Drive Forward and Reverse Letter Home

Introduction

Science, Technology, Engineering and Mathematics (STEM) education provides opportunities for students to engage in important life skills like teamwork, communication, and project-based organization. Robotics is an ideal approach to acquiring these STEM skills as students work together to solve various engineering challenges.

The following VEX STEM Lab provides a strong foundation for students who are new to programming. Students will engage in various hands-on activities that introduce them to the VEXcode IQ programming language.

Please keep this letter for your reference as your student works through the Driving Forward and Reverse STEM Lab. It contains information that you can use to keep up to date on what students are learning and to spark discussions about STEM and Robotics at home.

Look Inside the STEM Lab

In this lab, students will have the opportunity to build the Autopilot as a team. After recording their reflections of the build in their engineering notebooks, students will learn about how to both configure and program the robot to move forward and reverse using VEXcode IQ. Students will discuss how robots benefit different industries in their community. Students will be introduced to a worldwide robotics competition for VEX users. Students will then explore ways to move the Autopilot forward and reverse using different variations of code, recording their ideas and calculations in their engineering notebooks.

Vocabulary

Autopilot
The robot build that is used for the STEM Lab. This robot is the result of the first hands-on lesson the students will accomplish. It is used to complete the rest of the STEM Lab activities.
Behavior
An instruction that is downloaded to a robot brain, which is then executed. Programs usually consist of several behaviors combined in a logical succession.
Drivetrain
The system in a motor vehicle which connects the transmission to the drive axles.
Parameter
A limit or boundary that defines the scope of a particular process or activity.
VEXcode IQ
A block-based programming language used to program a VEX IQ robot.

Real World Connection

Students will discuss how robots are used in the workplace to complete tasks that need to be done in a precise and efficient manner. Students will be introduced to the VEX Robotics Competitions, in which teams of students are tasked with designing and building a robot to play against other teams in a game-based engineering challenge.

Guiding at Home Questions

- What types of commands do robots follow to move forward or backward?
- What types of professions/jobs use robots?
- In a typical day, how are our lives touched by robots?

You can explore the STEM Labs at education.vex.com.