to research the best ideas to solve the problem, or just research your ideas that you thought of. This is helpful because there will be some teams that use the same mechanism and finished it before you even started, and you will be able to see the efficiency of the mechanism,

and decide whether to use it or not. The fourth step is to develop ideas that can solve this. Think in your head how you can build it efficiently and properly while fitting in the limits. Some of my teammates thought about a ramp, wheels, chain, and multiple more, and I thought of a catapult. The fifth step of this process is to choose the best idea. There are multiple ideas that can be thought about. The team must discuss all the ideas thought of, and wisely select the best idea that is less complex, but at the same time, more efficient. The sixth step of this process is to design prototypes for your idea that you thought of. Teams can design the same exact thing in multiple ways, but there is only one model that is the most efficient, so they have to build prototypes to see which version they should use. The 7th step of this process is to test and evaluate. In this step, teams have to test their model on the field attached to their robot. The 8th step of this process is to make improvements. Not every design will be perfect, and most designs will have defects to it that the team must change. The 7th and 8th steps are the steps that our team repeated the most, and that's not a problem. That's only improving the robot. The final step is to communicate the results. This process is the most successful, but the point is that not only people who join Vex will use this, but engineers must use this when building the robot to make sure it works.

There are many ways that Vex IQ could help and prepare you for a job as a robotic engineer. One of the biggest ways is in Vex IQ you also work on machines, and robots that have certain tasks they have to complete. You would also have to use the Engineering Design process in both places since you

are Engineers and to have the most successful machine this is the process you need to go through. Vex could also help you with many small things like teamwork, communication, etc. Vex could even help you through things like stressing over the robot. Overall, I think in my perspective, Vex itself was something made to prepare kids for Stem jobs when they grow up, and to fully enjoy robotics.