

**VEX 8111A Career Readiness Online Challenge: An Aerospace Future**  
**Rudecinda Sepulveda Dodson Middle School**  
**By Jhiliane Ibatuan and Sophie Vizcarra**

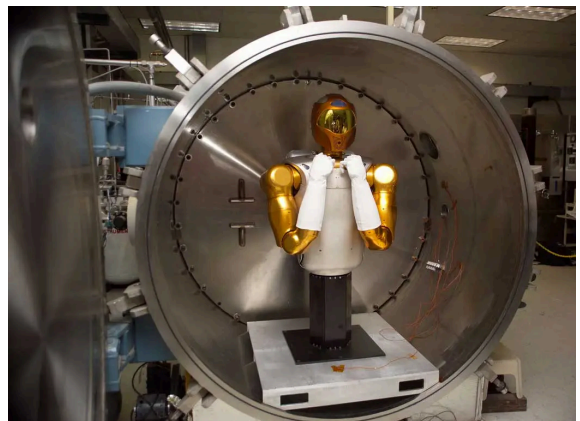


Ever since I was young, I was exposed to the engineering field of aerospace and took great interest in it. My dad works in the aerospace industry and used to come home with pieces that connected to planes, jets, and even gliders. I used to play with them not knowing how important they were until I grew older. Throughout middle school, I've been given opportunities to explore the aerospace path and even got the chance to talk with a NASA engineer who is working on projects such as the Mars Rover. This is why I decided to focus on a NASA aerospace engineer for this challenge.

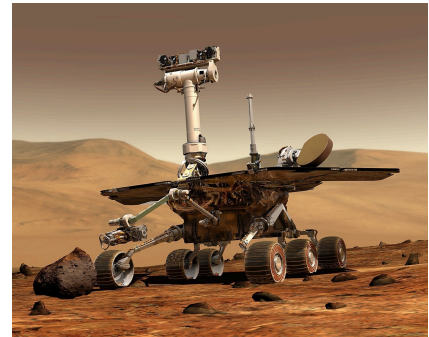
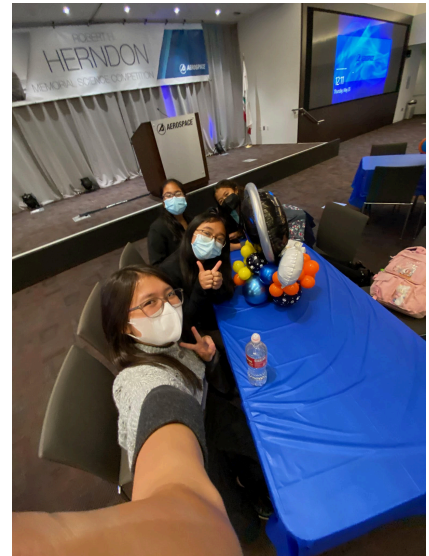


NASA, more known as the National Aeronautics and Space Administration is a government corporation which works to “expand human knowledge through new scientific discoveries” (Performance.gov). They achieve this by creating

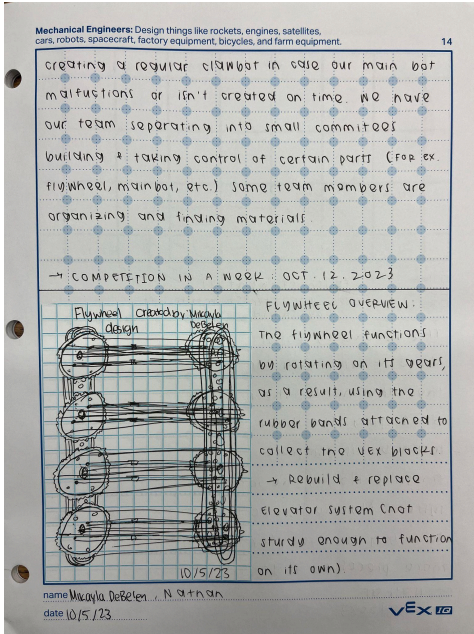
technology that can roam through space and collect data which will be analyzed by scientists on earth (“About NASA”). However, in order to do this, it requires a very long process, more known as the Engineering Design Process. The engineering design process is crucial to creating a successful prototype which will be sent into space. It guides engineers in problem solving. Their first step is to ask a question which needs to be solved. This problem often relates to space travel. Then, engineers must imagine. I understand that the human mind can be incredibly creative and dream big but engineers must be smart about their imagination to understand the importance of moving step by step. After this step, engineers then create sketches and designs. This is often where they may come in contact with problems due to inevitable constraints and limitations. Even in my personal experience, I have come in contact with this problem and was not able to complete projects. However, if they are successful, then the engineer can construct and bring their sketch to life. For an aerospace engineer, this is crucial because of the testing which comes alongside it (“An Educator's Guide to the Engineering Design Process”). NASA goes through a series of testing in order to ensure that their prototype can safely roam space. There are propulsion, oxygen, composite pressure, hypervelocity impact, propellants and aerospace fluids, and materials flight acceptance systems (“Testing and Analysis”).



After researching the application of the Engineering Design Process in the real world, I was able to easily connect and understand its importance. In January 2023, a group of around 10 people in my school's science club were given the opportunity to create an ROV for The Aerospace Corporations annual competition. Our goal was to create a prototype that uses PVC pipes and a camera to collect data from coral reefs. This challenged our ability to efficiently follow the Engineering Design Process in a limited amount of time. At the actual competition in June 2023, we were toured around the Aerospace Corporation and shown the various machines they use to even begin building. In 2021, my class was given the opportunity to talk to a NASA Aerospace Engineer who worked on a Mars Rover. This was a direct source of information about the process of one in the chosen profession. He talked about the construction of the rover and the type of protection it had to go to in order to have the ability to even set foot on Mars. His presentation really marked the beginning of my aerospace journey.



My VEX journey began in 2022 as a 7th grader. I believe it has a direct connection to a NASA aerospace engineers approach to the engineering design process. In this season, the goal was to find an efficient way for blocks to be collected and stored in towers to maximize the amount of points we can obtain. We used the process of elimination in order to find this and utilize the height and uniform bonus. We began brainstorming for designs in summer 2023 to make sure that when the season begins, we can jump straight in and test. We tested like the NASA engineers have to test their prototype in game-like conditions. It was a long process but ended in us ranking second.



Participating in VEX robotics has prepared me for a future in the aerospace field because of the lessons it has taught me. Not just through the Engineering Design Process but through the social and educational skills I grasped onto. I began as a seventh grader who had minimal experience in coding and interacting with others and VEX was able to teach me about working with others to share ideas. VEX has given not just me but my fellow members a headstart in life!

## Work Cited

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