CANADA LEARNING CODE

HEADS-UP with micro:bit

By: Lisa Anne Floyd
Duration: 2 hours

LEVEL	SUBJECTS	PROVINCES / TERRITORIES	TOOL
Grades 6-12	Any	All	micro:bit

Overview

In this lesson, learners will tinker with premade programs, learn about variables and arrays, and code their own Heads-Up game using micro:bit. The topics can be anything from characters in a book to parts of a cell.

Prep Work

Technology (per learner)

- Laptop

Before the lesson...

- ❑ Code/build the lesson's main project, ensuring you are comfortable with all steps
- ❑ Share the slides with learners: bit.ly/headsup-student
- ❑ Create a Kahoot account in order to access the Kahoot game: bit.ly/headsup-kahoot

Lesson

Have learners follow along using the interactive slides: bit.ly/headsup-student. If learners have a Google

Key Coding Concepts

- Algorithms
- Arrays
- Variables

Terminology

Algorithm

A step-by-step set of operations to be performed to help solve a problem.

Arrays

An array is a data structure that holds similar, related data. An array is like a collection of boxes, each of which is called an element . Each element has a position in the array, and can hold a value. The data in an array must all be of the same data type. (Retrieved from: bbc.co.uk)

Account, they can also make a copy.

Here's an overview of what to expect on the slides:

1. Watch a short video clip of Ellen and her guest playing her version of Heads-Up.
2. Learn about the anatomy of the micro:bit and the various code editor options.
3. Tinker with premade applications.
4. Learn about variables and arrays.
5. Complete a Kahoot quiz to check understanding.
6. Code a Heads-Up game for the micro:bit (having a micro:bit is optional).
7. Write a short reflection.

Assessment

The quiz is meant to check the learners' understanding of variables and arrays to determine next steps.

The learners can share their Heads-Up code with the educator.

Once the Heads-Up application has been created, learners can play the game with one another and provide clues.

Learners can submit their one paragraph which is connected to Social-Emotional Learning.

Variable
Stores a piece of information i.e. score of a game that increases by 1 value for each goal

Curricular Connections

To see how this lesson maps to provincial curricula, visit bit.ly/CLClessons.

References

micro:bit
https://microbit.org/

Tinkering Activity
http://bit.ly/tinkering-mystery-programs

Kahoot Quiz
http://bit.ly/headsup-kahoot

Coding their Heads-Up Game - Guided Materials
http://bit.ly/headsup-guided-materials

Extensions

Coding extensions are provided within the guided materials: bit.ly/headsup-guided-materials

If learners are onsite, they can play each others' games.

Tinkering with Mystery Programs

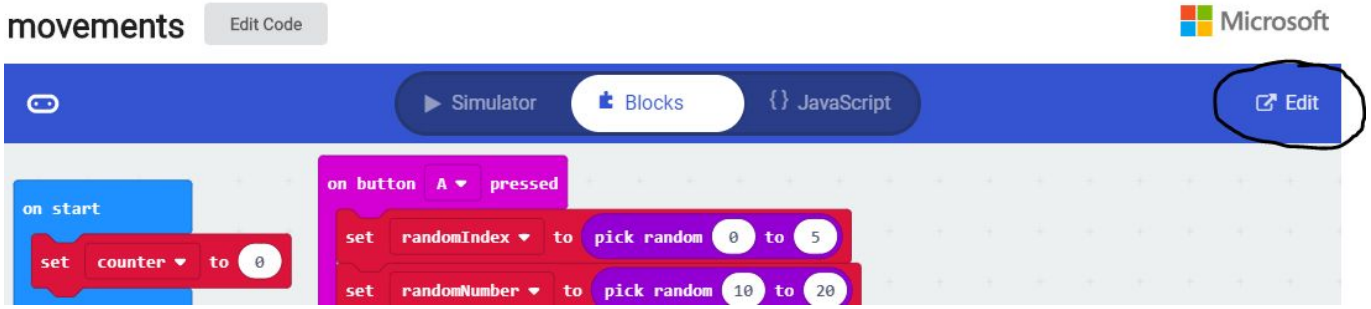
Tinkering with Programs

We will explore two premade applications. Click on each link and play around.

Mystery Program 1:

bit.ly/mysteryprogram1

Once at this link, select *Edit*, so you can edit the code and interact with the micro:bit simulator.



Tinker with the first Mystery Program.

If you're not sure where to start, check out the guiding questions in blue below.

Mystery Program 2:

bit.ly/mysteryprogram2

Tinker with this second Mystery Program.

If you're not sure where to start, check out the guiding questions in blue below.

Guiding Tinkering Questions...
What do you think the code does (educated guess)? What does each button do? What happens when you change some of the words in the array? What is the purpose of button B? Make an educated guess about the purpose of this program. How might you change this program?