

Science Literacy Week 2017 – Being Outer Space With Scratch

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|---|-----------------|
| <u>GENERAL WORKSHOP DESIGN PARAMETERS</u> | <u>2</u> |
| <u>“BEING IN OUTER SPACE” INSPIRED BY “DARKEST DARK” BY CHRIS HADFIELD</u> | <u>3</u> |
| Setup and Configuration [30 minutes] | 3 |
| <u>GUIDED SESSION [60 MINUTES]</u> | <u>4</u> |
| Scratch Basic Environment [5 Minutes] | 4 |
| Learn The Basics Of Scratch [10 Minutes + 10 Minutes Practice] | 4 |
| Where Does Your Story Happen? [5 Minutes] | 5 |
| Pick A Character And Then Get It Ready For Space! [10 Minutes] | 5 |
| Add Something Or Someone Your Astronaut Might Encounter In Space! [20 Minutes] | |
| Upgrade Your Program By Using Some Interesting Blocks From “Events”! [5 minutes] | 5 |
| <u>INSTRUCTOR NOTES</u> | <u>6</u> |

General workshop design parameters

- **Duration**
 - 2 hours
- **Target audience**
 - Children ages 7-12
 - Volunteers: no prior experience volunteering with KCJ required
- **Programming knowledge**
 - *Instructor*: Intermediate Scratch programmer
 - *Children*: no prior experience with programming or Scratch
 - *Volunteers*: good programming knowledge & completed Scratch example for the workshop prior to the event in order to familiarize themselves with the blocks and concepts being shown.
- **Objectives**
 - *Participants*
Learning basic programming concepts through fun: at the end of the workshop, child will have a small program to share with friends & family.
 - *Instructor*
Smiles at the end from all the children who should all feel like they have accomplished something fun and interesting (regardless of the complexity of the project they have managed to achieve).
 - *Volunteers*
Learn to interact with participants to help them learn (without giving them the answers) and become more comfortable in this environment. Learn a few new things in Scratch.
- **Sequence of workshop**
 - The instructor builds the class example from a blank project with input from the audience: this is to demonstrate that the project can be done without any prior preparation. It also allows the participants to observe how the instructor thinks things through, navigates the Scratch environment, makes mistakes and debugs.

[“Being in Outer Space” inspired by “Darkest Dark” by Chris Hadfield](#)

Topic: Create a short project about being in outer space using Scratch

Objective: In this workshop, participants will learn how to work with the block programming language, Scratch, and create a short project about space that they can then share with friends and family.

Requirements:

Instructor: Projector + screen and a computer that connects to it.

Participants: One computer per participant and access to the internet/web.

Duration: 2h – schedule

- *30 min* setup
- *60 min* of instruction (guided learning: short sections of listening & coding)
The instructor demonstrates one or two basic concepts (5-10mins) then the participants work on recreating and customizing their own project by applying what they have just learned (5-10mins).
- *30 min* free practice:
The participants continue working on their projects with the help of the instructor and volunteers, using what they have learned in the first section.

Sample project: <https://scratch.mit.edu/projects/174016928/>

Setup and Configuration [30 minutes]

- Participants arrive and setup their computers with the help of the volunteers
- Display the following information on screen:
 1. Wi-Fi: how to log in
 2. Go to website: <https://scratch.mit.edu/>
 3. Setup an account
 - “Join Scratch”
 - Username / password: write them down
 4. Start thinking about being in space or travelling to space
On a piece of paper write or draw:
 - *What do I see in space?*
 - *How do I move in space?*
 - *What do I use to travel in space?*

- *Who or what could I meet in space?*

When everyone is setup, introduce yourself and briefly introduce KCJ programs.

Explain that the goals of this session are to start programming, learn to use Scratch and create a project that they will be able to share with others.

Guided Session [60 minutes]

Scratch Basic Environment [5 minutes]

- Introduce the following basic elements of the Scratch screen
 - *Changing the language (if required)*
 - *Title of the project: we always want to give it a name*
 - *Duplicate and delete icons (scissors and stamp at top of screen)*
 - *Different sections of the screen*
 - Stage: where things happen
 - Sprite: the characters that are part of the program
 - Script: where the code is written



- DO use the mouse pointer to show the various sections
- AVOID showing every detail on screen (as the session progresses, introduce new things one at a time)

Learn the Basics of Scratch [10 minutes + 10 minutes practice]

- Demonstrate the basic blocks and how to manipulate them in order to see the effects on the screen:
 - Make a sprite move: Motion, Control



- Make the program start with the “green flag”



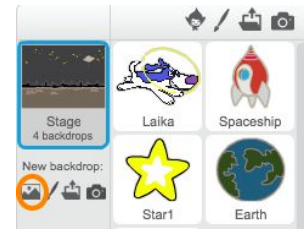
- Make the sprite say something with a “talk bubble”



- Have the participants practice using these blocks for 5-10 minutes

Where does your story happen? [5 minutes]

- Choose a background from the Scratch library
 - Theme: Space
 - You can draw your own in the “Backdrops” Tab (If children are drawing, provide a time limit!)



Pick a character and then get it ready for space! [10 minutes]

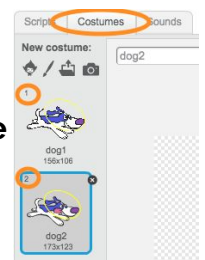
- Choose a sprite from the Scratch library:
There are plenty to choose from
 - Category: Animals, Fantasy, People
(As inspiration, the following animals have gone to space: dogs, monkeys, cats, frogs, spiders, mice and tortoises!)

- Make it bigger or smaller (two ways)
 - Using the block “set size to ... %”
 - Using the tools at the top of the screen



- Change the colour or add a helmet:
 - Select the “Costumes” tab
 - Colour: Pick the colour at the bottom and then select the paint can and touch the area you want to colour.
 - Add a helmet: Choose the colour of the helmet (e.g. yellow), then select the circle and draw a circle on the sprite.

- Animate your character
 - In the “Costumes” section of your sprite, make sure you have at least 2 costumes.
 - Use the bloc “next costume” in a loop and see what happens.



Now that you have your astronaut, start telling a story!

Add something or someone your astronaut might encounter in space! [20 minutes]


- Add one or two more sprites (a star, a planet, an alien, etc.)

Upgrade your program by using some interesting blocks from “Events”! [5 minutes]

- Explore more of the “Event” blocks and make the sprite do something interesting when it selected or a special key is pressed.

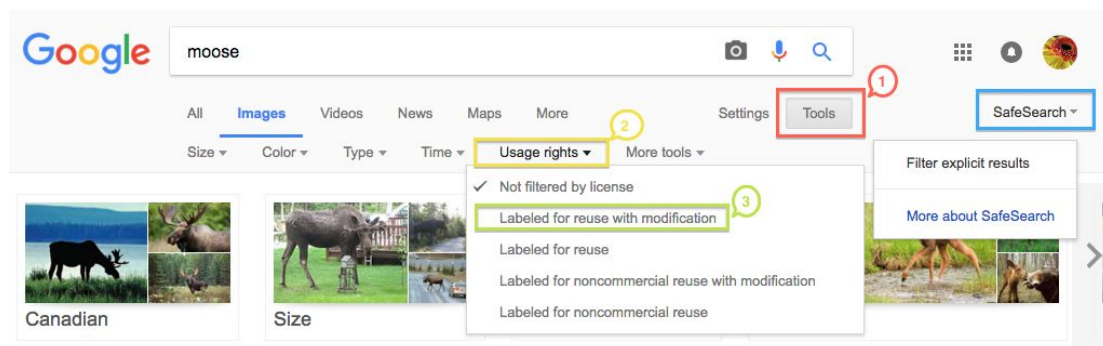


Instructor Notes

- Frequently remind the participants to save their work: at least at the start of every new section.
- Show everyone how to use the  block to “find” a sprite that has gone off the stage.
- Do: use a separate timer (use a tablet) that everyone can see for the “practice” sections: it makes it easier for everyone to know how much time they have left to practice on a particular section.

Avoid: A timer on-screen - the participants will be using your code as reference.

- **ADVANCED OPTION: Using images from the web**
This can use up a lot of time! (20-30mins to find the picture, cut it out, etc...)
 - o Make sure you are allowed to use the picture (usage rights):
In Google search, choose “Images” and then follow the 3 steps below:
 1. Tools
 2. Usage Rights
 3. Select: “Labeled for reuse with modification” – this option ensures pictures being used are 100% free.
 4. Right-click on the image to save it to your computer.



Science Literacy Week 2017 – Being Outer Space With Scratch

- o Upload the image to Scratch
- o Cut out the image to create a sprite:
 - In the “Costumes Tab”
 - Use the “Magic Wand” to remove the background

