CANADA LEARNING CODE

Paint with Gobo Interactive Art

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Duration: 45 minutes

LEVEL	SUBJECTS	PROVINCES / TERRITORIES	TOOL
Grades 1-3	Visual Arts	Across Canada	Scratch

Overview

Build a very simple piece of interactive art in Scratch with only a few commands, but big effects!

Prep Work

- Print the solution sheet ahead of time: http://bit.ly/gobo-solution
- View the final project here: https://scratch.mit.edu/projects/10015857
- If working offline: Install the Scratch App on learner computers ahead of time
- Optional: Watch a walk-through video of the lesson here: https://www.youtube.com/watch?v=BE0PoHZLOq4

Lesson

Introduction
Ask: What is Code? (A set of instructions that tells the computer what to do)

Optional: Do the Robot! (See lesson plan here: https://www.canadalearningcode.ca/lessons/do-the-robot/)

Key Coding Concepts

- Algorithms
- Loops
- Events

Terminology

Interactive
Something you can interact with, where your actions create some sort of result or change. A video game is more interactive than a printed book (e.g.) because your actions can affect the outcome of the game.

Curricular Connections

Line, colour, shape and form, space, repetition and rhythm, digital art, interactivity

Code Along

- Open up a new Scratch project at scratch.mit.edu and click on “create” (top, left corner) - or open the offline Scratch App.
- Point out the main elements: Stage, Sprites, and Scripts.
- Demonstrate how to drag and connect blocks.
- Give learners a few minutes to click on blocks and explore. Go through 1-2 challenges with the group, where learners are tasked with trying to make something happen in Scratch. For example, “Try to make Scratch move” or “Try to make Scratch say something when the space key is pressed” (See the Code-Along Challenges doc (http://bit.ly/scratch-challenge-solutions-doc) for more examples and solutions)

Activity

Show the example project (https://scratch.mit.edu/projects/10015857) so learners know what they are working towards.

Ask them what they see - what is happening in this project?

Use the Solution Sheet to guide learners through the following steps:

1) Create a new project
2) Follow the mouse pointer
3) Rainbow trail

Give learners time to work on their projects, and use the Add-Ons as additional extension ideas.

Assessment

Learning Outcomes

I can use code to tell the computer what to do.
I can use events to control when things happen in my project.
I can use loops to make things happen more than once.
I can use Scratch to create interactive artwork.

Extensions

Ask learners: How can we make our projects more interactive? Use as many Add-Ons as time allows.

Have learners use the elements of design (e.g. colour, shape) to portray a chosen emotion or theme in their project.

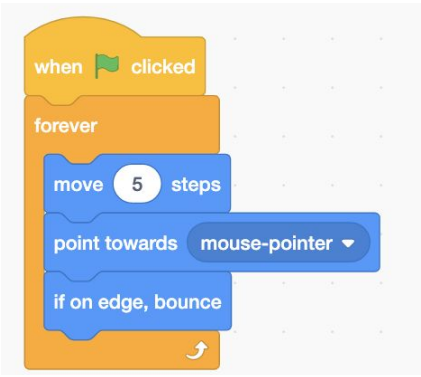
Painting with Gobo

STEP 1: Create a New Project

1. Create a new project (Click “Create” top, left corner)
2. Optional: Create an account / sign in to save

STEP 2: Follow the Mouse Pointer

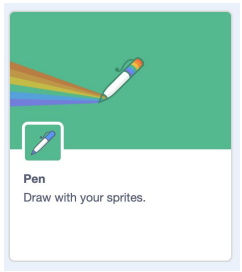
1. Make Scratch move
2. Make Scratch point towards the mouse
3. Make this happen forever
4. Be sure Scratch doesn’t move off of the edge
5. Make this happen when the green flag is clicked



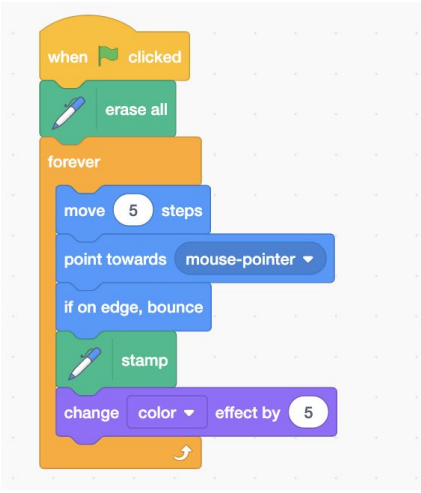
STEP 3: Rainbow Trail

1. Click on Add Extension button

2. Click on Pen

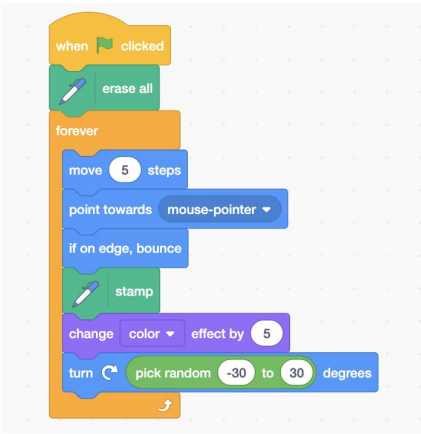


3. Change Scratch's colour
4. Create stamps of Scratch on the backdrop
5. Erase the stage when the green flag is clicked



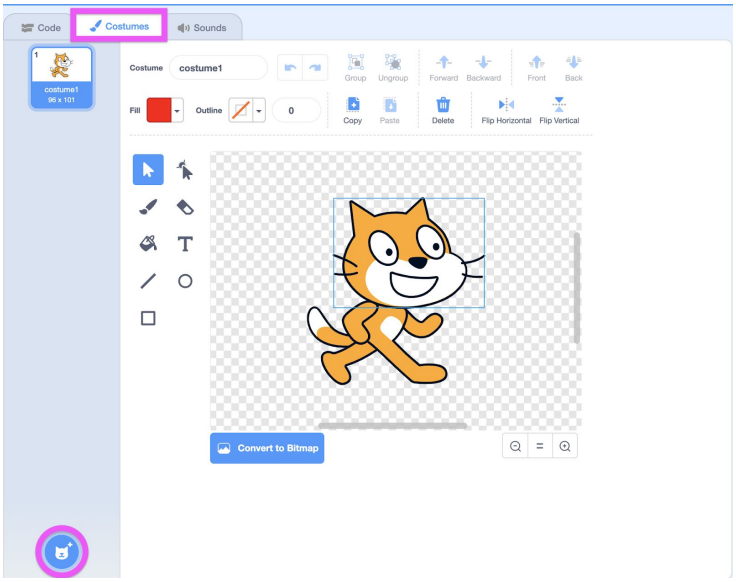
ADD-ON: Wobble

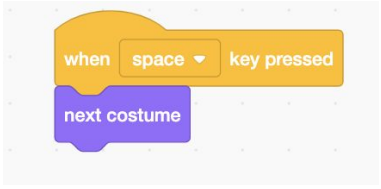
1. Make Scratch turn
2. Make the amount of degrees random (try between -30 and 30)



ADD-ON: Costume Change

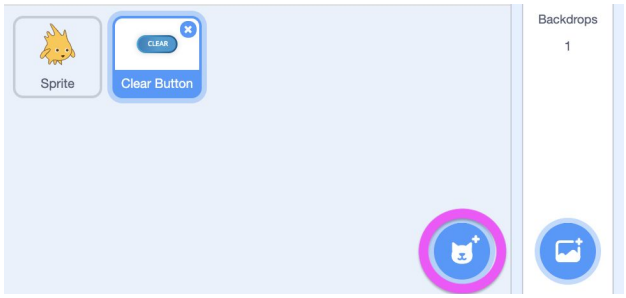
1. Select the Costumes tab
2. Choose a few different costumes - Select from the library
3. Go back to the Scripts tab
4. Make your Sprite change to the next costume every time the space key is pressed





ADD-ON: Clear Button

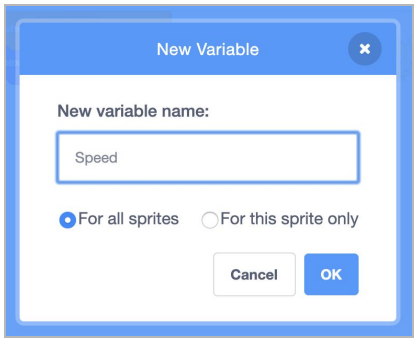
1. Add a new sprite from the library to be your clear button



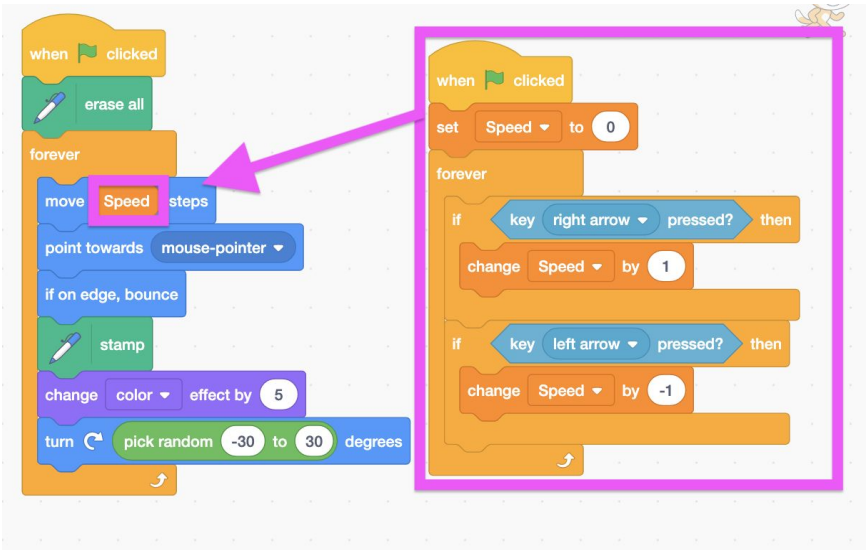
2. Optional: Edit the button in the Costumes tab
3. Select the button, then the Scripts tab
4. Make the stamp erase all when the button sprite is clicked

ADD-ON: Control Speed

1. Select the Scratch sprite
2. Under Variables, create a new Variable called “speed”



3. Replace the ‘move’ value with our new ‘speed’ variable
4. Make the speed increase
5. Make the speed increase if the right arrow key is pressed
6. Make the speed decrease if the left arrow key is pressed
7. Make this happen forever, when the green flag is clicked
8. Make the speed reset right after the green flag is clicked



ADD-ON: Change the Size

1. Create a new variable called ‘size’
2. Add a ‘change size by’ script to control the size
3. Same as above, replace its value with our new variable
4. Same as above make the size increase when one key is pressed, and decrease when another key is pressed

5. Same as above, make this happen forever, and make the variable go back to '0' when the green flag is clicked
6. Reset the size when the green flag is clicked