LearningBlade®

#STEM4Parents
Rescue Robots

These activities and questions have been designed for you to have engaging discussions with your student about the STEM jobs they are encountering in their Learning Blade schoolwork. Here is an overview of what is included.

Table Talk: These are questions you can ask your student without having any background knowledge in STEM. These will be easy conversation starters.

Dig Deeper: These are questions with suggested links to learn more about different STEM careers to explore with your student.

Home Lab: This is an easy, hands-on activity to do with your STEM student.

What Has Your Student Been Learning?

In this mission, your students are tasked to determine what types of robots are needed for this new unit and how much this new unit is going to cost the city. Along the journey students will need to determine what tools (i.e. **microphones, cameras, computers, electric circuits and sensors**) and teammates/experts (i.e**. electrical technician, mechanical engineer, computer programmer, and industrial designer**) are needed to assist in finding out more about robotics and their use in emergencies. It is up to the student to determine what help is required based on the clues provided.

TABLE TALK

Starter Question:

Drones are present in our daily lives more than ever. You can't go to a public beach or park without bumping into a drone operator. Operating a drone can be quite a fun hobby. As drone technology improves can you imagine how drones could be helpful in a rescue operation?

Discuss the various scenarios where a drone would be a useful resource in different types of rescue missions.

Helpful Hint: Think about the images of Hurricane Katrina, where people were stuck in their homes after entire neighborhoods flooding with water. What equipment on your drone besides a camera would be helpful? What are other scenarios that require a rescue?

DIG DEEPER

Resources for More Information:

In this section, we provide a series of links and associated questions to DIG DEEPER on individual careers addressed in the Rescue Robots Mission. Feel free to explore these with your STEM student as you model curiosity and lifelong learning.

Industrial design is a process of **design** applied to products that are to be manufactured through techniques of mass production. To create a mass produced robot or electronic device, **Industrial Designers** play an important role. Look at the link below to learn the many steps required to design a new mass produced object. What parts of the process surprised you?

http://www.idsa.org/education/how-they-do-it

Mechanical Engineers deal with the design, construction, and use of machines. Not all machines they use are complex, some are what we call "simple machines". What are some simple machines you have heard about or used? Now think about how these simple machines can be used to build a robot? Watch the video below of the 5 fastest robots.

https://www.youtube.com/watch?v=tnKAQXPkVlI

In this mission, your student learned about different **Microphones, Cameras, and Sensors & Logic** and how these tools are used in robotics. Are there any electronics in your house that use these? If so, what function do the tools help perform?

Think back to our starter question and thinking of a robot you could design. How would you incorporate **Microphones, Cameras, and Sensors & Logic** into your robot to allow it to execute these tasks?

Watch these videos below to see what Robotics Teams at the High School and College Level are doing:

High School: https://www.firstinspires.org/robotics/frc

College: http://www.darpa.mil/program/darpa-robotics-challenge

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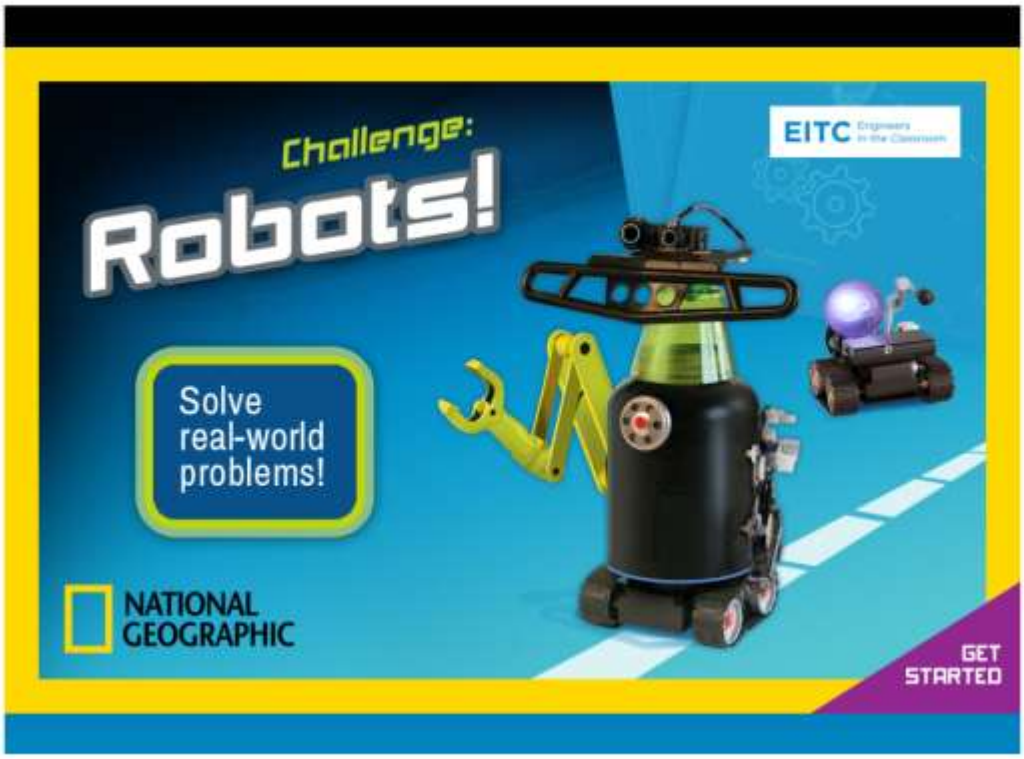
HOME LAB

In this section, we will explore applications of what your student has been learning in Rescue Robots Mission.

In this Home Lab, we will be looking at an online resource that will help build problem-solving skills and relate it to robotics.

The National Geographic challenge will take you on a journey as you build your own robot to solve a specific problem. Good luck! https://www.nationalgeographic.org/game/challenge-robots/

Challenge: Robots!



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Dear Parent/Guardian,

I kindly ask that you fill out and sign this piece of paper so I can provide your student with a completed grade for this #STEM4Parents homework assignment.

I discussed with _____ the Rescue Robots Mission in Learning Blade.
(student name)

_____
Student Signature

_____
Parent/Guardian Name (print)

_____
Date

_____
Parent/Guardian Signature
