Surviving the North	Grade 1 Needs and Characteristics of Living Things (Science) Math: Coding

Lesson Plan—Bear's Fish Hunt

Description

Students will learn about polar bears and their current needs for survival. They will also learn about how their environment is becoming endangered through climate change. We will talk about ways we help and harm the environment and then students will be challenged to use scratch junior to help the polar bear get his food. They will design the ice area that their polar bear lives on and then give him directions to get his food.

Learning Outcomes	Specific Expectations
--Students will demonstrate an understanding of polar bears and what they need in their environment to survive. --Students will be able to identify what the polar bear eats. --Students will be able to use coding terms (up, down, left, and right) to move their polar bear to get the food while going around obstacles.	**Math:** **C3.1** solve problems and create computational representations of mathematical situations by writing and executing code, including code that involves sequential events. **C3.2** read and alter existing code, including code that involves sequential events, and describe how changes to the code affect the outcomes **Science:** **B1.1** describe changes or problems that could result from the loss of living and non-living things that are part of everyday life, while taking different perspectives into consideration **B1.2** identify actions that can be taken to contribute to a healthy environment.

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Introduction

"Today we are going to learn about polar bears. What do you know about polar bears?"

Elicit responses from the class. You may choose to write down their ideas for what they know. Then explain that today we are going to use the information from our polar bear research to get a polar bear to hunt fish on the computer through our directions.

Use the PowerPoint presentation "Polar Bear Science Lesson". Read through the information together. Discuss as you go.

Action:

We are going to play a game in our classroom. We are going to select one person to be the polar bear and three others to be fish. The students will be randomly placed in the classroom. Then the other students will give directions for the polar bear to get to its food. If we want the bear to move left, the students will say, "Move left (negative or minus) –10 steps", and the bear will take 10 steps to the left. If we say, "Move right 10 steps", the bear will take 10 steps to the right. If we say, "Move up 10 steps", the bear will move 10 steps to the front of the classroom and "Move down (negative or minus) –10 steps", the bear will move to the back of the classroom.

Play the game a few times together choosing new polar bears and fish each round. This will give students the opportunity to practice explaining the steps.

Once students are comfortable with the game, explain that they just did coding. They told the polar bear how to move about the classroom following their directions. This is coding. Now we are going to do the same but using a program called Scratch.
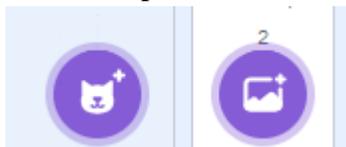
Demo: You can choose to use the program attached to demonstrate the polar bear moving about the screen by using the link. https://scratch.mit.edu/projects/872012353

Consolidation:

Scratch steps:
1. Login to www.scratch.mit.edu (You will want to create your own account.)
2. Click on create.
3. On the bottom right corner, you will see a sprite icon in the bottom right. Click on the x to delete the cat icon. Then click on the cat picture to choose your new sprite. Search

   polar bear. Then he will be added.

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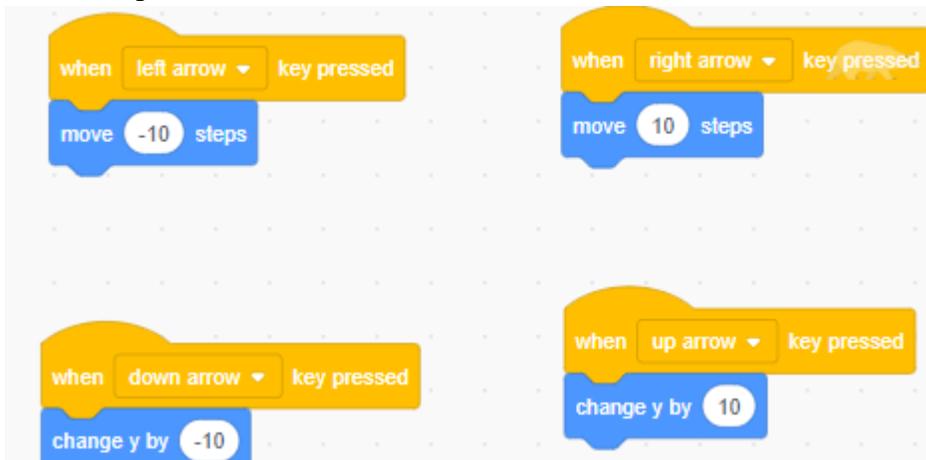a registered charity #10796 2979 RR0001

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4. Next click on the background icon (2 above). Here you can choose the arctic scene.
5. You will want to change the size of the polar bear to 50 from 100 to have space to

Size 50   Direction 90

move about the page.
6. Explain that the first thing we want our polar bear to be able to do is to move about the page. Explain that if we want him to move left, right, up, or down, we need to give him the directions.
7. First, we will click on the polar bear. We will help him to move left or right by going to the Events tab and clicking on the when _____ key pressed icon (see below).
8. You are going to tell the bear to move left by clicking on left in the arrow box.
9. Do this again for right, down and up. You will need 4 boxes to start.
10. Then go to motion blocks (blue blocks). Click on move ___ steps.
    a. 10 steps makes the polar bear move forward (to the right, if direction is 90). However, if you make it go −10, it will move to the left.
    b. Use "change y by _____" to move up and down. 10 steps will move up and −10 steps will move down.

when [left arrow ▼] key pressed
move (-10) steps

when [right arrow ▼] key pressed
move (10) steps

when [down arrow ▼] key pressed
change y by (-10)

when [up arrow ▼] key pressed
change y by (10)

11. Next, you are going to create the fish for the bear to catch. Select your fish sprite by repeating steps 3-5 with the fish. You can do this for 3 fish or just one. The choice is yours.
12. Then click under the events tab click on when green flag is tapped for the fish. Then go

when [🏳] clicked
go to (random position ▼)
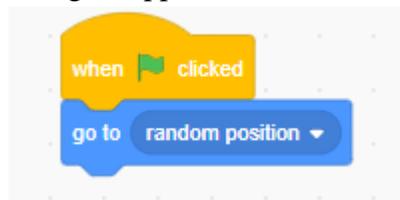
to movements and click on go to random position.
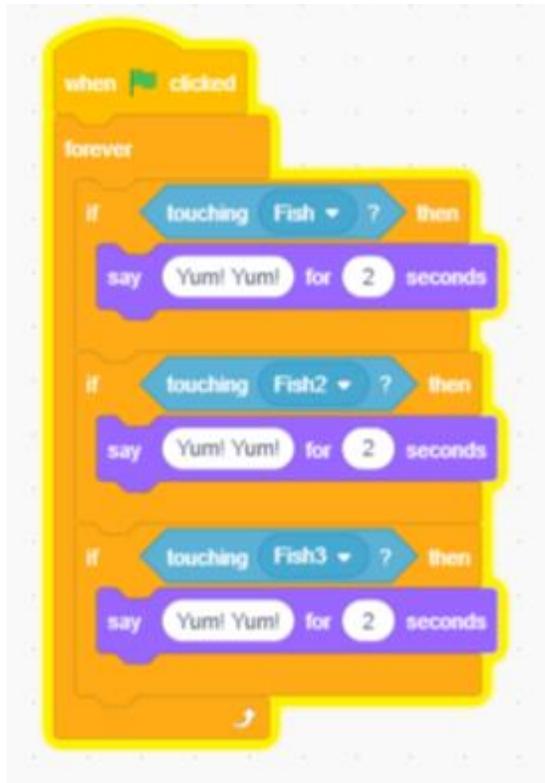Now when you click on the green flag on your home screen the fish will go to a new position.
13. You can now have your polar bear catch the fish by clicking on your polar bear sprite and giving him the directions to move about the screen.

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Example to play together. https://scratch.mit.edu/projects/872012353

Extension for Students: You can get the bear to talk and say "Yum! Yum!"
1. Go to the Events section and select the block with the green flag.
2. Add a Forever block from the Control (orange) section.
3. Add an If/ Then block from the same section.
    a. Use a hexagon (six-sided block) in light blue that says "touching___" from the Sensing section.
    b. Chose Fish.
4. Go into Looks section and click on the "Say ____ for ___ seconds" block.
5. Type the words you want the bear to say and the number of seconds.
6. Repeat for any other sprites on the screen.

Students can also use this for another action they want the polar bear to do when they get him touching a fish.

The above coding is for if there are three fish. Students can repeat for as many fish as they want.

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Accommodations/Modifications	Assessment
Students may work in partners or independently. You can choose to model the activity with an animal of choice and have him move about the page. You can also just have students change the sprite and background to move the object around the page to get another sprite.	Once the students have a working polar bear and he can catch the fish, have them walk you through how many steps the polar bear makes in each direction to get to the fish. If they can count each, they've got it. Work through together if they need help. **Additional challenge:** Can you explain how to make your polar bear do an action?

Additional Resources

Resources used in this lesson:

Locations for polar bears Polar Bears International | Polar Bear Tracker

Map of where polar bears are located in Canada map of Canada where polar bears live - Bing images

Scratch program: https://scratch.mit.edu