

*Bee-Bot – Animal Habitats* Kindergarten

<h2>Lesson Plan</h2>	Coding Tool	<i>Bee-Bot</i>
	Cross-curricular	Literacy & Mathematics

- Big Ideas**
- We can use positional/directional language to describe an object’s location.
  - We can provide the *Bee-Bot* with directional commands, and therefore, the students will develop an understanding of sequencing, computational thinking, and the mathematical concepts of coordinates, distance, and location.
  - We will learn that different animals live in different habitats due to their unique attributes.

- Specific Expectations**
- Belonging and Contributing:***
- Demonstrate an ability to use problem-solving skills in a variety of contexts, including social contexts.
- Self-Regulation and Well-Being:***
- Participate actively and regularly in a variety of activities that require the application of movement concepts.
- Problem Solving and Innovating:***
- Use technological problem-solving skills, on their own and with others, in the process of creating and designing (i.e.: questioning, planning, constructing, analysing, redesigning, and communicating).
  - Use the processes and skills of an inquiry stance.
- Demonstrating Literacy and Mathematics Behaviours:***
- Apply the mathematical processes to support the development of mathematical thinking, to demonstrate understanding, and to communicate thinking and learning in mathematics, while engaged in play-based learning and in other contexts.
  - Communicate an understanding of basic spatial relationships (*e.g., use terms such as “above/below”, “in/out”, “forward/backward”; use visualization, perspective, and movements [flips/reflections, slides/translations, and turns/rotations]*) in their conversations and play, in their predictions and visualizations, and during transitions and routines.

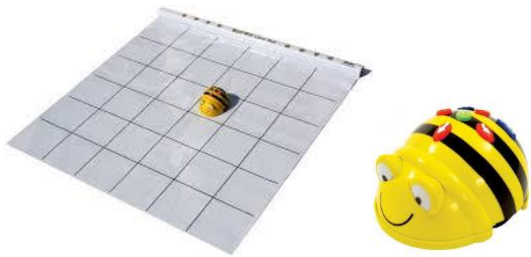
**Description**

In this lesson, students will use the directional cards to construct a path for the *Bee-Bot* to follow. The objective is for the students to sequence a program for the *Bee-Bot* to match a path from the selected animal to its corresponding habitat. This robot can follow up to 40 commands using forward, backwards, left, and right movements. The *Bee-Bot* is a wonderful tool to teach students the fundamentals of computational thinking.

### Materials

- *Bee-Bot*
- Directional cards
- Animal cards
- Habitat cards
- *Bee-Bot* mat (can be purchased or you can easily make your own!)

*To make your own: use bristol board, laminated chart paper, or a plastic tablecloth to make your own **grid with 15cm squares**. Remember that the *Bee-Bot* makes 15cm moves and 90 degree turns.*



### Computational Thinking Skills

- Create simple programs
- Pattern recognition (finding patterns which can help simplify task)
- Decomposition (the break down of complex problems into smaller and more manageable parts)
- Abstraction (filtering out unneeded information that comes from sorting)
- Algorithm design (determining appropriate steps to take and organizing them into a series of instructions a plan for solving a problem or completing a task correctly)

### Introduction

- Tell the students that the goal of today’s activity with the *Bee-Bot* is to create a path using the directional cards for the *Bee-Bot* to follow.
- The *Bee-Bot* must follow the path for the robot to match the animal to its habitat.
- Review the directional cards and words: left arrow – “left”, right arrow – “right”, up arrow – “forward”, down arrow – “backwards”.

### Action

- Ask the students to begin by thinking about where animals live. You can have the students turn and talk with a partner, share their thoughts aloud, and/or record them on paper or on a whiteboard.
- Discuss some of the options provided such as the bird card. “What is a bird’s habitat?”
- Model one of the animal and habitat matches for the students. For this example, we will be matching the bird card to its habitat, the nest card.
- Place all of the animal and habitat cards in a random order on the outside rows of the mat.
- Place the “Go” card on the mat where you would like to begin. The card must be placed on top of the animal card that you are beginning at.
- Use the directional cards to plan out the route of the *Bee-Bot*.
- Now that we have the sequencing complete, we can input the directions.
- Begin by placing the *Bee-Bot* on the “Go” card.
- On the *Bee-Bot*, click the corresponding direction buttons and follow along as the *Bee-Bot* completes its path.

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- *Note:* When the *Bee-Bot* turns, it turns in its spot and does not move forward. In the model in the video, you will see that in one box there is a card for “forward” and a card for “left” put together as the *Bee-Bot* will turn in its spot, but not continue forward.
  - Ask: “Were we successful in matching the bird with its habitat, the nest?” If not, what changes do we need to make? This step can entail some trial runs in order to fix certain parts of the sequence.
  - Complete the previous steps with the remaining animal cards and their corresponding habitat cards.

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## Consolidation/Extension

### Wrap-up:

- Discuss the animals and habitats that we matched. Ask: “What did you notice?” and review the animal pairings.

### Variation:

- This activity can be completed without a *Bee-Bot*. The mat and directional cards can be used to create a sequenced path. A larger version can also be made and placed on a carpet or floor for students to walk the sequenced path from the animal cards to their corresponding habitats. The floor can become a giant interactive grid.
- This activity can be used with other topics and themed cards. For example: the lifecycle of a frog, the parts of a plant, story retells, letters, numbers, or colours.

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## Assessment

- Observation chart – attached (Input student names in the chart and record observations for each student)
- Observe correct use of directions and reading of sight words (forward, backward, left, right)
- Four frame observations – Are students sharing? Are students working collaboratively? (Belonging & Contributing frame)

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## Additional Resources

- Cited photos attached
- *Bee-Bot* image sourced from <https://technostories.files.wordpress.com/2009/11/beebot1.png>