

# Medbot Letter Home

## Introduction

Science, Technology, Engineering and Mathematics (STEM) education presents students with the opportunity to be introduced to new skills, such as programming. Programming activities provide students with the opportunity to learn a skill that will expand their digital literacy skills, and prepare them for a future with more career choices.

The following VEX STEM Lab provides an engaging way to introduce students to behavior-based programming. Students analyze blocks to recognize that everything in a project must be broken down into tiny behaviors that a robot can understand and perform directly. Through a series of exercises, students will learn how to program a robot to drive forward or in reverse, turn right or left, and wait. In the Automated Challenge, students will create a project that will make deliveries on a "hospital floor."



Please keep this letter for your reference as your student works through the "Medbot" STEM Lab. It contains information that you can use to keep up to date on what your child is learning and spark discussions about STEM and Robotics.

## Look Inside the STEM Lab

In this lab, students will have the opportunity to build the VEX EDR Speedbot. After recording their reflections on the build in their engineering notebooks, they will be introduced to behavior-based programming, and complete a series of activities that will teach them how to drive forward or in reverse, turn right or left and wait in the Play section of this STEM Lab. They will then work as a team or individually to design, develop, and iterate a project the robot will follow to make deliveries in the Automated Challenge.

## Vocabulary

### **Behavior-based Programming**

A set of behaviors that independently work to accomplish their tasks, but together allow the robot to accomplish larger goals.

### **Simple Behaviors**

A simple, yet significant task.

**Complex Behaviors**

A combination of different types of behaviors.

**Programming**

The process of using blocks to tell a robot how to perform a task.

**Block**

A very specific instruction to a computer to perform some kind of action.

**Pseudocode**

An outline of a project that is written in plain language. Engineers often create pseudocode before they begin programming.

**Engineering Notebook**

A type of journal that the students will use to record their designs, ideas, and reflections as they move through the STEM Lab.

**VEX EDR Speedbot**

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.

## Real World Connection

Your child will also be presented with real-world connections to programming. Students will explore the benefits of using robotics in the medical field to deliver medications to patients. They will also demonstrate an understanding of how building behaviors can create a complex autonomous method of completing a task at home, in business, and at competitions.

## Guiding at Home Questions

1. What are some challenges you faced in trying to program your robot? What were some of your successes?
2. When have you ever planned to accomplish a task? How did you develop the plan?
3. What are some of the benefits of using robotics in the medical field to complete certain tasks for patients?

You can explore the STEM Labs at <https://education.vex.com/>.

# Medbot Checklist

- ☐ Seek
  - ☐ The Completed Look of the Build
  - ☐ Parts Needed
  - ☐ Build Instructions
  - ☐ Exploration
- ☐ Play
  - ☐ Behavior-Based Programming
  - ☐ Programming Drive Forward and Reverse - VEXcode V5 Blocks
  - ☐ Programming Turning Right and Left - VEXcode V5 Blocks
- ☐ Apply
  - ☐ Robots in the Medical Field
  - ☐ Project Planning in VEX Competitions
- ☐ Rethink
  - ☐ Prepare for the Automated Challenge
  - ☐ Design, Develop, and Iterate on your Project
  - ☐ Automated Challenge
- ☐ Know
  - ☐ Review