CANADA LEARNING CODE

micro:magic

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Duration: 3 Magical Projects (2-3 hours)

LEVEL	SUBJECTS	PROVINCES / TERRITORIES	TOOL
Age 7+	Art, Language Arts & Technology	Across Canada	micro:bit

Overview

In the first project, students will explore the magic of micro:bit by creating their own magic wand that will control a program through Scratch. In the second project, students will learn about conditionals and "If...Then...Else" statements as they program their own Magic 8 Ball game. In the third project, using the micro:bit MakeCode Editor, students will code their micro:bit to act as a sorting hat.

Prep Work

- The instructor should have some knowledge of micro:bit
- micro:bit (one per student)
- Computers or a device capable of pairing to micro:bit
- Students should have had some previous experiences with coding (Scratch or Blockly)
- Materials for creating magic wand (wooden dowels, fabric, duct tape, cardboard, glitter, tinfoil, elastic bands etc.)

Key Coding Concepts

- Algorithms
- Conditionals
- Events
- Variables

Terminology

Algorithm: a step-by-step set of operations to be performed to help solve a problem

Conditionals: Making connections based on conditions (ie. if it is raining, then open your umbrella)

Events: When one thing causes another thing to happen

Variable - A placeholder for a

Lesson

Project #1: micro: Magic Wand (60 + minutes)

Provide students with materials to create their own magic wand. The mico:bit should be hidden securely behind the star part of the wand.

Make sure Scratch is connected to micro:bit
https://scratch.mit.edu/microbit
*note: this project could be adapted to work with MakeCode program

Watch the video: Magic Wand (Scratch 3.0 + micro:bit) from Pinky Pepper:
https://www.youtube.com/watch?v=8MozA-c9018
*note: at 1:06 of video shows code.

Allow students an opportunity to remix their own magic wand program.

Project #2: micro:bit.org Magic 8 Ball Game (30+ minutes)

The finished game allows you to ask the micro:bit a question and it will respond with a random answer! Complete the easy to follow 7 steps
https://microbit.org/en/2017-03-07-magic-eight/

Review coding terminology:

piece of information that can change

Curricular Connections

Language Arts: Develop questions that reflect a personal information need

Art: Students will have the opportunity for creative activities of a wide nature; use of imagination, inventiveness and a spirit of inquiry.

References

MakeCode Reference Guide:
https://makecode.microbit.org/reference

micro:bit Educators Guide
https://www.slideshare.net/Microsofteduk/bbc-microbit-guide-from-hodder-education

The Official BBC micro:bit User Guide (2018) by Garteth Halfacree

micro:bit Tutorial Series Part 1: Getting Started
https://www.youtube.com/watch?v=ZIW_6rxYNBg

micro:bit by BBC - Creative Classroom Tips for Educators
https://www.youtube.com/watch?v=pR_AapxVudM

Code.Org Variables - In Envelopes Video Explanation
https://studio.code.org/s/courseF-2018/stage/14/puzzle/1

Variables: Code.Org Video:
https://www.youtube.com/watch?time_continue=1&v=DI7DprN4FtE

Conditionals: If...Then...Else Statements
Flocabulary Conditional Video
https://www.flocabulary.com/unit/coding-conditionals/

Allow students an opportunity to remix the code. They could change the Magic 8 Ball's responses.

As a Language Arts extension, students could write down possible questions they could ask the Magic 8 Ball. Have a discussion about open vs. closed questions.

As a art extension, have students using crafting materials to create their own crystal Magic 8 Ball.

Project #3: micro:bit Hogwarts Sorting Hat (101Computing.Net) (30+ minutes)
https://www.101computing.net/bbc-microbit-hogwarts-sorting-hat/

Using the micro:but MakeCode Editor, students will program their micro:bit to act as a sorting hat.

As an art extension, students could design their own sorting hat that the micro:bit can be attached to.

Connecting Scratch to micro:bit
https://scratch.mit.edu/microbit

Magic Wand (Scratch 3.0 + micro:bit) from Pinky Pepper:
https://www.youtube.com/watch?v=8MozA-c9018

micro:bit.org Magic 8 Ball
https://microbit.org/en/2017-03-07-magic-eight/

Variables:
Code.Org Video:
https://www.youtube.com/watch?time_continue=1&v=DI7DprN4FtE

Conditional: If...Then...Else Statements
Flocabulary Conditional Video
https://www.flocabulary.com/unit/coding-conditionals/

micro:bit Hogwarts Sorting Hat (101Computing.Net)
https://www.101computing.net/bbc-microbit-hogwarts-sorting-hat/

Assessment

Formatively Assess:

Is the student able to independently follow coding instructions?

Does the student have a growth mindset and is able to troubleshoot bugs that may arise?

Is the student able to take risks and create some of their own code?

Extensions

Allow students the opportunity to create some of their own code (remix the projects).