

Clawbot with Controller 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 engaging programming activities for students who have some experience programming robots. Students will employ VEXcode IQ Blocks to complete several projects after building the VEX IQ Clawbot.



Please keep this letter for your reference as your student works through the Clawbot with Controller 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 VEX IQ Clawbot as a team. After recording their reflections of the build in their engineering notebooks, students will learn about how to program the Clawbot for use with the Controller. Students will also discuss the benefits of using robots to assist with repetitive tasks in different industries after being introduced to programming loops. Students will also consider how event based programming is beneficial to competition teams. Students will then explore ways to use the Controller in Tank Mode, recording their ideas and calculations in their engineering notebook.

Vocabulary

Clawbot

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.

Events

An action or occurrence detected by a program. Events can be based on user actions, such as or sensor input, such as detecting a specific color signature.

Loops

One of the three building blocks of an algorithm (Sequence, Selection, Iteration). A Sequence is the action performed by the robot, the Selection is the decision to perform the programmed action, and Iteration is the amount of repetition, or loop, of an action.

Tank Mode

Enables the Controller to control the two motor functions of the Clawbot separately.

Real World Connection

Students will discuss how robots are used in the workplace to complete tasks that are repetitive, like on an assembly line. Students will be introduced to VEX Robotic Competitions and explore how loops are beneficial when creating a competition program.

Guiding at Home Questions

The students worked as a team built a Clawbot during the STEM lab that they drove with a Controller that they programed themselves. Spark some discussion using these questions.

1. What is the best part of working together as a team to build the Clawbot?
2. What did you have the Clawbot do when you were moving it with the Controller?
3. What are some things you would like to do in class with the Clawbot?

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

Clawbot with Controller Checklist

- ☐ Seek
 - ☐ The Completed Look of the Build
 - ☐ Parts Needed
 - ☐ Build Instructions
 - ☐ Exploration Questions
- ☐ Play
 - ☐ Loops: Simplifying Repetitive Action
 - ☐ Controller: Tank Drive Exploration - Part 1
 - ☐ Controller: Tank Drive Exploration - Part 2
- ☐ Apply
 - ☐ Loops in Manufacturing
 - ☐ Let's Compete!
- ☐ Rethink
 - ☐ Event-Based Programming: Communication Among Blocks
 - ☐ Controller: Clawbot Control
 - ☐ Remix Challenges
- ☐ Know
 - ☐ Know Questions