Fighter Jet Pilot's Engineering Process

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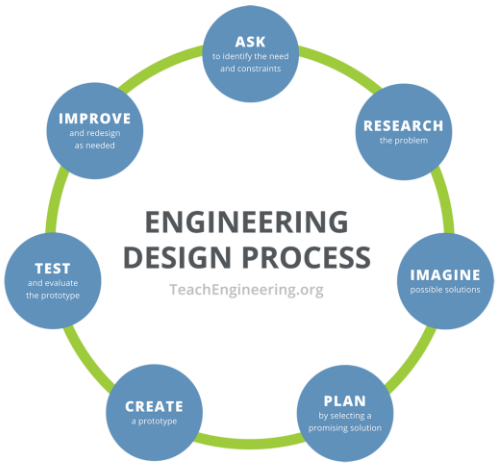
My passion for engineering and science came in seventh grade when I joined the VEX IQ Robotics team. There, I learned about the engineering process. It gave me a blueprint of how I can solve problems. The engineering process is constantly used inside and outside of robotics. It helps me learn from failure and use open-ended problem-solving techniques. Ever since I started participating in robotics, I realized I have a passion for aerospace engineering. I was most fascinated with aircraft. Aircraft were the inventions that helped us achieve flight. This inspired me to select the STEM career of an Air Force fighter jet pilot. It is a future ambition of mine to become one.

I started by visiting an article written by Captain Chris 'Clutch' Shannon, a pilot of the 421st Fighter Squadron at Hill Air Force Base. The first step is a lengthy brief. There, the first step of the engineering process comes into play: ask. They need to identify the objectives.

Then, I read another article by Captain Mike Shufedt, a National Guard A-10 fighter pilot. The second step of the engineering process is introduced, which is research. The pilots would look at weather equipment to know the weather and air patterns. Knowing the weather is important. This prevents casualties.

The third step of the engineering process is to imagine. The pilots need to imagine what problems could come their way and the viable solutions. For example, what if the pilots encounter hostilities? These hostilities could be enemy aircraft. There could also be sudden changes in weather conditions. After, they need to take the fourth step, plan. They would select the most promising solutions. This is based on weather conditions, concerns, and objectives. The fifth step of the engineering process, create, is at the brief's end. They condensed their gathered knowledge into their mission plan. The mission plan is considered their prototype.

This is the sixth step of the engineering process: test. The fighter jet pilots will do the necessary maintenance. Then, they are given clearance to take off. In the air, they would test the mission plan. Here, they would notice any mistakes. To ensure their safety, they would be in constant contact with Air Traffic Control, or ATC. The seventh and ultimate step, improve, is used in their debrief. They review the problems that were encountered. Then, they would find solutions to solve them when they come along again. They would start another blueprint of a plan that they could use the next time fighter pilots fly.



A pilot's use of the design process is different in many ways. However, we can find some similarities in how they use it and how our team uses it. In the first stage, fighter pilots go through a brief. Our team has something like a brief. We call a meeting before our practice starts. Here, we identify everyone's task and the problems we need to solve. Our team uses the second step, research, to find ideas and methods. We use our new knowledge to better our robot. However, the pilot uses it to know conditions that pose a danger to them. For the third step of the engineering process, imagine, we use it the same way a pilot would. Just like a fighter pilot, we produce as many realistic problems and solutions as possible. We use the fourth step, plan, in the same way the pilot would use it. We would find the best solutions for the problems we found in our third stage. Our fifth stage, create, is different. For us, a prototype is not a mission plan. Our prototype could be many things. It could be a prototype of a component, driving strategy, or autonomous code. The sixth step is used like a pilot. The only difference is the reason we test. However, teamwork is crucial. Teamwork has helped the engineer and driver better their strategy and component. At the same time, teamwork helped ATC keep pilots safe. The last step, improve, was used the way our team uses it. Our team would find out what went wrong in our prototype. This is just like a fighter jet pilot would find out what went wrong in their mission plan.

Many of my teammates want to be engineers in the future or fall into a job associated with engineering. VEX Robotics has helped us learn the basics found in engineering. For example, the engineering process is essential for engineers in any field to learn. Thanks to VEX Robotics, using it has become a habit. In college-level engineering, it puts them ahead of those who do not know it. Even if they do not want to pursue an engineering career, they can use the engineering process for solving problems.

Being in VEX Robotics helped me better my social skills and public speaking skills. I use what I learn when presenting a project. I even use it when talking to people I don't know. It has helped me become more confident and sociable. I've learned to be approachable. I'm not shy when it comes to asking for help. My social skills will help me to become an effective leader. These skills are valuable in the career I want to pursue. Being confident and a social person is valuable in the military. Also, VEX Robotics helped me find my passion. Without it, I wouldn't have found my affinity for engineering. My passion inspires me to become a fighter pilot. Being in VEX Robotics encouraged me to join the Civil Air Patrol, the Air Force Auxiliary. I was able to fly a CESSNA, a twin-engine plane, shown in the right photo. With dynamics and discipline I learned in robotics, I learned faster than my peers.

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