

**CODE/MOE/UOIT Makerspaces Project--Lesson Planning Template**

**School Board: GECDSB**

**Grade(s): Early Years**

**Subject(s): BC, SRWB, DLMB, PSI**

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| **BIG IDEAS:** Continue to develop the concept of block coding to control robots.**Curriculum Expectations:****OVERALL:**1. communicate with others in a variety of ways, for a variety of purposes, and in a variety of contexts (BC, SRWB, DLMB, PSI)

4. demonstrate an ability to use problem-solving skills in a variety of contexts, including social contexts (BC, SRWB, PSI)10. demonstrate literacy behaviours that enable beginning writers to communicate with others (DLMB)16. measure, using non-standard units of the same size, and compare objects, materials, and spaces in terms of their length, mass, capacity, area, and temperature, and explore ways of measuring the passage of time, through inquiry and play-based learning (DLMB)**SPECIFIC:** **1.2** listen and respond to others, both verbally and non-verbally (e.g., using the arts, using signs, using gestures and body language), for a variety of purposes (e.g., to exchange ideas, express feelings, offer opinions) and in a variety of contexts (e.g., after read-alouds and shared reading or writing experiences; while solving a class math problem; in imaginary or exploratory play; in the learning areas; while engaged in games and outdoor play; while making scientific observations of plants and animals outdoors)**BC, PSI****1.6** use language (verbal and non-verbal communication) to communicate their thinking, to reflect, and to solve problems **SRWB, DLMB** **4.1** use a variety of strategies to solve problems, including problems arising in social situations (e.g., trial and error, checking and guessing, cross-checking – looking ahead and back to find material to add or remove) **SRWB, BC, PSI****10.2** demonstrate an awareness that text can convey ideas or messages *(e.g., ask the educator to write out new words for them)* **DLMB** **10.3** write simple messages *(e.g., a grocery list on unlined paper, a greeting card made on a computer, labels for a block or sand construction)*, using a combination of pictures, symbols, knowledge of the correspondence between letters and sounds (phonics), and familiar words **DLMB**16.2 investigate strategies and materials used when measuring with non-standard units of measure (e.g., why feet used to measure length must be placed end to end with no gaps and not overlapping, and must all be the same size; why scoops used to measure water must be the same size and be filled to the top) **DLMB** |
| **Learning Goals:**“We are learning to…”* read/write block coding
* design code that meets a specific challenge
 | **Success Criteria:** “We will be successful when we…”* move the Dash from one point to another using block code
* make a code that keeps the Dash on our tile path
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| **Lesson Overview:**During a whole group circle introduce the Dash, talk about how to use and take care of them and do a few short demos with the Dash. During play work with small groups to code the Dash. |
| **Materials and Technology:** * Large carpet area
* 4 Dash
* 4 iPads with Blockly Jr. app
* a dozen floor tiles
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| **Student Accommodations/Modifications:** * time to freely explore Dash before trying challenges.
 | **Lesson will be differentiated by:*** lesson will be open enough to allow multiple entry points to making a simple code.
* use of Blockly Jr. allows students with limited language and ELLs to participate.
* students will be supported in designing code and using iPads.
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| **MINDS ON: Getting Started** |
| During this phase, the teacher may: • activate students’ prior knowledge; • engage students by posing thought-provoking questions; • gather diagnostic and/or formative assessment data through observation and questioning; • discuss and clarify the task(s).  | During this phase, students may: • participate in discussions; • propose strategies; • question the teacher and their classmates; • make connections to and reflect on prior learning.  |
| **Describe how you will introduce the learning activity to your students.** * whole class sitting at the edge of the carpet. Ask them about what we did last week in the gym and in our class with the BeeBots (see lessons: Early Years Intro to Coding 1- Phys Ed & Early Years Intro to Coding 2 - BeeBots). Let students talk about what was fun, easy, challenging with the coding activities.
* “Today I have another robot to show you.” Bring out one Dash and turn it on. Connect it to an iPad using Blockly Go. Ask the students to make a same/different comparison with the BeeBot. Lead a discussion on caring for our Dash robots (always carry with two hands, use the iPad to make them move rather than pushing/pulling, handle the iPad with two hands, keep the Dash on the carpet area)
* Connect the iPad to an appleTV so that the students can see the control panel as the teacher explains how to make them move. Activate another Dash and connect to a second iPad. As the students sit at the edge of the carpet have them pass the iPads around so that each student gets to control one of the Dash. Once all have tried it set one Dash aside and open the Blockly Jr. app. “It is fun to drive the Dash around the carpet. I want to show you another way to give them instructions. This is called Blockly Jr. and with this app we can give our Dash a whole string of actions we want it to do.” Click on the Dash icon to pull up the movement blocks. “What does this remind you of?” Lead them to the arrows and how we used arrows on the cards and on the BeeBots to make our lines of code. “With the Dash we can make and send our codes with the iPad.” Drag a forward block and connect it to the play icon. Ask the students if they heard the “click” when it was connected. Add two more forward blocks and demonstrate how the Dash moves. Show the students some of the other commands that can be added to the code.
* Tell the students that we will have 4 Dash in our room for the next few days and that if they would like to try coding them they can join me on the carpet. “How many do you think would be a good number to have working at the carpet at one time?” Establish a number (1 per Dash or working in pairs) and make it clear that if you don’t go first you will still have the opportunity to work with the Dash later. Have the student make a plan for active learning time. (Teacher may need to select the first round of friends for the Dash).
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| **ACTION: Working on it** |
| During this phase, the teacher may: • ask probing questions; • clarify misconceptions, as needed, by redirecting students through questioning; • answer students’ questions (but avoid providing a solution to the problem); • observe and assess; • encourage students to represent their thinking concretely and/or pictorially; • encourage students to clarify ideas and to pose questions to other students. | During this phase, students may: • represent their thinking (using numbers, pictures, words, manipulatives, actions, etc.); • participate actively in whole group, small group, or independent settings; • explain their thinking to the teacher and their classmates; • explore and develop strategies and concepts.  |
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| **Describe the task(s) in which your students will be engaged.** * in small group start by helping the students open Blockly Jr. and connect to one of the 4 Dash. Give each Dash a floor tile (could use a piece of paper) that will be its Home Base. When students are programming the Dash can sit on the tile (one in each corner of the carpet so they are spread out.)
* Challenge 1 “Tile to Tile”
* In the middle of the carpet the teacher can place 4 more tiles. Students must make a string of code using Blockly Jr. to make the Dash travel in a straight line and stop/touch their target tile. Teacher will have to move around and help individuals/pairs as the work through trial and error. As the students become more comfortable with the block coding the tasks can become more complex (eg. make your Dash go to a target tile and then come back to Home Base, make your Dash go to a target tile then visit someone else’s Home Base, make your Dash touch two target tiles, touch three target tiles and come back, etc.)
* Challenge 2 “Stay on the Path”
* The teacher (or students) can create a path by laying several tiles end to end. This could make a straight line, an “L” shape, a Zig Zag shape, etc. The students then have to try to make a code that would get the Dash from one end to the other while staying on the path. This takes a lot of trial and error with the students adding/taking away blocks. They can work in pairs or triads to encourage communication. Teacher can listen for/encourage directional language.
* Challenge 3 “Race to a …”
* after they have experimented with coding let them go back to Blockly Go. Place all Dash on their Home Base. In the middle of the carpet you can place targets (could be letters, numbers, colours, shapes). If using numbers from 1-20 for example, teacher can call out “7” and the students race the Dash to the number 7. First Dash to stop on the number gets to bring it to home base.

**What misconceptions or difficulties do you think they might experience?** * unrelated to tech, they may have trouble taking turns. If they cannot work it out themselves the teacher may need to establish roles in the small group/partnership that the students can work through.
* using the block coding takes patience and could be frustrating for some EY students. Teacher needs to know their students and monitor/assist to help keep it a positive and successful activity.

**How will they demonstrate their understanding of the concept?*** they are able to code the Dash to move from a start and end point. As they become more proficient they will be able to make it move to multiple points.

**How will you gather your assessment data (e.g., checklist, anecdotal records)?*** take photos and add anecdotal comments later
* make a Learning Story for student
* start a Document Panel around coding and robotics

**What extension activities will you provide?** * students will have access to the Dash over the next few days. Encourage them to create new challenges/games for their peers to try
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| **CONSOLIDATION: Reflecting and Connecting** |
| During this phase, the teacher may: • bring students back together to share and analyse strategies; • encourage students to explain a variety of learning strategies; • ask students to defend their procedures and justify their answers; • clarify misunderstandings; • relate strategies and solutions to similar types of problems in order to help students generalize concepts; • summarize the discussion and emphasize key points or concepts.  | During this phase, students may: • share their findings; • use a variety of concrete, pictorial, and numerical representations to demonstrate their understandings; • justify and explain their thinking; • reflect on their learning. |
| * Sharing Circle
* at the end of each day have a few students that worked with the Dash share with the class what they did (demo a string of code, explain a new game/challenge they made up)
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