Coding @ Park Grade 1 #1

Overview: This lesson is to introduce coding to students in grade 1 through a robotics activity using the Kibo robot kits
Students learn the specific coding blocks: forward, back, left, right, shake, beep

WHY?

- Taken from the Tufts DevTech Group white paper "6 Key Benefits of Using Robotics in the Early Childhood Classroom"
    - Coding Teaches the Literacy of the 21st Century
    - Coding Develops Computational Thinking Skills
    - Technology Becomes the Playground
    - Robotics Makes Coding Tangible and Concrete… and Screen-Free!
    - Using Technology Breaks Down Engineering Stereotypes
    - The Engineering Design Process Develops Grit and Perseverance
- Also see this e-Book Beginning Computer Programming for Kids

Essential Questions:

- What is a robot? What isn't?
- Can I program my robot to do what I want it to do?
- Can the robot do everything I can do? What are the limitations of this robot?
- Are all robots the same?

Directions to Homeroom Teachers
Please divide your students into 4 groups.

Coding Activity Plans 8:40-9:40 am	
8:40-8:55	Introduce today's lesson by ● Introducing yourselves and coding @ Park ● reading Eric Carle's "From head to Toe" book ○ Digital book: Megan's photos of the book in a slideshow you can project and read ○ From Head to Toe as a song on youtube ○ Another version on youtube ● Discuss how different animals can make different movements, and not all animals can make the same movements, transition into discussion of what humans and robots can and can't do, different robots are made to do different things, etc. what is a robot? ● Introduce KIBO and show the parts, use the slideshow to show the

	blocks, DEMO ○ How the wheels fit in (green dots showing) ○ How to turn it on ○ How to scan blocks (starting with Start and ending with End and command blocks in the middle) OPTIONAL SLIDESHOW with intro to kibo motors and wheels
8:55-9	Break students into small groups and ask them to have the robot use the following commands: ● Forward ● Back ● Left ● Right ● Shake ● Beep
	Students come up with a statement for the robot "I'm a robot, and I can dance/move like this… Can you?" The robot will complete moves, and then the students will repeat -OR- Vice versa- the student dances, and the robot follows "I'm a 1st grader and I can dance/move like this. Can you?"
9-9:25	Learning Through Playing Optional challenges: ● see if you can get your robot to do the hokey pokey ● Class synchronized programming
9:30-9:40	Sharing in Circle: ● each group shares what they programmed their robot to do Discussion: ● Could you program your robot to do what you wanted it to do? ● Can the robot do everything you can do? What are the limitations of this robot?

Feedback from teachers

Coding @ Park Grade 1 KIBOs Lesson #2

Lesson Objectives

Include skills practice

Materials: 5 KIBO kits, measuring tools, poster sticky, marker, Book slideshow

Students will…

- cooperatively code and operate a Kibo robot kit in groups of 3
- revisit specific coding blocks: start, end, forward, back, left, right, shake, beep.
- measure and gather data about the distance Kibo travels with one forward command
- Experiment and discover multiple avenues to move KIBO the distance of 3 forward commands
- learn and experiment with the REPEAT block
- identify the most "*efficient*" way to code KIBO to travel the distance that is 3X forward

Essential Questions

What makes a robot a robot?
How do you give instructions to a robot?
How can I make a robot repeat an instruction?

Hook/Activator

Activate prior knowledge/Get students set for class
Does this activity grab students' attention and capture their interest?
Does this activity make a connection with prior knowledge?

What is a robot?
Gather in circle and ask about what makes a robot a robot (concepts from lesson one). Collect and confirm. Review list from Session 1:

- •Robots are machines
- •Robots have moving (mechanical) parts
- •Not all robots look alike
- •People tell robots what to do with PROGRAMS
- •Some robots have SENSORS
- •Robots are not alive

Point out this is how robots are the same, but how might robots be different from one another? Take ideas, then Read the book, Robots, Robots Everywhere! By Sue Fleiss. Ask the students to notice if all the robots move, and how.

Direct Instruction or Guided Practice

What will students be doing/experiencing/practicing?

Not all robots move, but KIBO does.

1. Review how to program KIBO by using the program blocks and the scanner.
2. Review how we found out how far KIBO travels in one step (one forward) and why there might have been differing data.
3. Introduce REPEAT and demonstrate the repeat block.
4. Students will then work with partners to find 3 ways to demonstrate 3 “steps” one of which should be using the repeat block.
5. Gather and debrief. What were their solutions? What was a challenge? What was successful?
6. Have students clean up and fill out assessment.

Independent Practice

What will students be doing/experiencing/practicing?

1. Students will enjoy a storybook about the large variety of robots and things they can do.
2. Students will use a yardstick to determine how far KIBO travels in one “step” (a forward command.)
3. Students will use the repeat command to make KIBO travel forward three times.

Wrap-Up: Reflection/Summary/Synthesis

How will students capture the gist of the lesson?
What was important?
What have they learned?
How does today’s learning fit in with what they have done in previous classes or will be doing next?

Students will complete a handout asking students to show/draw/write how they programmed KIBO to move forward three “steps”.

Coding @ Park Grade 1 KIBOs Lesson #3

Lesson Objectives

Include skills practice

Materials: 5 KIBO kits, measuring tools, poster sticky, marker, Book slideshow

Students will…

- cooperatively code and operate a Kibo robot kit in groups of 3
- revisit specific coding blocks: start, end, forward, repeat, end repeat and number parameter.
- learn and experiment with the REPEAT block
- identify the most "*efficient*" way to code KIBO to travel the distance that is 3X forward
- Identify an event that happens every year at Park and code Kibo to represent that event.

Essential Questions

How can I make KIBO repeat an instruction?
What events happen every year at Park?
How can I code KIBO to represent a repeating event?

Hook/Activator

Activate prior knowledge/Get students set for class
Does this activity grab students' attention and capture their interest?
Does this activity make a connection with prior knowledge?

What kinds of events happen every year at Park? Write down ideas - get at least 6. Put them on a timeline.

Students Gather Relevant Information

Which information will students need to access?
How will they access it?
How will you present it? Using which modalities?

OR

Direct Instruction or Guided Practice

What will students be doing/experiencing/practicing?

1) Reteach use of the repeat block. (Have students act out the purpose of blocks??)

Student Processing

What will students be doing/experiencing/practicing?

OR

Independent Practice

What will students be doing/experiencing/practicing?

1) Assign one annual event to each student robotic group.
2) Work with partners to program KIBO to act out that event.
3) Gather and set up the timeline.
4) Go through the year and have teams run their program for KIBO.

Wrap-Up: Reflection/Summary/Synthesis

How will students capture the gist of the lesson?
What was important?
What have they learned?
How does today's learning fit in with what they have done in previous classes or will be doing next?

Students will complete a handout asking them to show/draw/write how they programmed KIBO to act out their "event." Optional extension: record their reflections in the Seesaw app.