CAREER READINESS

SCIENTISTS

By: 1102F

About the

Sasha

Sasha is one of our team members she is 11 years old, and was born in 2012. This is sasha's second year on Ten Ton Robotics. Sasha's strength on robotics is programming. Sasha programs a lot. She has been programming for a while now.

Amanda

Amanda the second team member, she is 11 years old, and was born in 2012. This is Amanda's first year on Ten Ton Robotics. Amanda's strength on robotics is notebooking. Amanda is an amazing notebooker. She works on the notebook a lot and does a very good job at it.

Sasha and Amanda

Both team members are the main builders. We both made this slideshow and we both contributed to building the robot and documenting in the notebook. We first met at school and then Amanda started to do robotics and got paired up with Sasha. Now we are partners and we together work hard to make the best robot and notebook possible.

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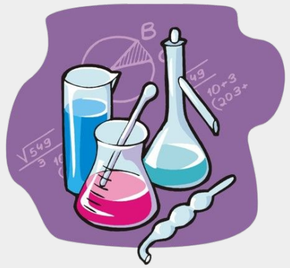
Why Did we choose scientists?

Why Did we chose scientists?

Why?



For our Career Readiness we chose Scientists because of a variety of reasons. Here are three reasons why:

Number 1

We both love science and it is our favorite subject in school. We like to do science experiments

Number 2

We want to be scientists when we grow up, that's something in our mind for the future.

Number 3

Science is awesome, and we want to investigate more and more about science because it is interesting.

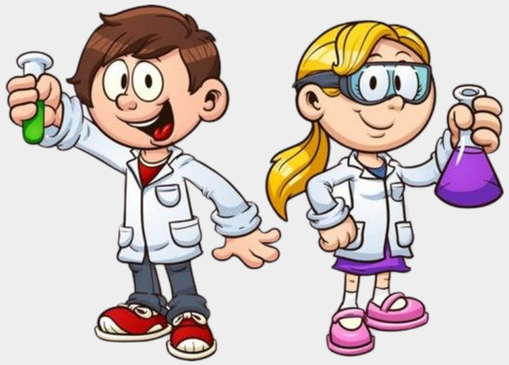
How is a scientist like a roboticist?

They are so different

Why

How

What



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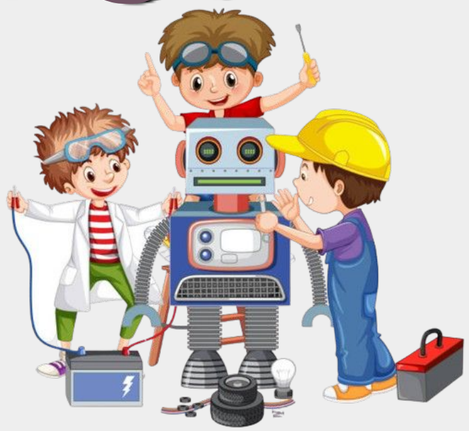


How is a scientist like a roboticist?

Scientists and roboticists are quite similar in many different ways. Both roboticists and scientists:

- Identify Problems

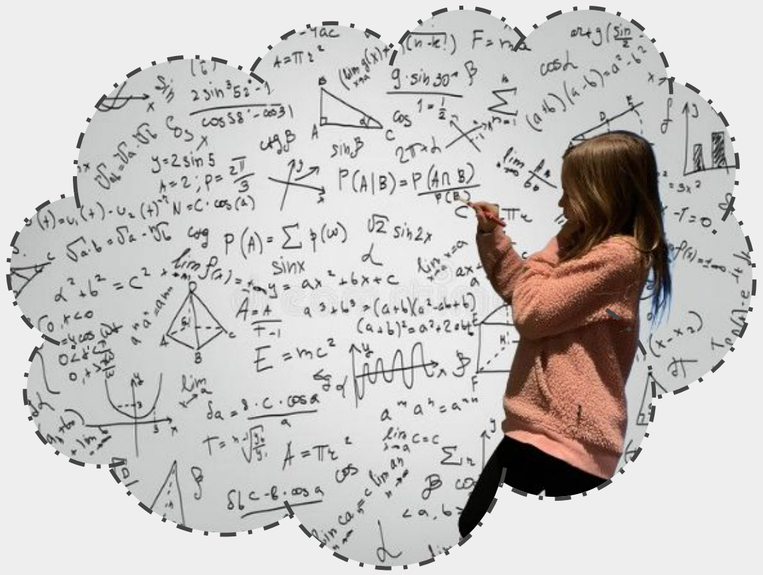
- Select the best Solution for all Problems

- Build and Program Solutions

- Test their Solutions

➢ Now we are going to explain how they both have these things, so if you want to find out how they have these thighs in common, stick around and you will find out.

Identify a problem

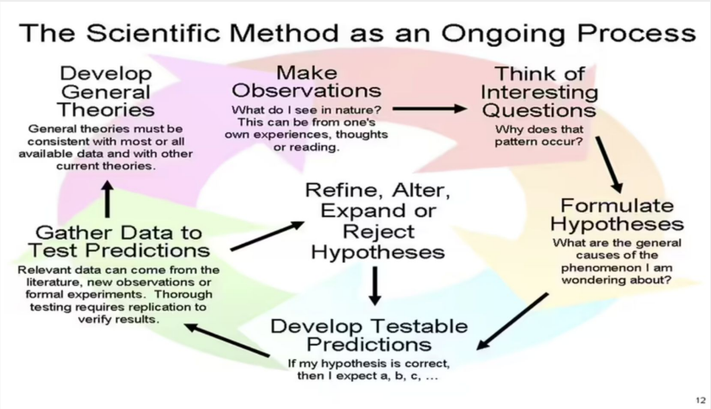


Identify a problem

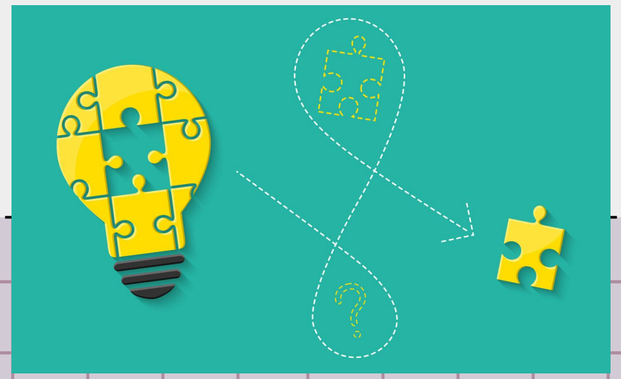
Scientists identify problems just like roboticists do; they find a problem, and then they find the answer.

First, they use a method to analyze and identify the problem. Multiple ways are used to collect data regarding the issue. To find the problem, they use questions like who, what, where, when, how and why to extend what could be a solution. They sometimes use trial and error by thinking of a problem and then thinking if that problem is what is starting the bigger problem.

This is how scientists and roboticists define a problem.



Solutions to the problems



Selecting the best solution and plan for the problem

How scientists do it

Now that they have identified the problem they need a solution for the problem. Scientists use a process of steps, which are:

★ 1. Define a Question to Investigate

They make observations and they ask questions about their observations.

★ 2. Make Hypotheses

Scientists make hypotheses about their observations. A hypothesis is a possible explanation to a problem.

★ 3. Gather Data

There are multiple ways scientists gather data. For example, observations, experiments, running a model, and more. If possible they include relevant data from a variety of sources.

★ 4. Analyze the Data

Scientists organize their data in tables, graphs, or diagrams. They also use math and statistics to analyze the data.

★ 5. Draw Conclusions

Based on whether or not their prediction came true, scientists can then decide whether the evidence clearly supports or does not support the hypothesis.

Selecting the best solution and plan for the problem (part 2)

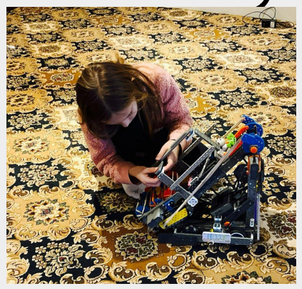
How it relates to Roboticists

Roboticists have a process, just like scientists. This process starts with:

- **Defining a Problem to Investigate**
  Both roboticists and scientists define a problem to investigate or else they have nothing to solve.
- **Ideate and Drawing out and Describing the Issue**
  Although this is not a part of the scientific process many scientists still do it.
- **Making predictions**
  Making hypotheses is both a big part of this process and the scientific process.
- **Test their Predictions**
  Scientists and roboticists test their predictions to see if the are correct or incorrect.
- **Draw Conclusions**
  Depending on if the hypothesis is correct or not they will either draw conclusions or make more predictions to test.
- **Redesign**
  After they draw conclusions they redesign whatever had a problem now that they know what is the issue.

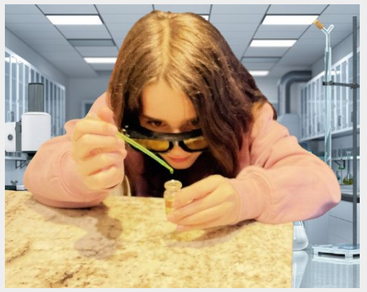
Build and Program the solution

Building and programming are something both scientists and roboticists do, which is one reason they are so similar. Did you know scientists spend an increasing amount of time building and using software? However, most scientists have not been taught how to do this efficiently. Roboticists build robots and program them to do stuff that solves the problem. When they find a problem in their robot, they check the code and how they made the robot. They think of a way to solve their problem and start building and reprogramming.



Roboticists

Scientists



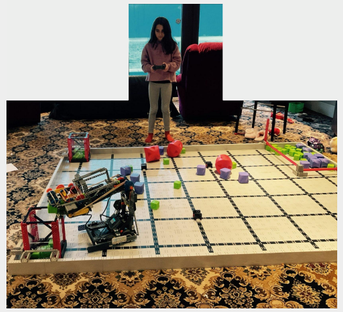
Test the Solution

Both scientists and roboticists do tests to find out if their solution works or not. Roboticists test-run their robots to see if they are working correctly, and if the problem has been solved. Roboticists do many varieties of tests to find out what is wrong with their robot.

Scientists also test their hypotheses to see if their prediction is correct. If their hypothesis proves true they gain and share understanding and knowledge. Scientists, just like roboticists, use many different ways to test their ideas.

Scientists

Roboticists



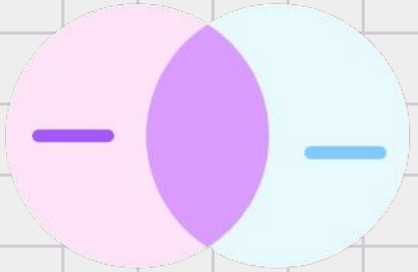
Repeat Design Process

After testing the solution if your hypotheses are wrong then you have to go to the very top. You have to go back all the way. Then you repeat everything you have done. At this point you might think that you have made no progress, but that's not true.

You have made progress you have discovered that your hypotheses are wrong. You have crossed out possibilities which helps you find the solution. If you decide to just give up then you have made no progress and just wasted your time.

Both scientists and roboticists have annoying moments when they were wrong at a prediction but everybody makes mistakes. Everyone has at least once repeated the design process and there is nothing wrong with making mistakes they are just ways for you to learn.

Venn Diagram



Scientists

- Invent new technologies and materials
- Do science experiments
- Research different topics and publish conclusions

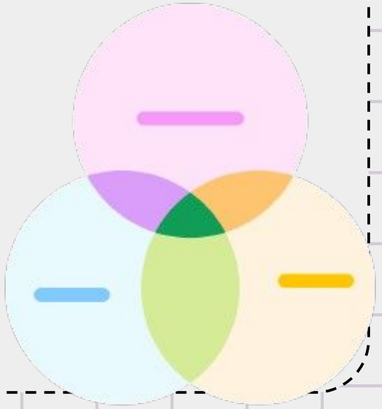
Both

- Make and test hypotheses
- Test solutions
- Require a lot of math
- Require technology

Roboticists

- Test their codes and robots
- Design and build robots
- Program robots
- Learn and use a variety of engineering concepts

Across this slideshow you can find a lot more similarities that what we wrote here, that is because we can't fit all of the possible similarities in such a small space.

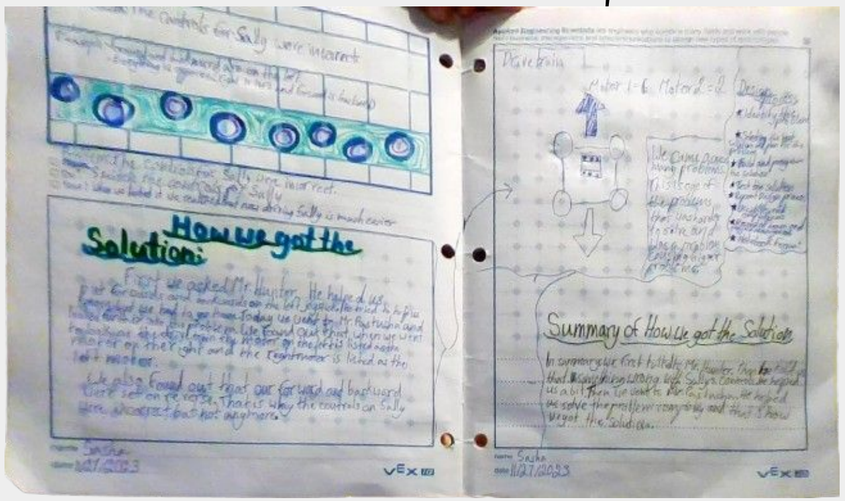


Documenting

Documenting

What is documenting?

Documenting is when you record data or info or anything that is important to your design process. Both scientists and roboticists document important stuff.

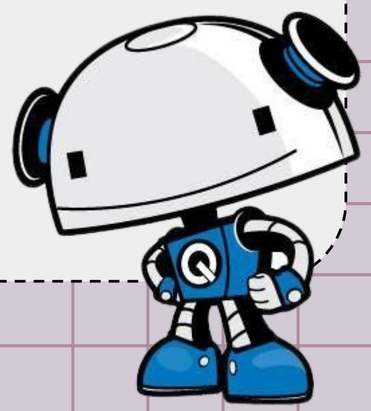


For example: Our engineering notebook would be a type of documenting

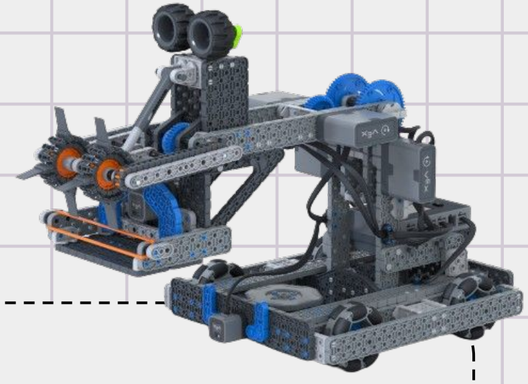
Why do roboticists and scientists document their work?

It helps teams stay organized and on track by providing a clear understanding of project requirements, progress, and any potential risks. Documentation encourages knowledge sharing, which empowers your team to understand how processes work and what finished projects typically look like.

How VEX Robotics prepares Scientists

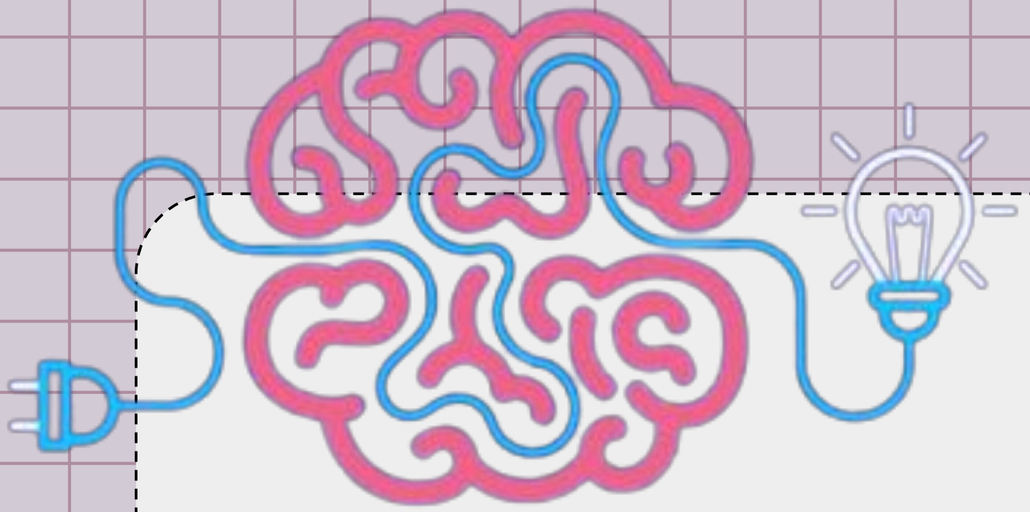


How VEX Robotics prepares Scientists



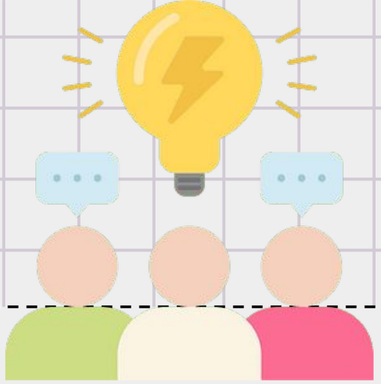
VEX Robotics prepares scientists by offering a range of educational programs and robotics competitions that help students develop critical thinking, problem-solving, and teamwork skills. The company provides robotics kits, software, and learning resources that allow students to design, build, and program robots using the VEX IQ platforms. Through its educational programs, VEX Robotics aims to inspire students to pursue careers in science, technology, engineering, and mathematics (STEM) fields and to become the next generation of innovators and leaders.

Additionally, VEX Robotics also offers professional development opportunities for educators to learn about robotics and how to integrate it into their curriculum. By providing access to cutting-edge technology and resources, VEX Robotics is helping to prepare the scientists of tomorrow.



Conclusion

Conclusion



As we come to the end of our presentation, we can see that there are many similarities between scientists and roboticists. Both fields require a significant amount of creativity, innovation, and problem-solving skills to achieve their goals. Scientists and roboticists must be careful in their approach, paying close attention to detail and constantly testing and refining their ideas. Additionally, both fields are focused on advancing human knowledge and improving our lives through new discoveries and technologies. By recognizing these similarities, we can appreciate the value of collaboration between these two fields, which can lead to exciting new breakthroughs and advancements in science and robotics.