

# THE VERY HUNGRY BEE-BOT

Course Name: Computer Science

Time Frame (in minutes): 40 Minutes

Unit/Theme: Coding

Grade Level: 2<sup>nd</sup> Grade

CONTENT AND SKILLS
<b>Learning Objectives:</b> <ul style="list-style-type: none"><li>• Students will work with Bee-Bots to learn how to program and debug.</li></ul>
<b>Essential Questions:</b> <ul style="list-style-type: none"><li>• How can I program a robot to follow a specific path?</li></ul>
<b>Students I can statements . . .</b> <ul style="list-style-type: none"><li>• I can program a robot to follow planned steps to reach an end point.</li><li>• I can debug problems with my program when they arise.</li></ul>
<b>How will you meet the needs of SWD and ELL/MLL students?</b> <ul style="list-style-type: none"><li>• A video will be shown of how to program the Bee Bots, so all students have access to revisiting a “how to” programming video is needed.</li></ul>
<b>Content Standards</b> List all standard indicators (do not need standard statement)
<ul style="list-style-type: none"><li>• SL.2.1a, b, c, d</li><li>• 2-PS1-1 &amp; 2-PS1-2</li></ul>
<b>NYS Computer Science and Digital Fluency Standards</b> List all standards that authentically align
<ul style="list-style-type: none"><li>• <b>2-3.NSD.1:</b> Describe and demonstrate several ways a computer program can receive data and instructions (input) and can present results (output).</li><li>• <b>2-3.CT.4:</b> Identify multiple ways that the same problem could be decomposed into smaller steps</li><li>• <b>2-3.CT.5:</b> Identify the essential details needed to perform a general task in different settings or situations</li><li>• <b>2-3.IC.6:</b> Identify and discuss factors that make a computing device or software application easier or more difficult.</li><li>• <b>2-3.CT.8:</b> Debug errors in algorithms and programs.</li><li>• <b>2-3.CT.9:</b> Identifying and debug errors within an algorithm or program that includes sequencing or repetition.</li></ul>

## NYS SEL BENCHMARKS

<https://www.p12.nysed.gov/sss/documents/SELBenchmarks2022.pdf>

- 1.C 1a
- 2A 1b
- 3B.1b

## INSTRUCTIONAL PLAN

List the steps of the lesson, including instructions for the students including how they will construct and practice content knowledge.

Add Standard Indicators next to activity that aligns and highlight them.

### Introduction (10 minutes):

- Introduce the Bee-Bot to the class. Explain how this is a robot that can be programmed to do 6 simple moves, forward, backward, turn left, turn right, pause and go. You can program up to 200 steps for the robot to move. To create new steps for the robot, you can clear out its memory and start over.
- Highlight what each switch and button does and how we need to press Go after all the steps are entered to make the Bee-Bot move. Students will watch a 3-minute video demonstrating how the Bee-Bot functions. While watching the video we will pause as the Bee Bot is being programmed. The term "input" will be introduced to the class, so they learn that when a robot is programmed, we are "imputing" the information. Once the robot performs the input tasks, the video will be paused, and the word "output" will be introduced to the class. They will build an understanding that "output" is when a computer (robot) presents results. **(2-3.NSD 1)**
- Give a brief synopsis of "The Very Hungry Caterpillar" then say today's lesson is the Very Hungry Bee-Bot! Show the Color Shape Mat and explain that each color and shape represents a food the caterpillar will eat. Brainstorm some ideas of what foods the colors and shapes can represent.\*

\*Some ideas. Please use examples that your students will relate to:

Orange Circle: bowl of phở or ramen, roti, birthday cake, tortilla, falafel, carrot

Green Rectangle: box of cereal, kale, pesto, avocado

Red Triangle: pizza slice, lychee, Sriracha sauce, chili, salsa

Blue Hexagon: blueberry, honeycomb, \_\_\_\_\_ on a hexagon-shaped plate

Purple Cube: ube ice cream, box of pasta, grape, mangosteen

Yellow Square: curry, dumpling wrapper, mango, ginger rice

- Today, you will tell your own Very Hungry Bee-Bot story as you program Bee-Bot to eat from a starting place to an ending place!

**Modeling:** (5 minutes)

- Introduce The Very Hungry Bee-Bot recording sheet. Model a path the Bee-Bot can take and mark the path on the sheet. Now think aloud of the steps that need to be programmed into the Bee-Bot to follow. Use the Recording Example sheet. **(2-3.CT.5)**
- Set the Bee-Bot on the Color Shape Mat and press "GO" on the Bee-Bot.
- Record what foods the Bee-Bot could have eaten.
- Explain that "bugs" or problems may occur when programming. If this arises you and your partner will problem solve to "debug" the situation or correct the problem. **(2-3.CT.9)**

**Main Activity (15 minutes):**

Students will be paired with another student and will work with one Bee-Bot during this activity. They will work together to program the Bee-Bot and debug, persevering through challenges together. **(2-3.CT.9)**

Each group needs:

- o One Color Shape Mat
- o One Bee-Bot
- o One Recording Sheet
  - Colored pencils/crayons to draw foods and the Bee-Bot path

- Have extras, in case groups finish one path and have time to plan a second or third path. **(2-3.CT.4)**

**Circle share:** (10 Minutes)

Students showcase their recording sheet and demonstrate their Bee-Bot performing the programmed task.

- Student showcase (1-3 groups).
  - Can be them presenting their Recording Sheet under a document camera.
- Debrief content:
  - How did your group decide which path to take? Did you make choices when designing your path that would make programming easier or harder? **(2-3.IC.6)**
- Debrief process:
  - Who would we like to thank in our group for taking turns, treating Bee-Bot kindly, having great ideas, etc.?

### Vocabulary

- **debug** - find and fix errors (bugs) in programs
- **perseverance** - continued effort to do or achieve something despite difficulties, failure, or opposition
- **sequence** - events arranged in a specific order, from beginning to end\
- **step** - one of multiple actions in a sequence
- **Programming** - is telling a computer exactly what to do, step by step, by giving it special instructions called code.

### FUTURE READY COMPETENCIES

Check off each competency that students will interact with during this lesson.

Collaboration  
 Communication  
 Critical Thinking/Problem Solving  
 Creativity & Innovation

### MATERIALS / RESOURCES

Add additional resources needed for this lesson such as instructional technology templates, images, videos, etc. ***Including Instructional Technology Tools***

- Bee-Bots, 1 for each group
- [Recording Sheet](#)
- [Recording Sheet Example](#)
- [Color Shape Mat](#)
- [Bee-Bot 3-Button Sequence image and video link](#)