

Kindergarten Letter Identification/ Sound Correspondence Bee-Bot Lesson

Subject(s): Computer Science, Literacy, Math

Grade: Kindergarten

Common Core Learning Standard(s) Addressed:

CCSS.MATH.CONTENT.K.CC.B.4.A

When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.

CCSS.MATH.CONTENT.K.CC.B.5

Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1-20, count out that many objects.

*2.APA.01 With guidance, identify and model daily processes by creating and following algorithms (sets of step-by- step instructions) to complete tasks (e.g., verbally, kinesthetically, with robot devices, or a programming language). [Practice 4.4 Developing and Using Abstractions]

*2.AP.C.01 With guidance, independently and collaboratively create programs to accomplish tasks using a programming language, robot device, or unplugged activity that includes sequencing, conditionals, and repetition. [Practice 5.2 Creating Computational Artifacts]

*2.AP.M.01 Using grade appropriate content and complexity, decompose (breakdown) the steps needed to solve a problem into a precise sequence of instructions (e.g., develop a set of instructions on how to play your favorite game). [Practice 3.2 Recognizing and Defining Computational Problems]

CCSS.ELA-LITERACY.RF.K.1.D

Recognize and name all upper- and lowercase letters of the alphabet.

CCSS.ELA-LITERACY.RF.K.3.A

Demonstrate basic knowledge of one-to-one letter-sound correspondences by producing the primary sound or many of the most frequent sounds for each consonant.

CCSS.ELA-LITERACY.RF.K.3.B

Associate the long and short sounds with the common spellings (graphemes) for the five major vowels.

CCSS.ELA-LITERACY.SL.K.6

Speak audibly and express thoughts, feelings, and ideas clearly.

Learning Targets/Objectives:

- Students will recognize and name uppercase and lowercase letters.
- Students will produce the corresponding primary sound for consonants and short vowels.
- Students will demonstrate one-to-one correspondence when counting.
- Students will use a Beebot to create an algorithm to reach the appropriate destination on the Beebot mat.
- Students will decompose the steps needed to solve the task with the Beebot.
- Students will work collaboratively to accomplish the task.

Relevance/Rationale:

This lesson ties together computer science (problem solving) with literacy (foundational skills, speaking/listening) and math. It encourages students to work collaboratively to program a Bee-bot

to reach a desired location while at the same time reinforcing foundational letter/sound skills needed for reading (letter identification, letter/sound correspondence). Students get practice working with their peers to practice important social and problem solving skills.

Formative Assessment Criteria for Success:

You will know that students have successfully met the lesson's outcomes if they:

- Are able to correctly identify and name uppercase and lowercase letters.
- Are able to produce the corresponding primary sound for consonants and short vowels.
- Are able to count in standard order (one-to-one correspondence).
- Are able to create and follow an algorithm to reach the appropriate destination with the Bee-bot.
- Are able to decompose and explain the steps necessary to program the Beebot to solve the task.
- Are able to work collaboratively to accomplish the task.

Activity Steps:

Pre-activity prep: label 5-10 bowling pins with uppercase OR lowercase letters or a combination of both. There should be one letter per bowling pin. Then, create corresponding cards for students to draw from with either the matching uppercase or lowercase letter. Ex: If you put an "A" on a bowling pin, put an "a" on the card. Before beginning the activity have the Bee-bot mat(s)

set up with the bowling pins in place and the card stack ready to go.

1. Hook: Ask students if they have ever been bowling before and if necessary explain/show what bowling is.
2. Explain to students that they are going to be working on letter identification and letter sounds using Bee-Bots to “bowl” in collaborative groups. Go over learning targets with students. (Ex: I can identify upper and lowercase letters. I can say the correct letter sound. I can follow group work expectations).
3. Model for students how to play the game. Draw a card from the stack. If there is a letter “r” on it, locate the bowling pin with the “R” on it. Then think aloud for the students as you decide how you need to program the Bee-bot to reach the intended destination. Students need to keep in mind that they will also need to program the Bee-bot to go around any bowling pins in their way. Hitting other bowling pins is NOT okay :). If students are struggling with the programming, it might be helpful to have them draw or map their sequence first on a whiteboard. Once you have the Bee-bot programmed, click the start button and see if it ends up where it needs to be. If it does, it should knock over the bowling pin with the corresponding uppercase or lowercase letter. Model how to problem solve if the Bee-bot does NOT end up where it was intended. Once the bowling pin is knocked over, remove it from the mat and say the corresponding letter sound (if you use Foundations, have students say corresponding letter name, picture, sound...ex: a, apple, /a/). Keep playing until all bowling pins have been knocked over (you don’t need to model the entire game).

4. Put students into groups of 2-4. Review how to work collaboratively if necessary. Provide whiteboards and markers for students to use if they need to map out the path. Allow students to play for 10-15 minutes or until they have completed the activity.
5. Reflection: Pull students back together whole group and reflect on the activity. Ask students to share (either in pairs or whole group) what went well, what was hard, what could I do differently next time, etc...Return attention to learning targets. Go through them and discuss whether or not they met their targets.

Resources/Materials:

Beebots, Beebot mats, uppercase/lowercase letter cards, uppercase/lowercase letter labels for bowling pins, plastic bowling pins, whiteboards, dry-erase markers, learning targets.

Modifications/Extensions:

- For students struggling with programming the Bee-bot, have them draw the path out first and explain their thinking. Have less bowling pins set up and locate them closer to where the Bee-bot is starting.
- If students are unable to match uppercase and lowercase letters yet, they could simply focus on lowercase or uppercase match. Ex: If they draw the “t” card, they find the “t” labeled bowling pin.
- For more advanced students, set up the bowling pins in a way that makes it more challenging to get to complete the task without knocking over another bowling pin. For this, extra unlabeled bowling pins could be used.