Career Readiness Challenge Entry – Drafting Technician

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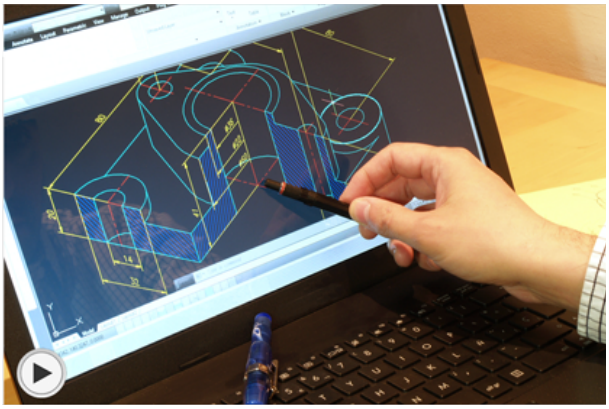
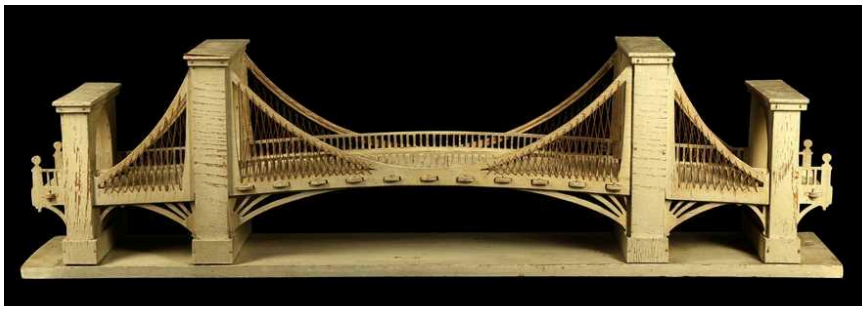
The STEM career we selected is a drafting technician. To summarize, a drafting technician is responsible for creating design plans for buildings, products and machinery using computer software. Drafting technicians also must work closely with architects to convert blueprints and sketches into 2D or 3D computer models. They will often create very stable and beautiful structures, all due to the testing beforehand. This "testing" process is actually very similar to the engineering design process that VEX Robotics – and our team – uses.



Why drafting technician?
We chose this profession as it very clearly utilizes the engineering design process. The work that a drafting technician does is very closely related to the engineering design process. It's also very similar to the process many VEX Robotics engineers go through while designing and building their robot. This is the reason why we decided to delve deeper into what drafting technicians do and how, exactly, they do it.

How do drafting technicians apply the engineering design process in their career?
The engineering design process is a step-by-step progression in creating or building something. It can be applied to many aspects of life such as building robots, graphing computer models or making a certain mechanism. So how do drafting technicians use the engineering design process? Well, drafting technicians have to use this process many times. In their work, they first have to figure out what their problem is. Then they must think of various solutions until they find one that has a high chance of

working. Now, they will create a small prototype to check if it works. If it does work, great! They can still continue to improve it though, by finetuning everything and making it look aesthetically pleasing. If it doesn't work, then they must figure out why it doesn't work and make a plan from there. For example, imagine a drafting technician with a task. His task is to create a 3-D rendition of a bridge he has been tasked to design. First, he must think of multiple solutions that would solve the problem. Then, he must pick the most viable one; perhaps an enlarged version of a suspension bridge but made of concrete. Then, he would have to create a scaled down version of it and test it in all kinds of conditions to see if it could withstand the elements. When he has finished, he will submit the plans and construction on the bridge will commence.



How does what drafting technician's do connect to our work in VEX Robotics?
Being a drafting technician is quite similar to what we do in VEX Robotics; in fact, it's almost identical. VEX Robotics is all about the engineering design process, building robots, and competing. What we do is create a robot designed to play every VEX game at the highest level. Our step-by-step process is very similar to a drafting technician's. First, we study the new game. We make sure we know the ins and outs of the game, and we figure out the best way to get the most points. Next, we make a drawing of the proposed robot and figure out the logistics of the build. Next, we'll start building the robot. We like to start from the base and build our way up. So in the Over Under season, we first built our drivetrain with six wheels: three on each side and with a traction wheel in the middle to ensure the bot can cross the bar threshold. Next was the intake and tech, which consisted of the brain, motors, pneumatics, and cables. The pneumatics would be the foundation for an extremely important mechanism later on. Next, we built a catapult to shoot the triballs over the halfway mark. This would be very important to get lots of points in real matches. Lastly, we added the wings. The wings are these small c-channels connected to the pneumatics that pop out whenever we need it. These are all the components that make our robot successful, but there will always be room for improvement.

Conclusion:

Furthermore, participation in VEX Robotics has already prepared us for many future careers such as architects, mechanics, and many others. This is because the engineering design process is used everywhere by dozens of different jobs. Learning and performing this process at a young age is what will lead to success when we get older.