

My Robot Bug

Grades: K-12

Post trip lesson to extend the learning experience into the classroom after their field trip to the Discovery.

Engagement

Ask students what they remember from the Discovery Lab?
What did they learn from programming their bugs?

Exploration

Many of the activities that we do here at The Discovery involving the blue bots can be done without the devices. One student will act out the program (code) that another student has written by moving an object, like a cup, in the way that the robot bug would move.

The following is one way that you can integrate coding into your existing content instruction. This lesson is best done with a classic fairytale or another picture book with a clear and direct plot like little red riding hood. After reading the book students, work as a class to identify the plot points (the following link is for a graphic organizer for plot http://www.readwritethink.org/files/resources/lesson_images/lesson800/IdentifyPlot.pdf)

Have students work in pairs to draw a maze that moves your main character through the plot points and finally ending in the resolution. After creating the maze have them work together to write the code, on a separate piece of paper, that will move your character through the plot of the story to the resolution. Simple arrows like those on the Blue Bot can be used as your code language.

Optional – You can allow students to draw the main character and attach it to their cup.

Have students run the code and check it to see that the character moves through the plot in the same way that they did in the book. Work together to fix any errors in your program until you can retell the story using the program you coded.

Explanation

Have student repeat the activity using a book of their choice.

Standards: K-12 Computer Science Standards Framework:

People follow and create processes as part of daily life.

Many any of these processes can be expressed as algorithms that computers can follow.

What you will need:

- Plastic cups
(Other simple substitutes can be used if no cups are available)
- Butcher paper
- Pencils and markers



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Other device free coding lessons:

The following device free coding lessons were featured on code.org website (<https://code.org/learn>) and therefore have been rigorously reviewed and tested.

The Emotion Machine Activity

The class program a card robot face to show different emotions one after another. This is a very simple way to introduce the idea of programs and sequences of instructions as well as computational thinking ideas like algorithmic thinking and decomposition.

<https://teachinglondoncomputing.org/resources/inspiring-uplugged-classroom-activities/the-emotion-machine-activity/>

Design a Robot

In this lesson, students will build their literacy skills while diving into the field of robotics. They'll watch Flocabulary's educational hip-hop video to find out what a robot is and see examples of robots in daily life. They'll close-read short passages about robots, discuss tasks that robots are well suited for and finish the lesson by designing their own robot to solve a specific problem.

<https://www.flocabulary.com/lesson/Robots/>

Move It, Move It!

This lesson will help students realize that in order to give clear instructions, they need a common language. Students will practice controlling one another using a simple combination of hand gestures. Once they understand the language, they will begin to "program" one another by giving multiple instructions in advance.

<https://studio.code.org/s/course1/stage/2/puzzle/1>