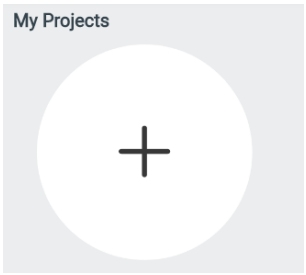
BC Natural Resources and Root

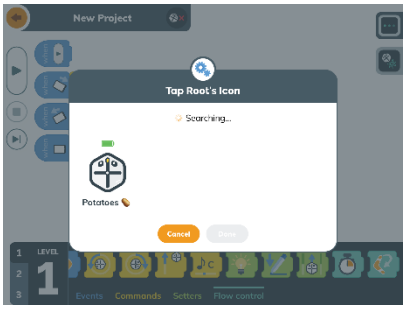
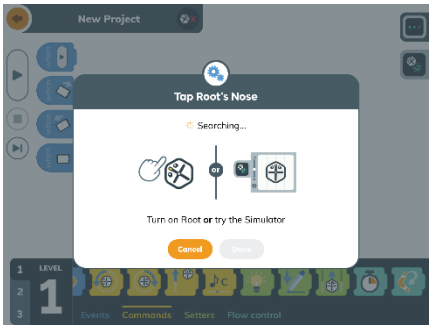
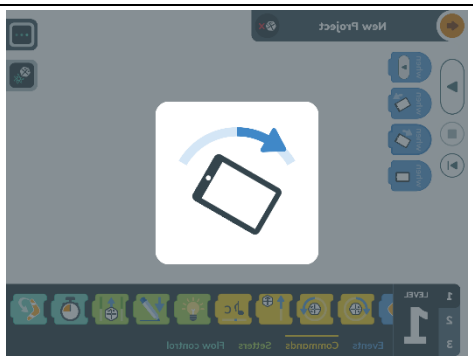
Introduction

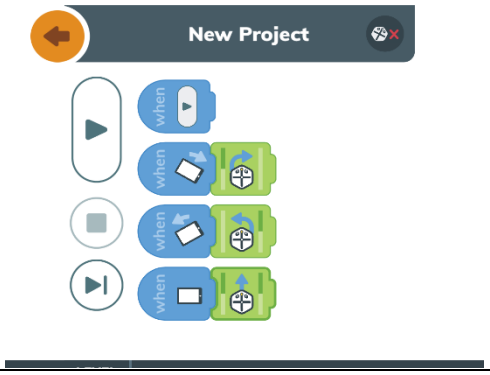
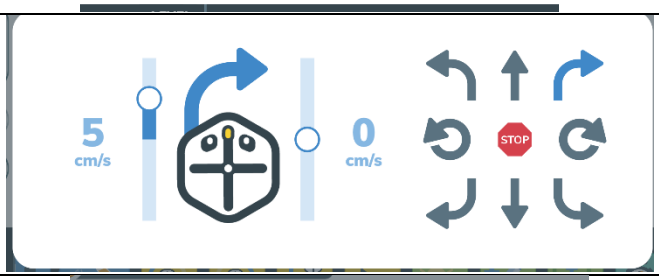
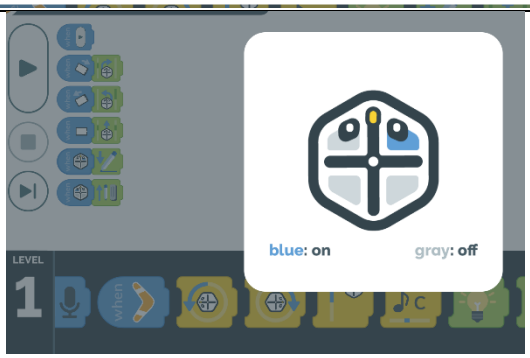
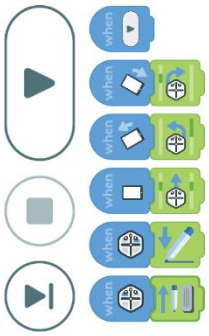
Students will use a laminated map of BC to design a visual message about BC resources. Working in groups of 4, they will create a visual map of where their natural resource can be found. Resource suggestions: lumber, fishing, hydro-electricity, coal, oil deposits, farming/ranching. Select 5 or 6 different resources and give each student group of 4 a different resource to report on. Allow students *at least* 3-4 hours of class time before commencing this lesson to research their resources and locate where they can be found in BC.

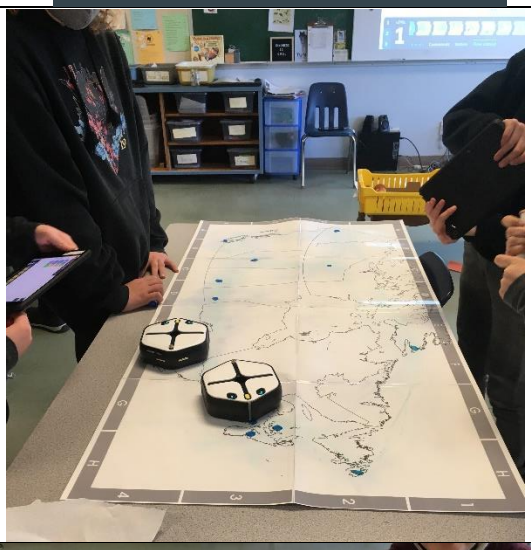
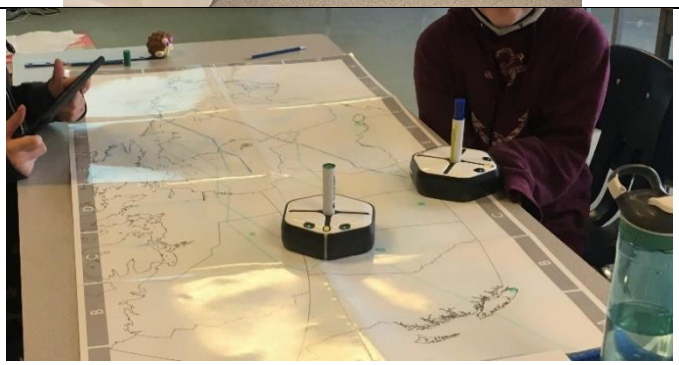
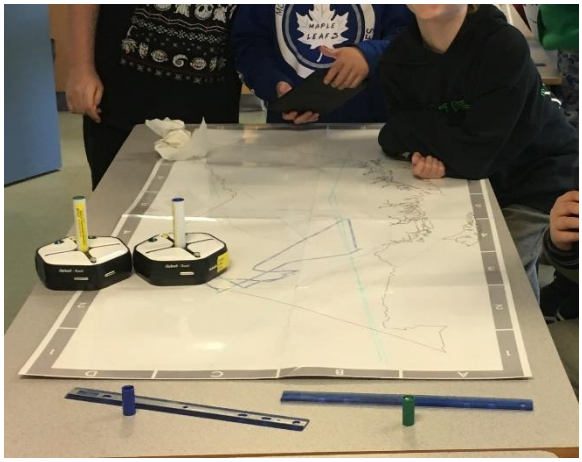
Materials:

Ipads (enough for one to every two students), Root Robots (1:2 students), laminated maps of BC (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		Divide Students into Groups of 2 Then put two groups together to make 4 students Give each student group a Robot, an Ipad, two different coloured dry erase pens, and a laminated map of BC
2	 	Have students create a new project by clicking on the + sign (left) Then have students connect to their robot by clicking on the icon to the right of the project label.

3		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. 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.
4		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! 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.
5		Students will then begin creating their new project. Have them name it 'Drive' so that they know which project it is.
6		Show students on the white-board screen what the 'Drive' program should look like. The best option is to use a student ipad for all visual instructions
7		Students will pull up three laptop sensor settings from the blue section labelled 'events'. Each of these laptop sensors will be modified by clicking on the icons on your working screen.
8		The three laptop sensors can be set to the following events: **Slight turn right** **Slight turn left** **Straight** These are the best settings for the activity below

9		Now, have students pull up three green wheel setters to correspond to each laptop movement event: **Slight turn right + 5 cm per second** **Slight turn left + 5 cm per second** **Straight + 5 cm per second**
10		The importance of having **slower 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.
11		Now, drag in two 'When Touch Sensor' Events from the blue events section. Turn off all but the front right quadrant on the first, and turn off all but the front left quadrant on the second. Pull out a marker sensor on both. (From the green setters section)
12		Change the second marker sensor to lift up when the upper left quadrant is touched. The first can remain as a regular marker sensor, so that when the upper right quadrant is touched, the robot will begin marking the page. When the left upper quadrant is touched, the marker will lift up.
13		Now your program should look like this (see left).

14		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.
15		Have the students now use their new driving/writing program to highlight the areas on their map of B.C. that are most associated with their chosen natural resource. For example, if they have chosen ‘fisheries’, they will want to focus on coastline areas and large lakes/rivers in the interior. You can also have them label the locations after they have completed their maps to reinforce the learning. Have each group use a different-coloured pen for best results!
16		Groups of two people can work together best by having one student operate the touch sensors, while the other student operates the ipad for driving. The program forces students to work together as a team in labelling their map.
17		Each student should have a turn driving and using the touch sensor so that both benefit from working the entire program. Have students display their finished maps at the front of the room when completed. Since each student group has focused on a different natural resource, each map should look completely different! The resulting visuals will allow the entire class to learn about B.C.’s natural resources.

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!