Centre of Excellence DIGITAL INNOVATION

Creative Innovators

A Learning Activity for Grades K-2

Overview

In this activity, learners will be inspired to create without limitations! As they discover the endless possibilities of being a creator of technology, they will also be challenged to create something that would make a difference in their home, their classroom, or even in their community. Truly, the sky's the limit when being a creative innovator!

NB Curriculum Connections

K-2 Learning Areas
English Language Arts: ○ *Strand:* Interactions – *Big Idea:* Expression – *Skill Descriptor:* Present simple facts, ideas, and opinions to peers and teachers. ○ *Strand:* Reading – *Big Idea:* Reading Comprehension - *Skill Descriptor:* Construct meaning from oral stories, read-alouds, and text.
Explore Your World: ○ *Strand:* Play and Playfulness – *Big Idea:* Exploration and Problem Solving - *Skill Descriptor:* Invent approaches to practical problems. ○ *Strand:* Diversity and Social Responsibility – *Big Idea:* Democratic Practices - *Skill Descriptor:* Act as responsible and responsive community members.

Global Competencies

Collaboration

Communication

Critical Thinking & Problem-Solving

Innovation, Creativity & Entrepreneurship

Fostering and Teaching Self-Awareness and Self-Management

Sustainability and Global Citizenship

What You'll Need

- Book – *Peter & Pablo the Printer: Adventures in Making the Future* (by: Jeffrey Ito)
- Story Map Printable (*provided below*)
- Pencils
- Aluminum Foil
- Art supplies – scissors, markers, tape, glue, pipe cleaners, buttons, beads, string, etc.
- 3 Brown Paper Bags or 3 small bins

- My Creative Invention Sheet (*provided below*)
- Recyclable Materials – cardboard, paper, tubes, newspaper, cartons, etc.
- 1 large cardboard box (as a 3D Printer reveal box)
- Creator Cromwell and Consumer Carl Monster Face Cutouts (*provided below)*
- Technology cards for monsters (*provided below*)
- Laptops/iPads (*optional*)

Instructions

1. **MONSTER MATCH ACTIVITY**: Gather learners in a common meeting area. Discuss the following questions: *"What kinds of technology do you use every day?"* Have learners share responses (iPad, X-box, watch, apps, tv, etc). Then, ask: *"What do you use these for? Do you create with them, or do you consume them, or both?"* [Create: active, expressing my ideas, learning, making, giving to others, impact, influence / Consume: passive, limited, enjoy for me, using other people's ideas) Tape 1 of each of the Monster Face cutouts to the 3 brown paper bags (or 3 small bins). Display them at the front of the classroom, on a table or easily reached place for learners to be able to place their cards inside the container. Introduce the learners to each monster using the prompts below:

Monster Creator Cromwell		**Monster Creator Cromwell** uses all kinds of technology to CREATE and MAKE – his iPad, his 3D printer, his laptop, and his colour printer. He likes to think up ideas and then make them with technology. He creates games, toys, and even gifts for his monster friends. He spends his time creating photos with his Monster family, making videos of cooking yummy Monster meals for his Monster community, and he even designed Monster Soccer posters and printed them to decorate his bedroom! He has also created a Monster video game called, "Monstercraft!" to build Monster Villages. He just recently made a pet mouse robot that can pick up the crumbs and objects that fall on the floor for his 97-year-old grandpa, Monster Stanley SlipFingers!
Two-faced Monster Tina		Two-faced Monster Tina uses technology to relax and to create! She likes to take photographs with her iPad of Monsters in the wild and then display them at the local Monster Art Gallery in her town. Tina also enjoys watching funny cat videos on Youtube and playing Subway Surfers each day.

Monster Consumer Carl		Monster Consumer Carl loves technology and uses technology all the time! He likes to see how many steps he takes around his Monster House on his fitbit watch. He also is a Monster Video Gamer Champion, who loves playing games like "MarioKart", "FortNite", and "Roblox". He also is a pro Monster Soccer champion – on the FIFA soccer video game. Monster Consumer Carl also enjoys watching YouTube videos of real Monster Soccer stars and listens to Rock Music on his tablet with headphones. He never misses an episode of Monster Mania – a weekly show featuring videos of Monsters doing crazy tricks and stunts. Carl is a huge Monster Movie fan, as well, and often goes to the Monster Movie theatre in his hometown every Friday night.

Next, pass out 1 technology card per learner. Have learners taking turns "feeding" their technology card to the corresponding monster. If the technology item:

- Is for creating = Monster Creator Cromwell
- Is for consuming = Monster Consumer Carl
- Is for both creating and consuming = Two-faced Monster Tina

Review the cards and the monsters fed. Ask learners, "*Which monster are you most like and why?*" Allow learners to share with an elbow partner and then have a few share their responses with the whole group.

2. **READ ALOUD – *Peter and Pablo the Printer: Adventures in Making the Future*:** Gather together. Ask learners: *What is a 3D printer?* Give learners a chance to share their knowledge and experience with this device. (If your school has one, take the time to show your class what the device looks like and how it operates prior to reading the book.) Divide the reading into 3 sections and have learners complete 1 part of the Story Map (below) following each of the readings.

Read Selected Chapters:	**Story Map:**
Peter's Birthday *Meeting Pablo*	Draw Peter's Birthday Gift
Peter Makes a New Friend *Rocky the Retriever* *Summer Vacation*	Draw what Peter creates with his 3D printer
Peter Learns a Lesson *Andre and the Fire Truck* *Peter's Fresh Start*	Draw how Peter's 3D creations helped himself and others around him

3. **2D or 3D CLASSROOM HUNT:** After reading of Peter's 3D Printing Adventures, allow learners to get up around the classroom and point to an object on your command. Direct learners: "Find a 2D shape" OR "Find a 3D Object". Repeat as desired. Allow a few learners to tell of their found shape or object and which shape and/or object it is. (square, circle, rectangular prism, sphere, etc.)

4. **MY CREATIVE INVENTION PROJECT:** Ask learners: *Now that we have read about Peter and Pablo and their wonderful 3D creations, does it give you an idea of an object that you would like to create with a 3D printer? What sorts of inventions would you like to make for others around you that would help them in some way?* Feel free to brainstorm ideas as a whole group. For this activity – there are NO impossible ideas! Using a large cardboard box, cut 2 doors in the front side of the box (this is where learners will reveal their invention). Then, cover in aluminum foil and add buttons for fun! Give each learner, or pairs, a copy of *My Creative Invention Sheet* to sketch out their 3D creation. Once they have a plan, allow learners to make a "prototype" using recyclable and/or makerspace materials. Once learners have completed their projects, host a *Creative Inventors Convention* in your classroom! Have learners reveal their invention from behind the make-shift 3D printer doors with added sound effects (https://www.audiomicro.com/free-sound-effects/free-industrial-and-machinery). Allow them to explain their idea and how they feel it would help others. Celebrate each design and creation!

EXTENSION IDEAS:

- Following your *Creative Inventors Convention*, choose a few of the inventions to see **if** they exist or if they **could** exist. Have learners use internet search tools, books from the library, or ask a technology expert. (You can always reach out to the Centre of Excellence for Digital Innovation.)
- If there is an invention that is incredibly creative and will help others, as a class project, develop a plan to bring it to life - just like in our story of Peter and Pablo! * Work with a Grades 3-5 class in your school to design with the 3D printer, or work together, if using other technological devices where older students may have more expertise. *
- Who uses 3D printing in their career? Check out these NB examples:

a) UNB Researchers Using 3D printing to Accelerate Shipbuilding -2023: https://www.cbc.ca/news/canada/new-brunswick/unb-3d-printing-shipbuilding-1.6924445

b) Moncton Teacher uses 3D printer to Help Health-Care Workers, 2020: https://www.cbc.ca/news/canada/new-brunswick/moncton-bessborough-health-care-masks-3d-printer-venessa-poirier-leblanc-1.5533310

c) Think 3D is neat? New Brunswick is now looking at 4D possibilities:

https://onbcanada.ca/unb-4d- printing/

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

Creativity, Design, and Problem Solving: Students explore a variety of digital technologies to develop and enhance ideas, products, or processes through creative expression and innovative design to solve issues that affect them, their community, and the world.

Acknowledgements

1. CBC News, Alexandre Silberman: UNB Researchers Using 3D printing to Accelerate Shipbuilding. https://www.cbc.ca/news/canada/new-brunswick/unb-3d-printing-shipbuilding-1.6924445, 2023.
2. Opportunities NB: University of New Brunswick Looks to Lead in Intelligent 4D Printing. https://onbcanada.ca/unb-4d-printing/, 2023.
3. CBC News, Kate Letterick: Moncton teacher uses 3D printer to help health-care workers, inspire students. https://www.cbc.ca/news/canada/new-brunswick/moncton-bessborough-health-care-masks-3d-printer-venessa-poirier-leblanc-1.5533310, 2020.
4. Microbit: Overview, User Guide - https://microbit.org/get-started/user-guide/overview/.
5. Brilliant Labs: What is the b.Board? https://www.brilliantlabs.ca/bboard#about, 2021.
6. iStock: 3D Printer Image - https://unsplash.com/s/photos/3d-printing, 2023.

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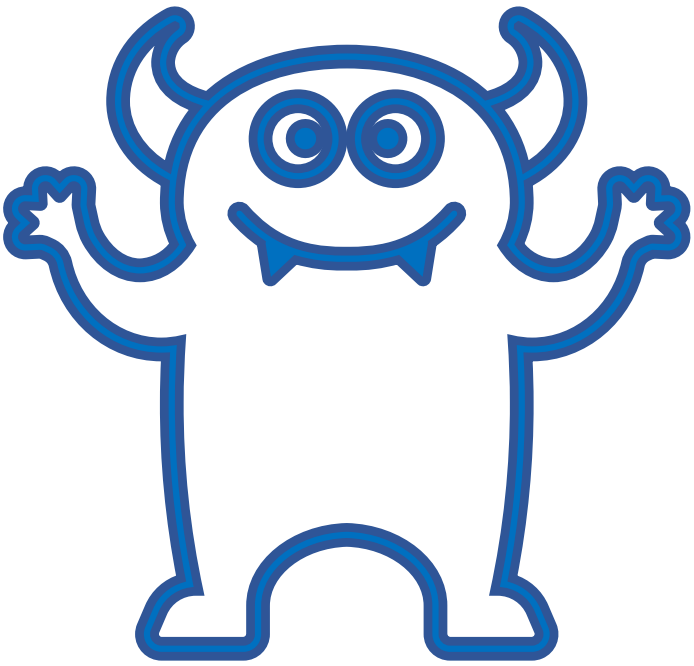
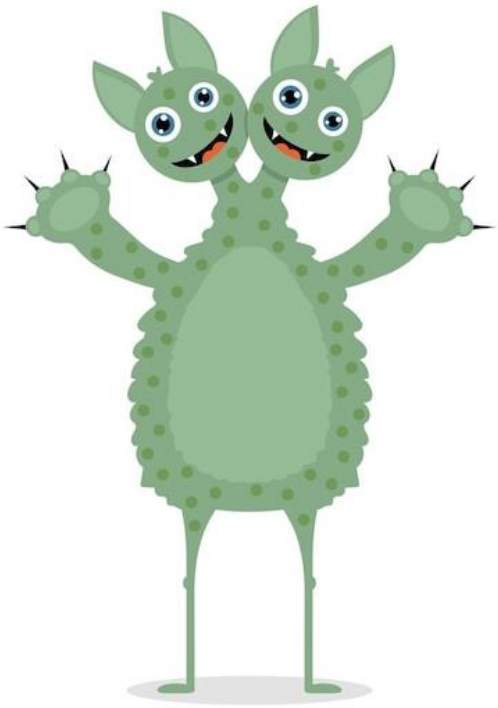
Monster Face Cutouts

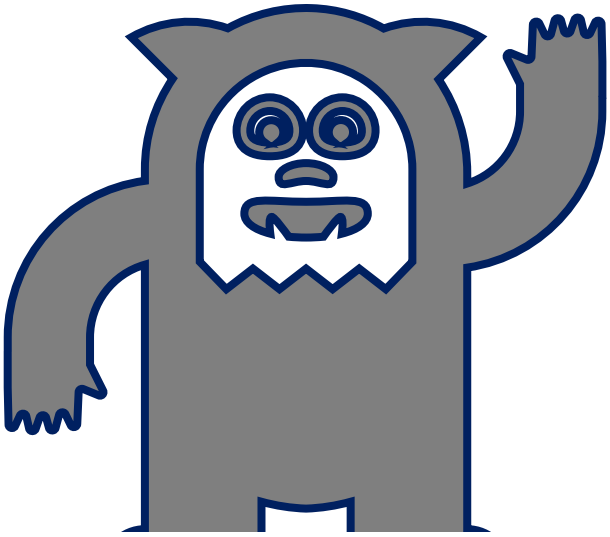
Please cut out faces below and tape to brown paper bags or bin containers for Activity #1:



Monster Creator Cromwell



Two-Faced Monster Tina



Monster Consumer Carl

Example:

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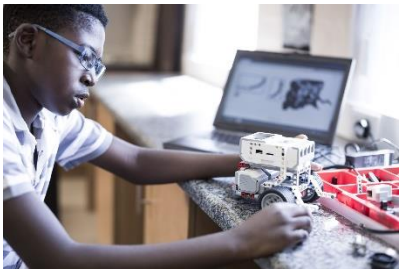
Technology Cards

Please cut out cards and give 1 to each learner to "feed" to the corresponding monster:

Laptop



Robot

Video Game

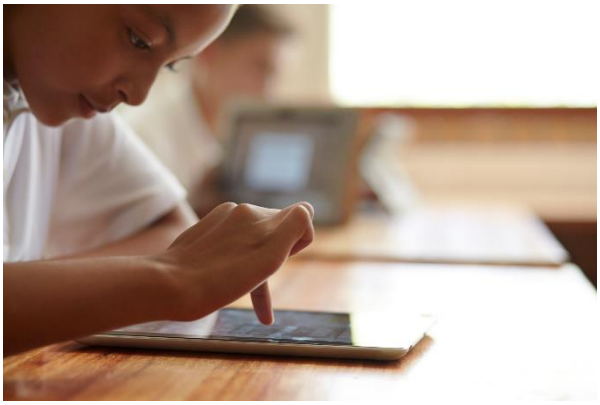
Printer

Cell Phone

Movie Screen

Digital Camera

Video Editing/Creating



iPad or Tablet

Music Software

(To create, mix, share)

Fitbit or Step-Tracking Watch

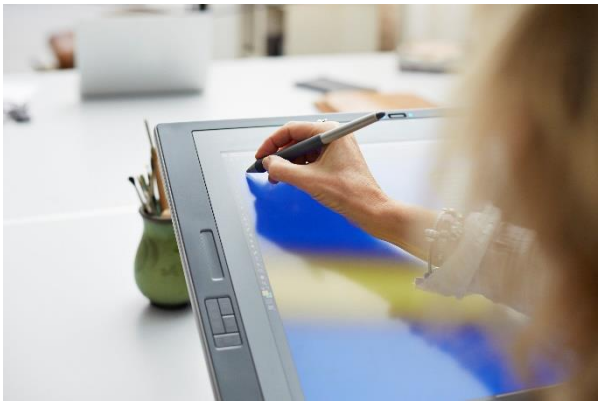
Headphones

(ear buds, air pods, etc.)

Apps

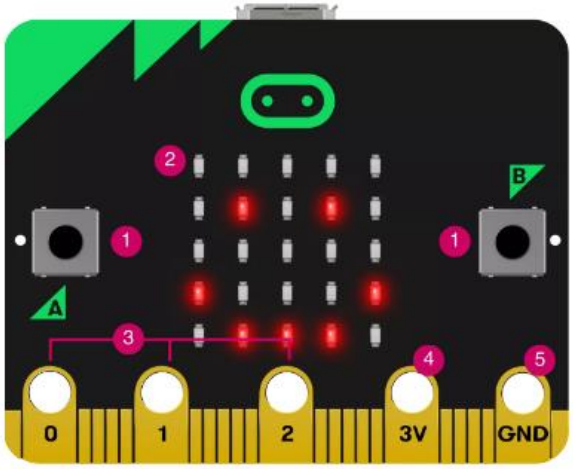
Video Creating/Recording

TV



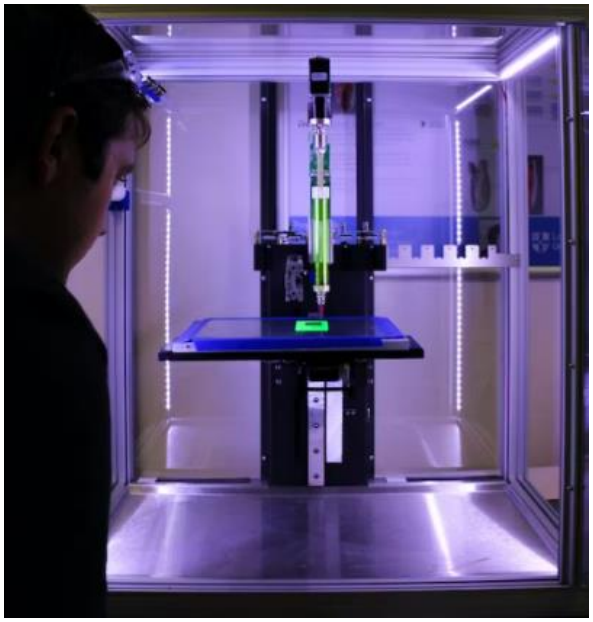
Design Programs

(Images, stories, characters, games, etc.)



Microbit

b.Board

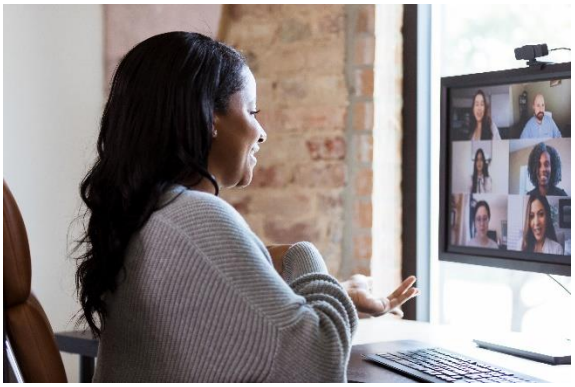


3D Printer

Cricut

(print images for decoration of mugs, shirts, frames, and so much more!)

Email/Digital Messages



Virtual Meetings

(Microsoft Teams or webcam for school, family, friends, or hobbies)

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Story Map

Name: _____

After Reading:	Draw or Write:
Peter's Birthday *Meeting Pablo*	Peter's Birthday Gift
Peter Makes a New Friend *Rocky the Retriever* *Summer Vacation*	What Peter creates with his 3D printer
Peter Learns a Lesson *Andre and the Fire Truck* *Peter's Fresh Start*	How Peter's 3D creations helped himself and others around him

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My Creative Invention

Name: _____

My Idea (Draw a sketch of your invention before you build)

My Impact (Who or what do I hope to help?)