CANADA LEARNING CODE

Birthday Sort

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Duration: 15 minutes

LEVEL	SUBJECTS	PROVINCES / TERRITORIES	TOOL
Grades 1-3	Science and Technology Mathematics	Across Canada	Unplugged

Overview

In this inquiry-based offline activity, students will learn about algorithms and how they help computers move through enormous amounts of information in a short amount of time.

Prep Work

- Make enough space in the classroom for students to easily move around

Lesson

Introduction

Algorithms are a list of rules to follow in order to solve a problem. We use these everyday and may not notice. To better understand how algorithms work we will practice one in real life.

Key Coding Concepts

- Algorithms
- Loops
- Sequences

Terminology

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

Loops
Running the same sequence multiple times i.e. repeat or forever blocks

Sequences
Identifying a series of steps for a task. Computers and Scratch read and perform commands in order from top to bottom

Activity

1. Instruct students to organize themselves in a line from youngest to oldest after you say GO! BUT, they will have to organize themselves in complete silence.
2. Time students as they line up.
3. Once students have finished, tell them the time that they made.
4. Now have students sort themselves again. See if they can beat their initial time.
5. Announce the time again, and ask students:
    a. What was different between the first sorting time and the second?
    b. What strategies did they use to communicate?
    c. What strategies did they decide on to sort themselves?
    d. Was there a leader?
6. The type of algorithm that students practiced is called a sorting algorithm. Software developers ask the same questions above as they develop computer programs. Sorting algorithms help computers sift through large sets of data or information quickly.
7. If you have time, watch these silly videos for fun. They show dancers enacting different sorting algorithms: https://www.youtube.com/user/AlgoRythmics

Assessment

Assess students' ability to collaborate and communicate as a group.

Extension

Have students research an algorithm to learn more about how it works.

Have students act as representatives of their algorithms and debate why theirs is best.