## Title

Using Robotics Everyday

iRobot Roomba Vacuum

## Students

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## Team Number

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## Location of Team

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## Stem Company

We chose the company iRobot. We chose them because, as we brainstormed ideas, we thought about choosing a company that uses robotics every day. We thought about our daily lives and everything we do. One important thing that is usually the priority for most parents is cleaning. They are always telling us to clean our room and clean up after dinner. Our teachers tell us to clean our area too. So, we brainstormed some more ideas of the things we use to clean. We thought about brooms, mops, swifers, dust clothes, but all of these do not involve any types of robotics. Then we started to think about things that needed to be charged or plugged in. We thought about the vacuum and automatically we all thought of the cordless, hands free iRobot. We thought that was a great example of the use of robotics for cleaning. Some of our club members even have one in their home so it was easy to talk about how it works and how it is being used in their homes.

## Resources

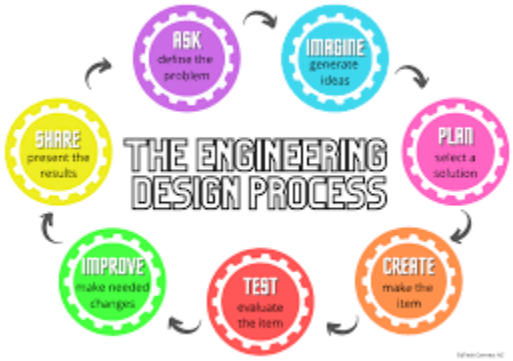
We used Google and Youtube to search for information about the company iRobot. We also found links that gave us information on the inventor of the first robotic vacuum cleaner. These websites had a lot of information.

- https://www.news-leader.com/story/news/business/2017/06/09/inventor-roomba-southwest-missouri-native-release-new-robot/371868001/
- https://about.irobot.com/smart-home
- https://about.irobot.com/en-us/history

## Engineering Design Process

As we researched, we found out that iRobot wanted to make practical robots a reality. They started designing robots that could be used every day in 1990. They wanted to help families with an easier way to clean, so they introduced the first home robot for home cleaning. The inventor of the Roomba, Joe Jones, said he did not like to clean so he envisioned a robot to clean for him. He worked at an AI lab, so he asked his friends to help him build a model. They tested the model, and it worked a little bit, but they had to make improvements. Since then, more than 40 million robots have been sold. Now they are working on adding smart home technology with new levels of intelligence. Many people have smart homes now so they can talk to google or Alexa, so they want to add this feature to the robots. You can just ask Alexa to start the vacuum. Also, people are busy now so it's easy to just have a robot clean your floors. You also do not have to be home to clean. You can start your robot from

anywhere as long as you use the app. Over the years the company has continued to use the engineering design process because they are trying to update the robot with every new technology that comes out. Every time they have to make a change they have to start again by planning, creating, testing and improving.




## Comparison

The purpose of the iRobot was to invent something useful to clean all types of floors. The engineering process was to use parts that would clean and pick up things from the floor and store them in a compartment until you clean it. The first step was to think of the design and how it would pick things up and move them inside of the vacuum. These are the same steps for our robotics club. The purpose of our robotics team is to build a robot to compete in competitions with other teams. Our engineering process is to use parts that will help us win the competition. If we need to pick up blocks, then we need to design something like an arm with a claw to grab the blocks off the floor. After we brainstorm and design the part we need, then we need to build it and try it out. When we try the part out, we need to program the robot to move how we want it to. This happens over and over again with any parts that we add to the robot. We also have to program the robot to move forward,

backwards, and from side to side. Also, it is not always easy to complete some tasks. For example, we needed to create a way for the robot to pick blocks off the floor, so we decided to add an arm with a claw to our robot. We watched videos and found instructions. We followed the instructions, but we still ran into some problems. The same thing happened when the iRobot was being developed and created. It was not easy to build it then make it work. Sometimes you must change the design or add or delete parts to make the project work. It is also a club that allows us to work together and accomplish one goal. The iRobot team also had to work together to complete their goal of making the vacuum cleaner.

## Future Career

Although most of us do not know what we want to do when we get older, we know that participation in VEX robotics has prepared us for a future career. We are learning many things in our club. We are learning how to figure out what we need to get a particular job done. Once we figure out what we need, we brainstorm ways to get it done. We work together to accomplish one goal. We are learning how to work with different people and how to communicate. We do not always agree with what we want to do, but we talk about it and then come up with a solution. We are also learning responsibility. We meet every week, and we are working on a few different things at once. We have certain projects that must get done, so it is up to us to work on all of them to meet the deadlines. These skills will help us in the future in many ways. We are leaning how to work with people, how to implement changes and solutions to everyday life, and how to be responsible.