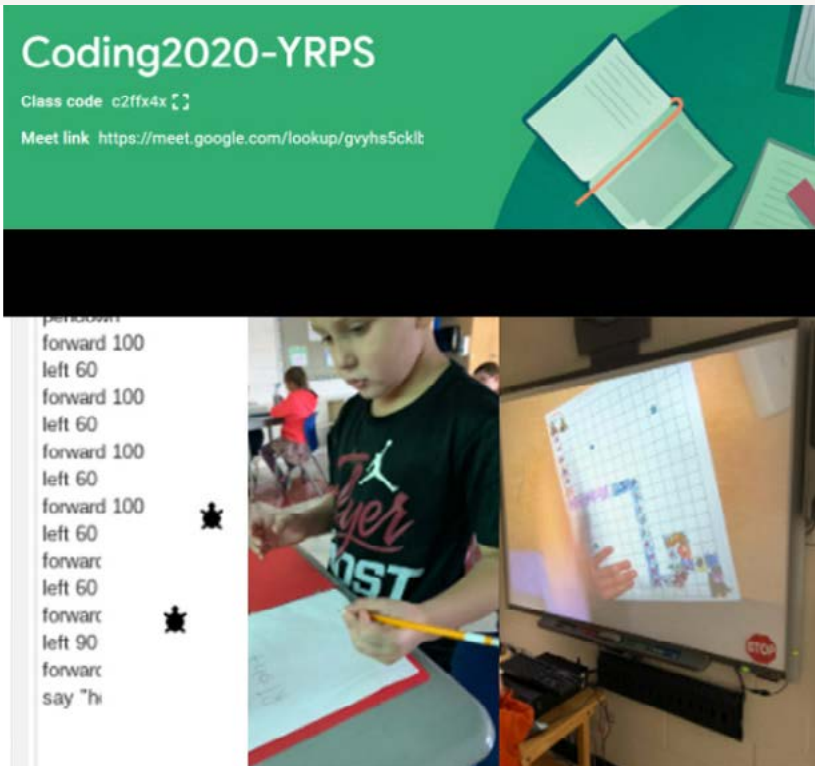
Coding Avec Les Frites (Snack Size Self-Regulation / Numeracy)

Team Members:
Sarah Vance, Amber Harrison, Nina Lambe, and Lisa Resmer
(All Classes participated in journaling for self-regulation as related to the new Mathematics Curriculum and Computational Thinking)

School District: Hastings Prince Edward DSB



What We Did

With this school-wide project we engaged our students and teachers in a new routine, with the leadership of our Principal Lisa Resmer and CYC Ashlynn Fuller. On Friday mornings, as a whole school both French and English classes have been engaging in a 30-minute writing task each week, using special self-regulation journals that were purchased with funds from this project. Our intention behind journaling has been to support students in literacy skills development; perseverance when writing; and thinking through the process of becoming an effective communicator. Over the announcements we have been sharing a specific prompt that relates to procedural writing tasks, with the goal that these questions are helping students develop procedural writing skills, that will eventually relate to the steps involved in coding and computational thinking. Examples of prompts students have considered are; "write a recipe for friendship, write about the goals you are setting for this year, and your action plan for achieving them, describe the steps you need to travel from your classroom to the yard, while safely social distancing."

At the beginning of our project we used an early literacy screen to gather data for our project. We also used a diagnostic tool that we developed, which asked students to sequence a three-step problem; determine the difference between left and right directions, and put a task in order using first, second, third steps. We asked students to tell us their understanding of the words "algorithm," "boolean," "code," and "mapping."

Moving forward we used a "Choose Your Own Adventure" strategy to help students take Turtle Walks, using grid paper, and obstacles on the grid paper. Students co-created the success criteria for giving directions and wrote simple commands using prompts that they would eventually see in Lynx.

When working in Lynx we have explored shapes such as squares, triangles and pentagons, while problem-solving both the direction our turtle needs to turn (i.e., 90 degrees, 30 degrees) in order to make a vertex that uses pendown to travel in the correct direction, and calculates the correct angle for the shape. For example, students have considered the questions, "Is it possible to make a triangle that has two 90 degree angles?" "What are the four angles in the interior of a square?"

We have developed object-oriented turtle tasks where turtle primitives can move North, South, East, West, at the click of a button to try to catch and capture a Canadian loonie coin. We are continuing our learning journey using a Google Classroom.

What We Learned

As a result of using computational thinking as a starting point, and beginning with journaling, we have considered that before computers can be used to solve a problem, the problem itself and the ways in which it could be resolved must be understood and problem-solved. This process has involved decomposing what it means to write an algorithm, a pattern, and a boolean "if-then" statement.

As educators we have a deeper understanding of the cornerstones of computational thinking. For example coding is purposeful, it is a set of steps, with a desired outcome. We have deeply considered algorithms and related the algorithms we see in mathematics to other every day tasks. For example, students have considered questions such as, "Is there an algorithm for making a treasure hunt? Is there an algorithm for washing our hands? Is there an algorithm for brushing our teeth?"

We have a deeper understanding of patterning and how this relates to coding in Lynx. For example, often we do not need to write more code, we simply need to use a command such as repeat, and then the amount of internals we seek repeated. We are relating patterning to programming.

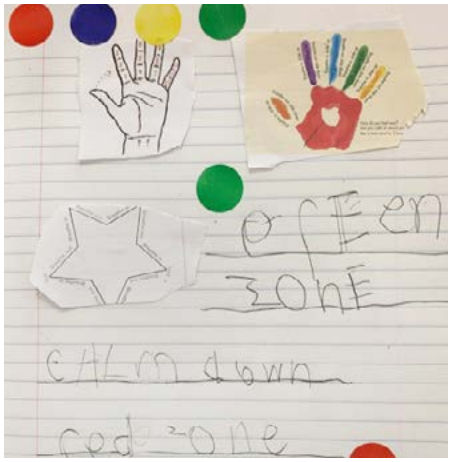
We have learned about decomposition as we abstracted what are the important steps involved in a procedural task. Students have considered sequencing as they isolated the steps that need to come first, second and third, while relating these to everyday tasks. We learned that in order to promote strong written communication it can be helpful to "act out" the steps we want to write about. For example, before writing about the steps needed to wash our hands, we acted out these instructions with an elbow partner, while asking ourselves if our elbow partner was being given the correct information needed to perform the desired task.

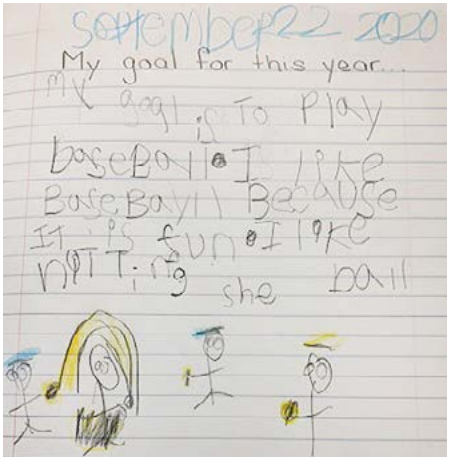
We have developed a greater understanding of Booleans. For example, during Turtle Tasks students wrote a "choose your own adventure," in order to get from point A to point B. Although students could take any route they desired, there were set obstacles on their grid paper. Depending on the route taken by students they would need to consider a Boolean, e.g., if I go straight 5 steps, then I will need to take 2 steps to the left, in order to go around the Otter in my path. If I travel straight 7 steps, then I will need to take a right turn.

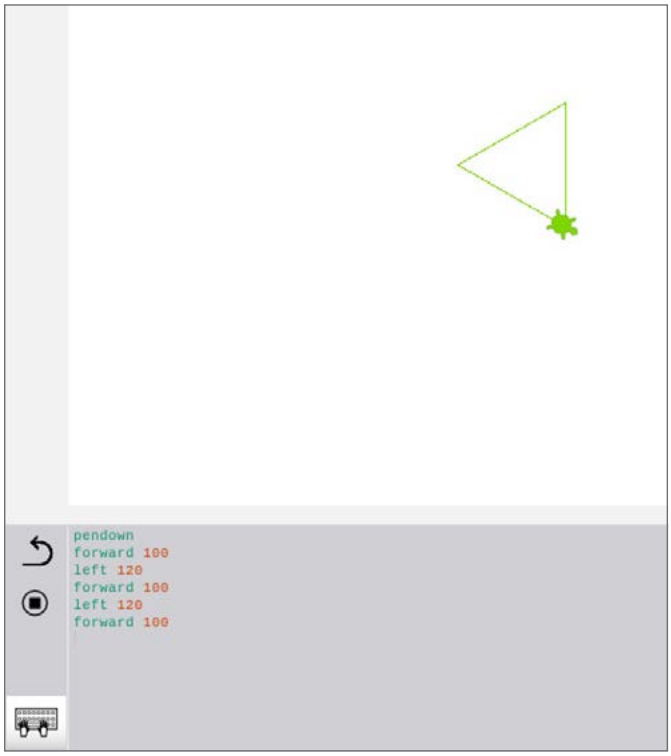
How We Shared Our Learning With Others

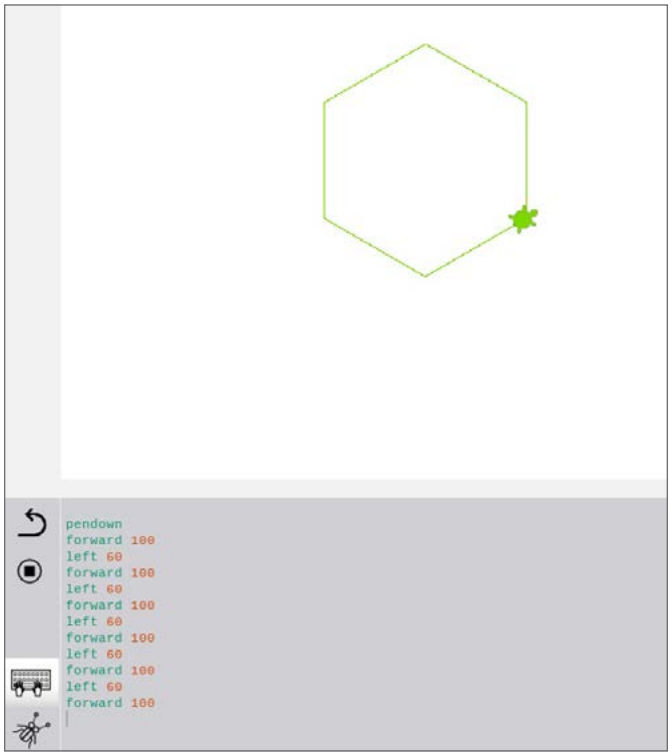
We are developing a Google Classroom that can be shared with colleagues who would like to see the progression of our learning. We have shared our work at a school level on bulletin boards, using success criteria and learning goals, along with student work samples. Our growing, rich journal tasks continue to be a living archive that students, parents, and teachers can reference to see growth over time. At a school level, descriptive feedback is being provided to students within their journals, and this informs next steps. Students are taking pride in their procedural writing success, and using this as a talking point with their teachers, as we link self-regulation to both numeracy and written communication tasks.

Links to Our Work









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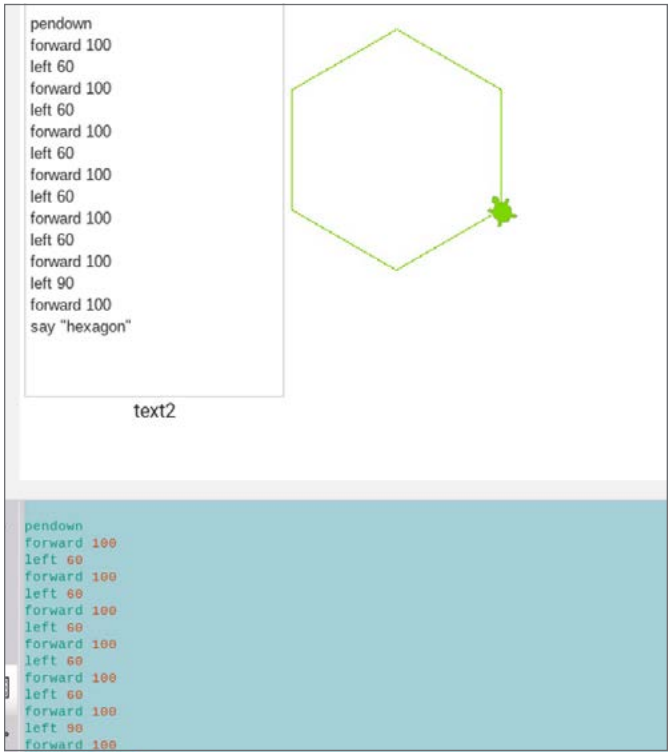

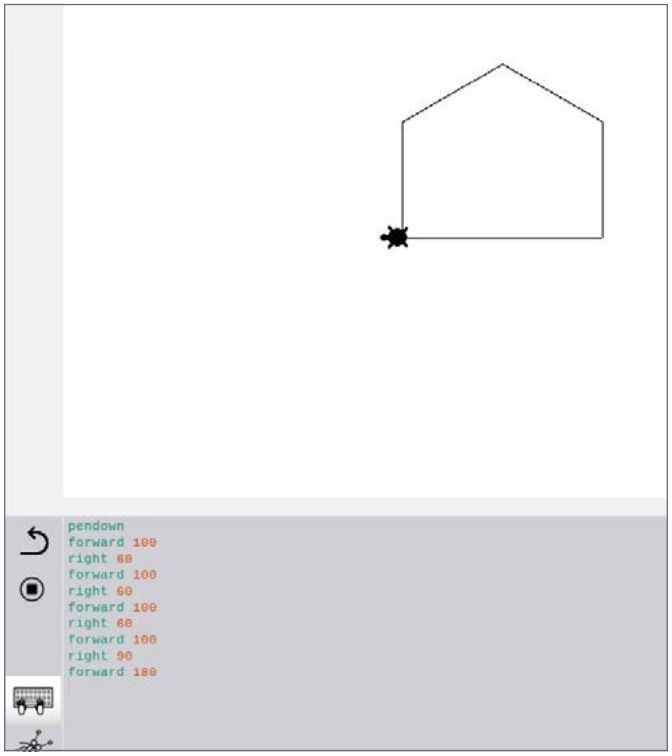

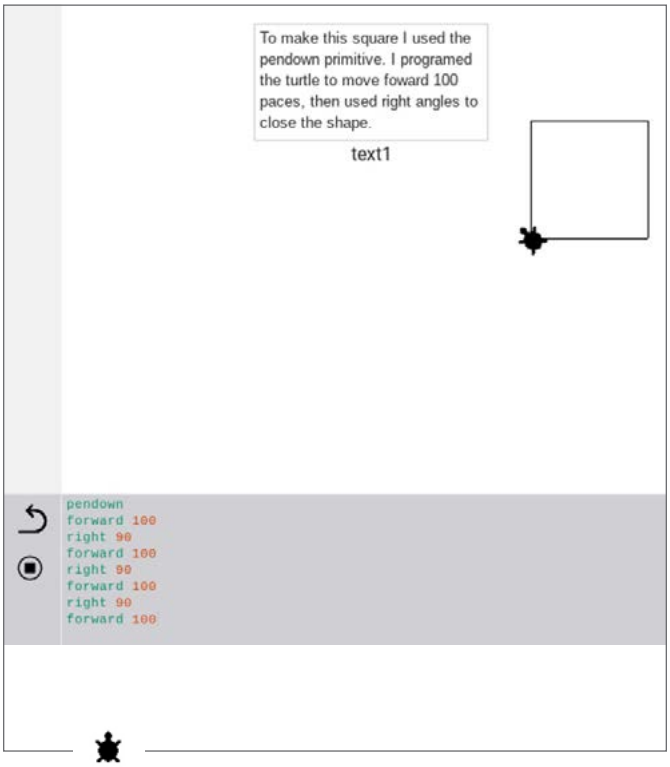

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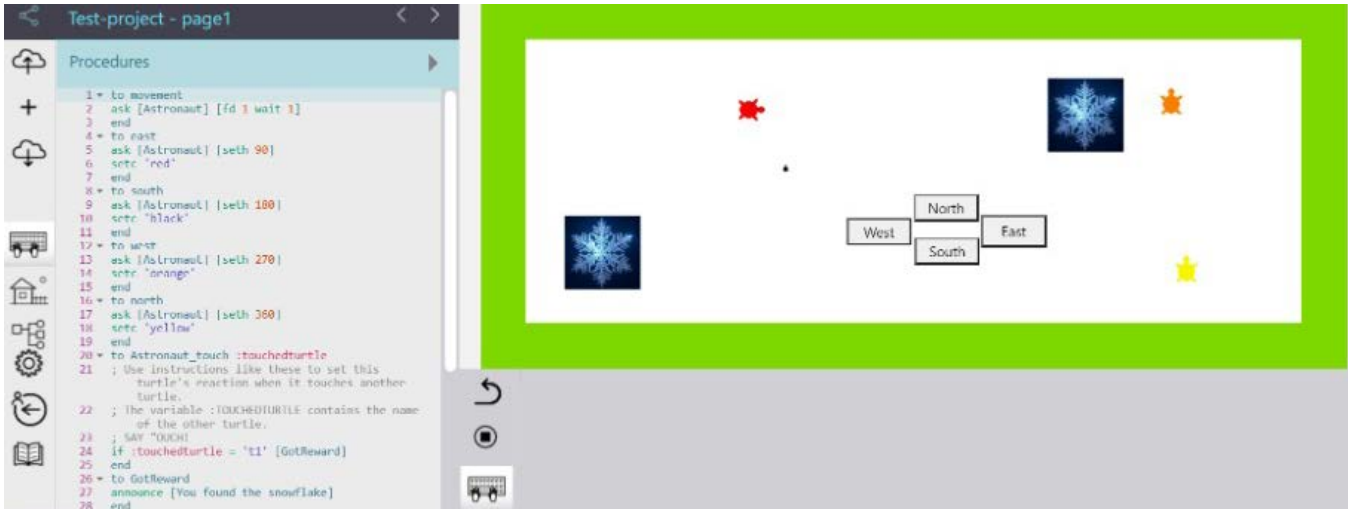

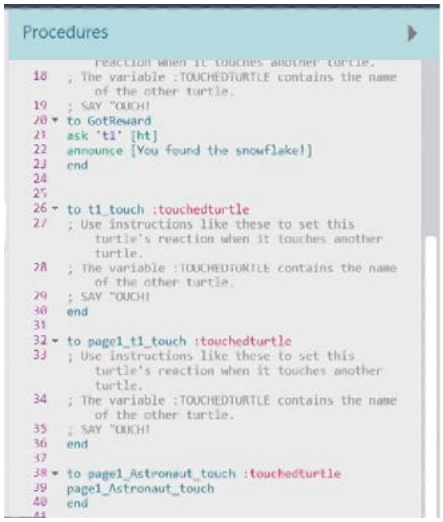

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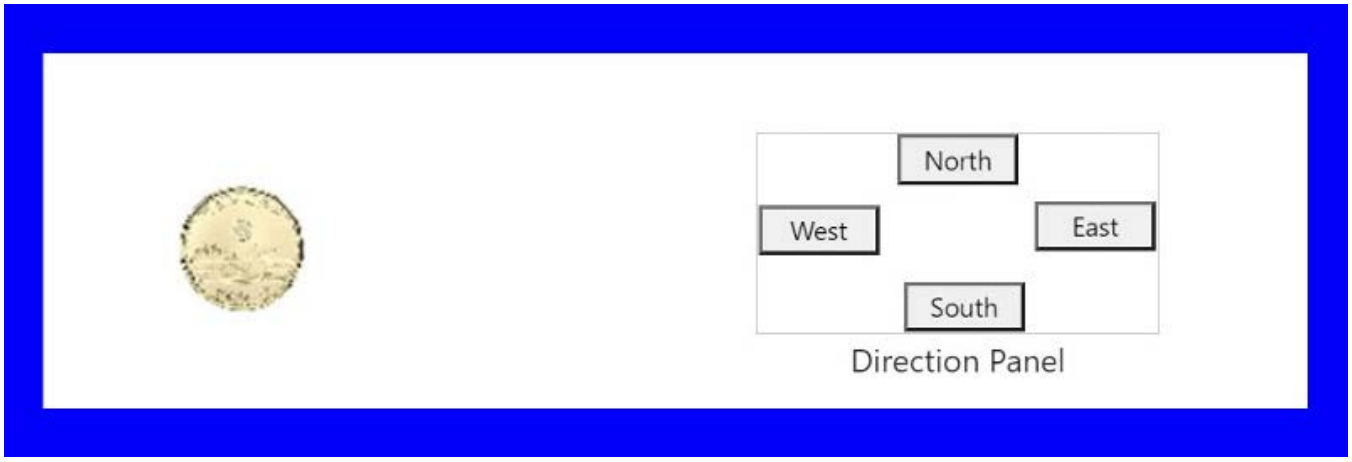

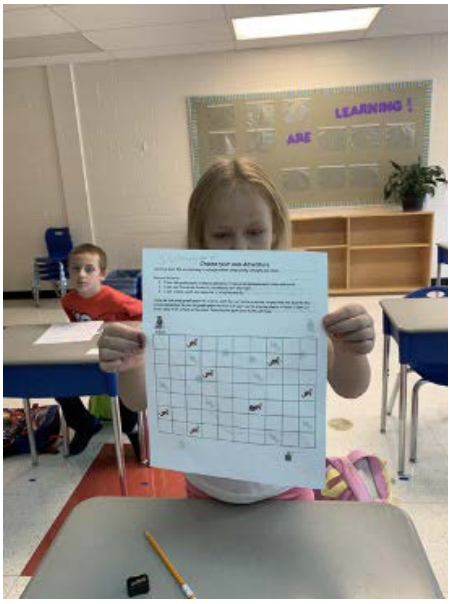

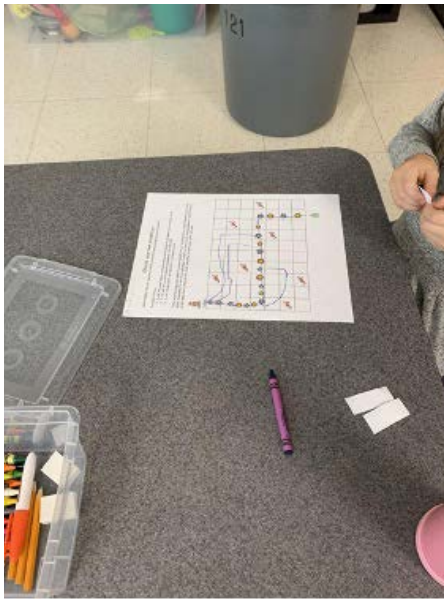

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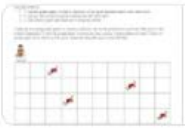
Learning Goal: We are learning to solve problems using coding concepts and skills.

Success Criteria:
I can use graph paper to show a distance of two grids between each otter and turtle.
I can use the words forward (fd), backward (bd), left (lt) and right (ft).
I can create a path and describe it using key words.

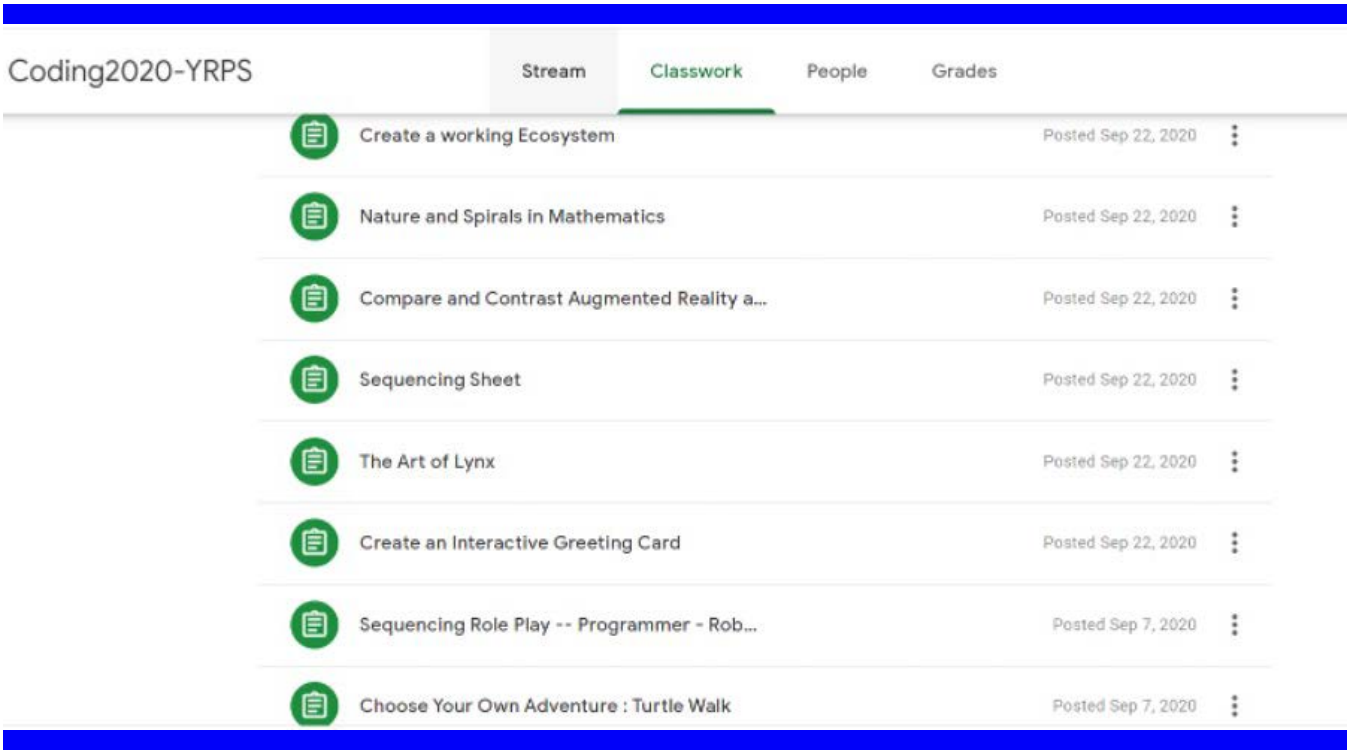
Today we are using graph paper to create a path for our turtle primitive to get from it's nest, to the school. Remember to use the graph paper to mark out your course, staying always at least 2 feet (or grids) away from otters on the yard, because our turtle is social distancing.

Be prepared to describe the path your turtle will take using the keywords in our success criteria.

(This exercise will help us practice giving exact instructions in our daily lives and help to understand the importance of giving commands in the right order. We may look for patterns, and get a better understanding of breaking down, or decomposing the parts of a problem as we complete this task. Remember programming is about giving step-by-step instructions to a computer on what to do and in which order. Instructions need to be clear, precise, and simple.)



TurtleWalk-Otter
Google Docs



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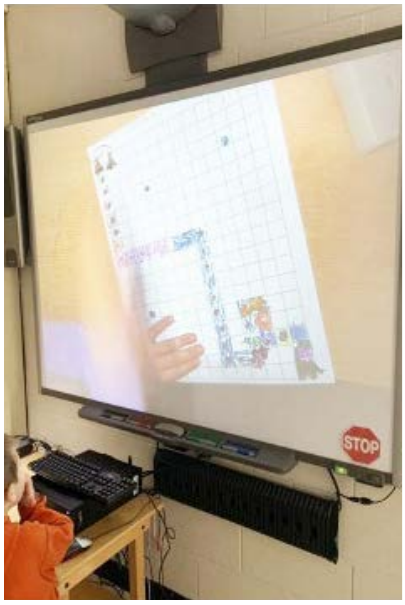

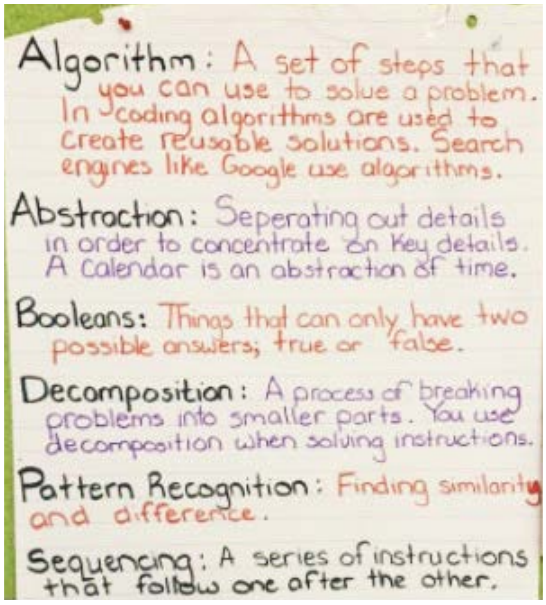

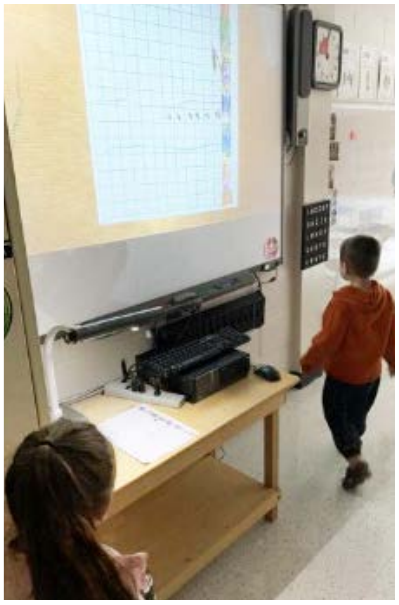

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