Centre of Excellence DIGITAL INNOVATION

Do You Want to Code a Snowman?

A Learning Activity for 3-5

Overview

In this activity, learners will be challenged to create and build a snowman in less than 10 steps! Learners will examine what is needed to make a snowman, as well as practicing breaking down a larger task into smaller steps – computational thinking in the wintertime!

NB Curricular Connections

3-5 Learning Areas
English Language Arts   o *Strand:* Representations - *Big Idea:* Compositions – *Skill Descriptor:* Organize ideas and create written and media texts collaboratively and independently.
Visual Arts   o *Strand:* Connect - *Big Idea:* Art and Culture – *Skill Descriptor:* Discuss the role of visual art in creating, expressing, recording, and reflecting culture and human experiences.

What You'll Need

- o Chart Paper or White Board & markers
- o Student printable (see PDF attached)
- o Pencils
- o Clipboards (*optional*)
- o Snow OR Miracle Snow (*can be purchased online*)
- o Buttons

- o Wooden sticks
- o Brown paper bags
- o Optional decorating: felt scarves, hats, mittens, etc.
- o PowerPoint Presentation – Do You Want to Code A Snowman?
- o Tablecloth (*if using snow or Miracle Snow inside*)

Instructions

1. **DISCUSSION:** Gather together and show Slide #2 of the PowerPoint presentation. Ask learners: What **must** a snowman have to be a snowman? Write down responses on chart paper or on a whiteboard. (Examples: wooden stick arms, black top hat, snow, 3 balls – small, medium, large, etc.) Then, look at Slide #3 together and discuss: Is there only one way to build a snowman? Allow learners to share their responses, particularly in relation to their culture and heritage. Snowmen are snow creations - spend time

allowing learners to share their personal experiences with them and how this impacts their own snowmen creations.

2. **STEP-BY-STEP:** Return to the chart paper or whiteboard of all the "musts" of a snowman. Feel free to tweak and adjust. As a class, decide on the **top 5** must-haves. Together, read over Slide #4 of the PowerPoint presentation to present the term – computational thinking – one of the 6 components of the NB Digital Literacy Framework. Simply put, computational thinking is taking a large task and breaking it into smaller, manageable steps that anyone could follow. These steps make an algorithm that we could build as a "code" for a computer to create a snowman. Break the class into small groups, to begin describing the smaller steps to build a snowman.

3. **CREATION CHALLENGE:** A few words and concepts to consider for students when developing an algorithm:
   - Sequence – making sure the steps are in the correct order.
   - Loop – adding a REPEAT option (repeat x3 or repeat until 3 balls of snow are made, etc.)
   - Conditional – steps that include an "If" statement (example: **If** the three round snowballs are the same size, make sure to make them a small, medium, and large.)

Once students have had the chance to talk about their own computational thinking of creating a snowman, it is time to announce their challenge. Use Slide #5 – Can you write an algorithm for a snowman in less than 10 steps? Students will not only write out their algorithm, but they will also create as they record. As a class, determine a time limit (20-30 minutes) to complete the challenge.

   - OUTDOOR CHALLENGE: If using real snow and our beautiful outdoors, be sure each team has the following: a student copy of the printable (*see below*), a clipboard, a pencil, and a page protector. Students will need to find sticks, rocks, and other natural materials to include in their creation (that you decided as a class beforehand).

   - INDOOR CHALLENGE: If using Miracle Snow, or snow brought inside, be sure each team has the following: a student copy of the printable (see below), a pencil, and a brown bag of building materials (mini wooden sticks, buttons, felt pieces, etc.). *A tablecloth is also a great idea to keep the mess to a minimum!

4. **SHOW AND SHARE:** Once learners have completed their algorithms and creations, take the time to do a show and share (either indoors or outdoors) using Slide #6. Allow learners to explain the challenges that they faced in either the creation of the snowman and/or in the creation of the algorithm. If time and supplies permit, have

learners swap algorithms and see if they can create the snowman using the steps provided.

Extension Ideas

- Invite another class to try out your snowman algorithms!
- Try out your algorithm and additional coding practice with Scratch (https://scratch.mit.edu)

Reflection Activity

Please see the attached PDF for several choices on how you and your learners can reflect upon today's activity.

Digital Literacy Framework

Computational Thinking: Students break down problems into individual components, create abstract and relevant representations, look for patterns, and develop algorithms to better understand, manage, and solve complex problems in a variety of educational contexts, as well as everyday life.

Global Competencies

Collaboration

Communication

Critical Thinking & Problem-Solving

Innovation, Creativity & Entrepreneurship

Acknowledgements

1. Fox Weather - *Before Frosty: The Origin Story of the Modern Snowman*, https://www.foxweather.com/lifestyle/before-frosty-the-origin-story-of-the-modern-snowman, 2022.
2. Carnaval de Québec: The Carnival - https://carnaval.qc.ca/le-carnaval/bonhomme/, 2023.
3. Medium – A Snowman Looks A Little Different in Japan - https://medium.com/knowledge-stew/a-snowman-looks-a-little-different-in-japan-58cd7a8256cc, 2020.