Unit Planner

North Vancouver
School District
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Overview			
Subject:	Introduction to Coding	**Topic:**	I Can Code!
Unit Overview:	Introduction to comptuer coding for grades 1-2.		
Grade:	1-2		
Unit Duration:	6-8 lessons	**Date:**	October 30 2017

Stage 1 – Desired Results

Big Ideas

Skills can be developed through play.

Technologies are tools that extend human capabilities.

Core Competencies

- I get ideas when I play.
- I make my ideas work or I change what I am doing.
- With some support, I can be part of a group
- I am kind to others, can work or play co-operatively, and can build relationships with people of my choosing
- I can work with others to achieve a common goal; I do my share
- I can explore materials and actions
- I can show a sense of accomplishment and joy

Concepts	Unit Understandings	Transfer Goals	Essential Questions
- Systems - Cause and effect	**Students will understand that…** - I can use my words to ask others to do tasks. - Left and right are ways of distinguishing direction. - I can control the computer with the mouse and keyboard. - Computers receive directions from users. - The computer is a tool I can use to accomplish tasks. - Coding is a sequence of tasks that a programmer gives a computer. - I can use coding to create products or actions online.	**Students will be able to independently use their learning to…** - I can use my words or actions to give directions and accomplish tasks.	**Students will keep considering…** How can I express myself to achieve a goal?

First Peoples Principles

- Learning is holistic, reflexive, reflective, experiential, and relational (focused on connectedness, on reciprocal relationships, and a sense of place).

Alignment Check:
Are your concepts, unit understandings, transfer goals, and essential questions connected and supportive of your Big Idea?

Curricular Competencies	Content
Students will be skilled at…	**Students will know that…**
• Use materials, tools, and technologies in a safe manner in both physical and digital environments • Develop their skills and add new ones through play and collaborative work • Explore the use of simple, available tools and technologies to extend their capabilities	• Students are expected to use the learning standards for Curricular Competencies from Applied Design, Skills, and Technologies K-3 in combination with grade-level content from other areas of learning in cross-curricular activities to develop foundational mindsets and skills in design thinking and making.

Stage 2 – Evidence: Assessing for Understanding

Assess: Understanding

Summative: Culminating Performance Task(s) at the end of the unit to show understanding	Formative: Checkpoints for understanding during the unit
Teachers should consider how assessment should be differentiated to meet students' diverse needs, interests, and learning styles.	Teachers should consider how formative assessment is ongoing, varied, and central to the instructional learning cycle.
AUTHENTIC PERFORMANCE TASK: **Assessing for Understanding** Students will be able to demonstrate their understanding by: In groups, students create messages or images on grids outside (or in gym) by giving each other simple directions, using coding language as learned on code.org. (e.g. flower, sun, letter, short word, etc.). More info below.	**OTHER EVIDENCE: Assessing for Knowledge and Skills** Students will show they have acquired Stage 1 knowledge and skills by: **FORMATIVE ASSESSMENT** • **Code.org progression through levels** • **Teacher monitoring: partner work, group work, class work (successfully competing tasks, using appropriate vocab, etc.)**

Assess: Know & Do

Summative: Final assessments of knowledge and skill at the end of the unit	Formative: Checkpoints for students to show their knowledge and skills during the unit
Teachers should consider how summative assessments should be based on clear criteria and include a variety of ways for students to show demonstrate their learning	Teachers should consider how this ongoing assessment is clear, specific, and timely in order to support student progress
SUMMATIVE ASSESSMENT (Teacher may use these examples as formative assessments) • See performance task	**FORMATIVE ASSESSMENT** • **Code.org progression through levels** • **Teacher monitoring: partner work, group work, class work (successfully competing tasks, using appropriate vocab, etc.)**

Stage 3 – Executing the Learning Plan

These learning events/activities are suggested activities. Some activities may span over several lessons. Teachers should add, revise, and adapt based on the needs of their students, their own personal preferences for resources, and a variety of instructional techniques.

UNIT HOOK

Coding unplugged activity where students practice responding to simple directions "turn left, turn right, move forward". (Consider using the squares of a tiled floor.) (More info at https://code.org)

Line students up in the gym, in the classroom, or outside and have them all face the same direction (towards you works best). Give students simple instructions to "turn to the left", "turn to the right", "move forward". Repeat until students are comfortable with right, left, etc.

Suggested Activities:

Intro to code.org:
- Teach students how to log into a computer, use the mouse, use the keyboard and load pages on safari
- Have students go to code.org and (optional) create a user account
- Work students through course 1 – intro to programming (3-5 classes, depending on if students work at home, student ability, familiarity with coding, etc.)

Course 1: https://studio.code.org/s/course1

Pencil-paper coding:
- Create basic designs on 4x4 grids (straight line, X, etc.)
- Explicitly review coding language, as seen on code.org (move forward, move left, move right, etc)
- As a class, have students give one person directions in front of the class (on a projector, smartboard, etc.) to recreate one basic design on a blank grid
- Give students grids of 4x4 blank boxes
- In pairs, students give instructions to a partner to recreate a design they have (students can create the designs ahead of time, or create them themselves).
- Students use instructions "move forward, move left, move right, colour it in"

More info: https://padlet.com/clarke/ADST (document "graph paper coding")

Walking & coding:
- Line students up in the gym, in the classroom, or outside and have them all face the same direction (towards you works best). Give students simple instructions to "turn to the left", "turn to the right", "move forward". Repeat until students are comfortable with right, left, etc.
- Chalk or tape grides on the ground (4x4 or 5x5) about 1 foot squared for each square
- Give students grids with grids that have certain squares coloured in
- As in paper coding, students give each other directions to move around the square "move left, move right, move forward" and "put a piece of paper down" (use coloured paper that matches the colours on the grids you distribute to students
- Use 3-4 students per grid (1 student giving instructions, 1 student per colour of paper) and have them change roles

Make a message (performance task):
- Give students blank grids (4x4 or 5x5) and have them create an image or short message (a sun, a flower, etc.) they want to recreate in person. Using only 1-3 colours will work best
- Set up grids outside, in the classroom, on the floor
- Students use the same skills as in previous activities to give each other direction to move around grid and "colour in" squares to reproduce their image.

Possible extensions:
- Do performance task at Earth Day, so students create earth-related images around the school ground
- Use google earth or maps to have students create routes around their neighbourhood on a printed map ("turn right, go straight", etc.) – e.g. school to home, home to grandma's house.
- Link to Google Earth Unit on My Community and Landforms – see other Grade 2 union on hub!
- Have students move on (at home or in school) in code.org lesson sequence
- Have students use Turtle Academy to create their names, or other images.
- SO many more coding unplugged activities. Check out the padlet (above) or google for more ideas!

Resources:

- https://code.org
- Paul Clarke and Justine Frazee – District Helping Teahcers for Technology
- https://padlet.com/clarke/ADST (Paul and Justine's website)
- https://turtleacademy.com/

What aspects of the unit went well?

What did students struggle with?

What did you struggle with?

What would you add/revise the next time you taught this unit?

Were there any unintended outcomes?

Were students engaged?