

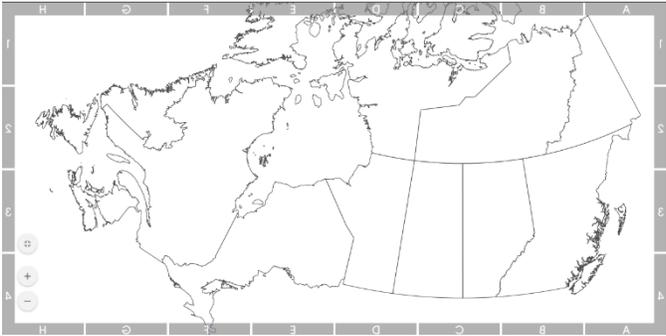
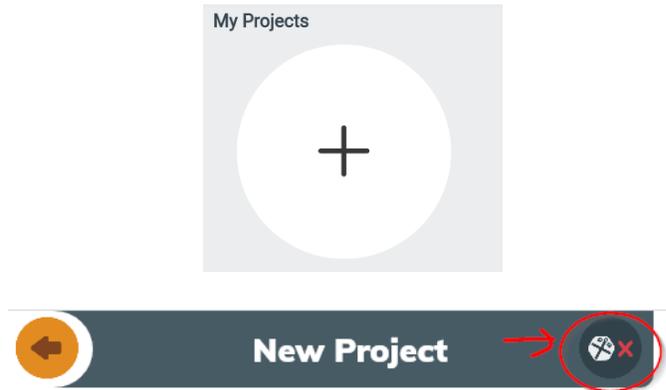
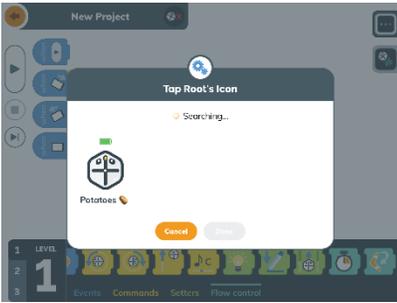
Canadian Geography and Root

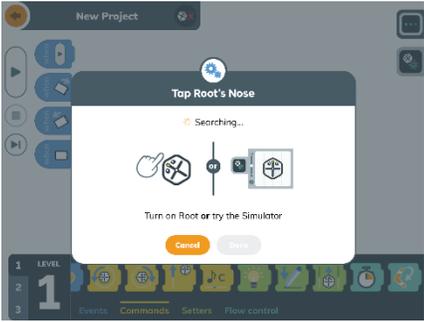
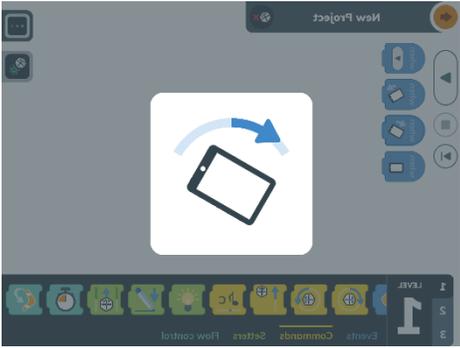
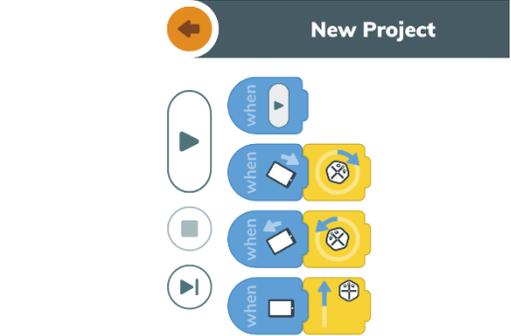
Introduction

Students will use a laminated map of Canada to design a path travelling to each of the 14 capital cities in the country. Working in groups of 4, they will compete to see who can travel the most efficient path around the country, while hitting every capital.

Materials:

Ipads (enough for one to every two students), Root Robots (1:2 students), laminated maps of Canada (1:4 students. Available in LRC Root kits), dry erase markers (in LRC Root kits), dry towels or paper towel to erase lines (1:2 students), Large tables or solid, flat, clean surface to place maps.

Steps	
1	 <p>Divide Students into Groups of 2</p> <p>Then put two groups together to make 4 students</p> <p>Give each student group a Robot, an Ipad, two different coloured dry erase pens, and a laminated map of Canada</p>
2	 <p>Have students create a new project by clicking on the + sign (left)</p> <p>Then have students connect to their robot by clicking on the icon to the right of the project label.</p>
3	 <p>When students click on the connection icon, a list of available robots should show up on the screen. Available robots are robots that are turned on but they are not currently connected to any ipad apps.</p> <p>Your robot should be turned on and you will know if it is yours when, if you click on its name, it lights up blue at the same time. Click 'done' when you have selected your robot.</p>

4		<p>If your robot is not turned on, and no other robots are available, the screen to the left will appear. Make sure your robot is turned on!</p> <p>You turn on your robot by pressing the yellow 'nose' of your bot for two seconds. You will know it is turned on because the 'eyes' will light up and it will make a little sound.</p>
5		<p>Students will then begin creating their new project. Have them name it 'Drive' so that they know which project it is.</p>
6		<p>Show students on the white-board screen what the 'Drive' program should look like.</p> <p>They will first pull up the 'marker' function onto the "When Play" setting</p>
7		<p>They will then pull up three laptop sensor settings from the blue section labelled 'events'.</p> <p>Each of these laptop sensors will be modified by clicking on the icons on your working screen.</p>
8		<p>The three laptop sensors can be set to the following events:</p> <p>Slight turn right</p> <p>Slight turn left</p> <p>Straight</p> <p>These are the best settings for the activity below</p>
9		<p>Now, have students pull up three commands to correspond to each laptop movement event:</p> <p>Slight turn right + 30 degree right turn</p> <p>Slight turn left + 30 degree left turn</p> <p>Straight + 4 cm movement forward</p>

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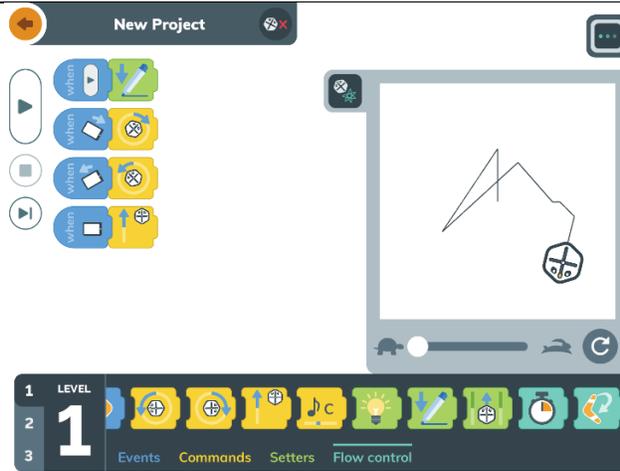
The importance of having **smaller movements** left, right, and straight cannot be overstated. Wide turns and big forward movements do not allow for control of the device. Have students mimic your program as much as possible for the best results.

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Now your program should look like this (see left).

12



Students will now begin practicing 'driving' their robot. Have them practice in the simulator for at least 5 minutes before beginning the challenge. Some students struggle with imagining that the robot's perspective is different from their own. This is particularly true of younger students.

Note that the simulator is on the upper-right hand side of the screen. The icon is a root robot above a star shape.

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Have the students label their map with all 14 capital cities (including the capital cities of the Territories). It's best to have a **sample map** on your whiteboard or blackboard with each city already labelled.

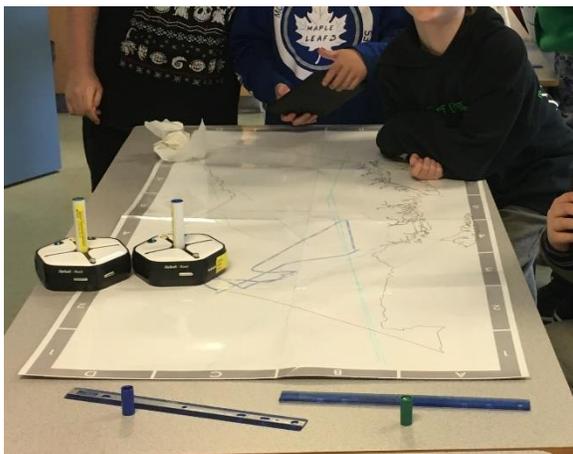
Depending on time, you may want to discuss the names of all the capital cities and the provinces, just to reinforce the learning.

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Once they have done this, each group of two should take a turn 'driving' across the country, with the goal of hitting every single one of the capital cities in the most efficient way possible.

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Each student should have a turn, and make sure each group has one blue and one green marker so that they can easily measure their distances with a ruler and compare notes.

Take tons of photos! Students love to show off their learning and the number of cross-curricular benefits from activities like this one are so fertile for growing new ideas.

It is so important to debrief after ADST lessons. Take the time to review the learning with your students and remind them of all they have achieved in such a short time!



Tips...

1. If student robots are moving slowly, have them go completely out of the app (press the home button) to disconnect from their robot. When they go back in, they can reconnect and the robot should go much faster.
2. For best results, have students rename their robot at the beginning of the lesson. This way, when they accidentally disconnect from their robot (as they inevitably will), they will easily be able to find their bot on the list. The robot re-naming function is available in the 'Hello' program (see below for icon)



3. Students can also use their pens to design their robot to set it apart from other bots. Just remember to wipe clean with a dry cloth afterward!