CANADA LEARNING CODE

micro: virtual pet

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Duration: 3 hours

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

Overview

Students will plan and design their own micro: virtual pet. Then students will animate their own pets. This lesson includes three different options for students to animate their pet (based on age and ability).

**Recommended to run the lesson over three sessions*

Prep Work

- Some previous experience with micro:bit would be beneficial
- Instructor should review Micro:bit Quick Start Guide: https://microbit.org/guide/quick/
- Crafting materials (for micro: virtual pet) including: cardboard, plastic cups, cans, duct tape, pipe cleaners, popsicle sticks, foam, etc.
- Unplugged: Prototype Design Plan & Reflection Sheet (photocopy for each student)

Lesson

1. Review micro:bit functions
2. Hand out Prototype Design Planning Sheet and allow time to complete (for exemplars of

Key Coding Concepts

- Algorithms
- Function
- Loops
- Design Thinking and Innovation

Terminology

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

Function: a type of procedure or routine that performs a distinct operation

Loops: running the same sequence multiple times

References

Micro:bit Quick Start Guide

projects see MakeCode micro:bit Pet Project: https://makecode.microbit.org/courses/csintro/making/project

3. Provide students with crafting material and allow them to create their micro: virtual pet. (*note: The pet should be able to hold the micro:bit and battery pack. The micro:bit's face should be showing. Also, the micro:bit should be able to be easily turned on and off)

4. Animate your virtual pet:

   Option A (already created code):
   Micro-pet: includes videos, detailed instructions and exemplars. Students will download the already created code to animate their own pet.
   http://bit.ly/bbc-micro-pet-advanced

   Option B (basic):
   Create a basic animation (such a happy and sad face)
   Micro:bit MakeCode Smiley Buttons Activity
   http://bit.ly/smiley-buttons-activity

   Option C (intermediate):
   Complete Code.Org micro:bit Functions for a Digital Pet Lesson (approximately 60 minutes)
   In this task students will create their own micro:bit pet with 3 function calls. Inserting icons or changing LEDs can create a new pet. Students will tell a story about their pet and why it does the actions they chose.
   http://bit.ly/functions-digital-pet

https://microbit.org/guide/quick/

MakeCode micro:bit Pet Project
https://makecode.microbit.org/courses/csintro/making/project

Tech Will Save Us: Micro-pet
https://make.techwillsaveus.com/microbit/activities/micro-pet-advanced
*includes student examples (scroll to bottom of website)

Micro:bit MakeCode Smiley Buttons Activity
https://microbit.org/en/2017-03-07-smiley-buttons/

Virtual Pet (Code.Org)
https://microbit.org/en/2017-12-04-code_org_course_e_functions_2/

Digital Maker: Virtual Cat 3-4 hours intermediate project (extension activity)
https://www.imda.gov.sg/digitalmaker/make/2017/07/12/virtual-cat

Assessment

Create your own design rubric or use the one provided (see below).

Code.Org micro:bit Functions for a Digital Pet Lesson includes a short answer quiz on the use of functions:
http://bit.ly/functions-digital-pet

Extensions

Challenges:

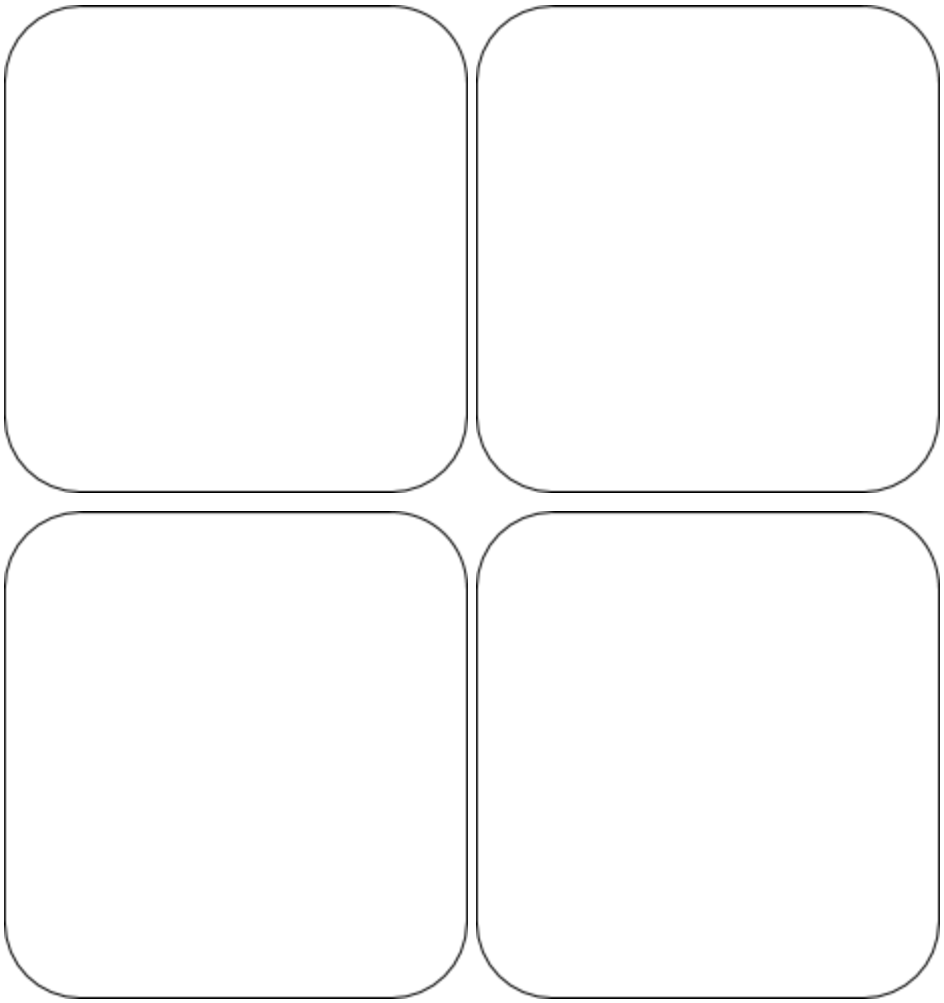
- ★ Make the pet move.
- ★ Create a cage or habitat for the pet.
- ★ Create an pet that reacts when you touch it (find a way to detect when the micro:bit is moved or when its position changes in a certain way.)
- ★ Additional challenge: Digit Maker: Virtual Cat 3-4 hours intermediate project http://bit.ly/virtual-cat
- ★ Share this with students: A micro:bit Star at 11 Years-Old (created her own animations) http://bit.ly/abbie-animation

Micro: Virtual Pet Prototype Plan

What kind of pet would you want to have?

- Your pet should be able to hold the micro:bit and battery pack.
- The micro:bit's face should be showing.
- You should be able to be able to easily turn on and off the micro:bit.

Sketch a few of your ideas:



Think about what materials you could use and choose your best design.

Start creating!!
When you are done creating, think of a name for your micro: virtual pet

Reflection:

What is your favourite part of your micro: virtual pet design?

What was something you enjoyed during your micro: virtual pet design?

How could your micro: virtual pet be improved?

What was something you find challenging? Why?

Developing a micro:pet: Student Self- Assessment Rubric

Name(s):
Date:

	Outcomes Not Met (needed support)	Met Outcomes (acceptable)	Exceeded Outcomes	Comments:
Developing a micro:pet Planning Sheet is complete				
Able to independently download (or create) program (function animation) to micro:bit				
micro:bit's face is displayed and the battery pack is supported				
micro:bit can be easily turned on and off				
Reflection is thoughtful				
Able to troubleshoot (debug) any issues				

Developing a micro:pet: Assessment Rubric (Instructor)

Name(s):
Date:

	Outcomes Not Met (needed support)	Met Outcomes (acceptable)	Exceeded Outcomes	Comments:
Developing a micro:pet Planning Sheet is complete				
Able to independently download (or create) program (function animation) to micro:bit				
micro:bit's face is displayed and the battery pack is supported				
micro:bit can be easily turned on and off				
Reflection is thoughtful				
Able to troubleshoot (debug) any issues				