EXTRA MISSION 04

Fantastik'eau

I love water. I take care of it!

THE WATER TOWER

CYCLE 3

C.I.EAU Centre d'interprétation de l'eau

Québec

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THE WATER TOWER

STUDENT WORKBOOK
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BACKGROUND

While taking a walk through their town, Conscious Charlie and Wasteful Wally discover a huge, towering construction. Crystal Clearwater happens to be standing next to it. She explains to them that it is a water tower. The water that comes out of the drinking water treatment plant is pumped and stored high up in the water tower. Right now, the water tower is empty, which is why Conscious Charlie and Wasteful Wally don't have any water pressure at home ... but that's about to change!

THIS IS A JOB FOR **THE FANTASTIK'EAU CREW!**

DO THIS ACTIVITY WITH JÉRÉMIE

Watch the short video featuring Jérémie, and do the activity with him! All of the Fantastik'eau content and videos are available on the C.I.EAU's website at:

www.cieau.org/fantastikeau

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YOUR MISSION

Build a miniature water tower. This construction will allow drinking water to travel to Wasteful Wally and Conscious Charlie's home.

DURATION

45 minutes

SUGGESTED MATERIALS, WITH ADULT SUPERVISION

- 1 nail to make 5 mm holes
- Small hammer
- 1 pushpin to make 2 mm holes
- 1 measuring cup
- A 500 millilitres plastic bottle and its cap
- A 4 litres clear plastic bottle
- A stopwatch
- Adhesive putty
- 1 paper plate with a hole cut in the middle; the diameter of the hole should be about 6 centimetres
- Whatever you can find in the recycling bin to hold the bottle upside down!
- Adhesive tape
- Scissors
- A marker
- Water
- A bin to hold the water

CRYSTAL CLEARWATER : The water tower maintains a constant water pressure in the system. It also improves the quality of water by letting it settle, while offering additional contact between the water and the products used to ensure its quality.

INVESTIGATING AND IDENTIFYING POSSIBLE SOLUTIONS

Use the materials listed above or whatever you find at home to get inspired!

JÉRÉMIE : Does the water come out faster when the bottle is full? And how about if you squeeze it? Or place it higher? Find out for yourself!

WARNINGS

Ideally, you should do this experiment in a sink or bathtub! If the water won't flow, it might be because of an air bubble; to solve this, gently shake the construction.

It is recommended to have an adult use a drill, a hole puncher or another tool to make holes.

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DESIGNING THE PROTOTYPE OF A WATER TOWER—EXAMPLE

Here are the instructions to design the prototype of a water tower. If you want, you can also use your imagination and create your own version!

- Ask an adult to make a hole in the cap of your 500 millilitres bottle using a pushpin. Afterwards, you can use a nail to enlarge this hole. This bottle will become your miniature water tower.
- Plug the hole in the cap using adhesive putty.
- Make a hole in the bottom of this bottle using a pushpin. This will let in air and help the water come out through the hole in the cap.
- Using your marker, trace the base of your 500 millilitres bottle in your paper plate. This should give you a circle. Cut out this circle and insert the top of your bottle in the hole. Use adhesive tape to secure the plate and bottle together.
- Ask an adult to help you cut the 4 litres bottle over the neck, or use another container you have at home. You will use this as a support to hold your water tower in place.
- Turn your water tower (i.e. your bottle) over your container and remove the adhesive putty. You should see the water coming out of your bottle.

EXERCISE

- What would happen if you changed the quantity of liquid coming out of your water bottle? Would it flow faster or slower? _____
- For each volume of liquid used, measure the liquid that flows in 20 seconds to calculate the speed at which it comes out (flow rate), like you did with the shower head in mission 2. You can redo the exercise using different volumes of liquid and write down your calculations below.

CALCULATIONS

WARNING

It is recommended to have an adult use a drill, a hole puncher or another tool to pierce a hole.

FOR INSPIRATION

WALTER : You can very well make your own water tower. You can use whatever you find in your recycling bin that inspires you. You can even continue your work **outside** by building a pipe system that will distribute water to miniature houses! Feel free to use your imagination!

AQUA-MARY : You can also graduate your bottle to see the effect of the volume of water on the pressure when the water comes out of the bottle, instead of using a measuring cup. If you want to go even further, you can create a table with your class or family to write down everyone's results and compare them.

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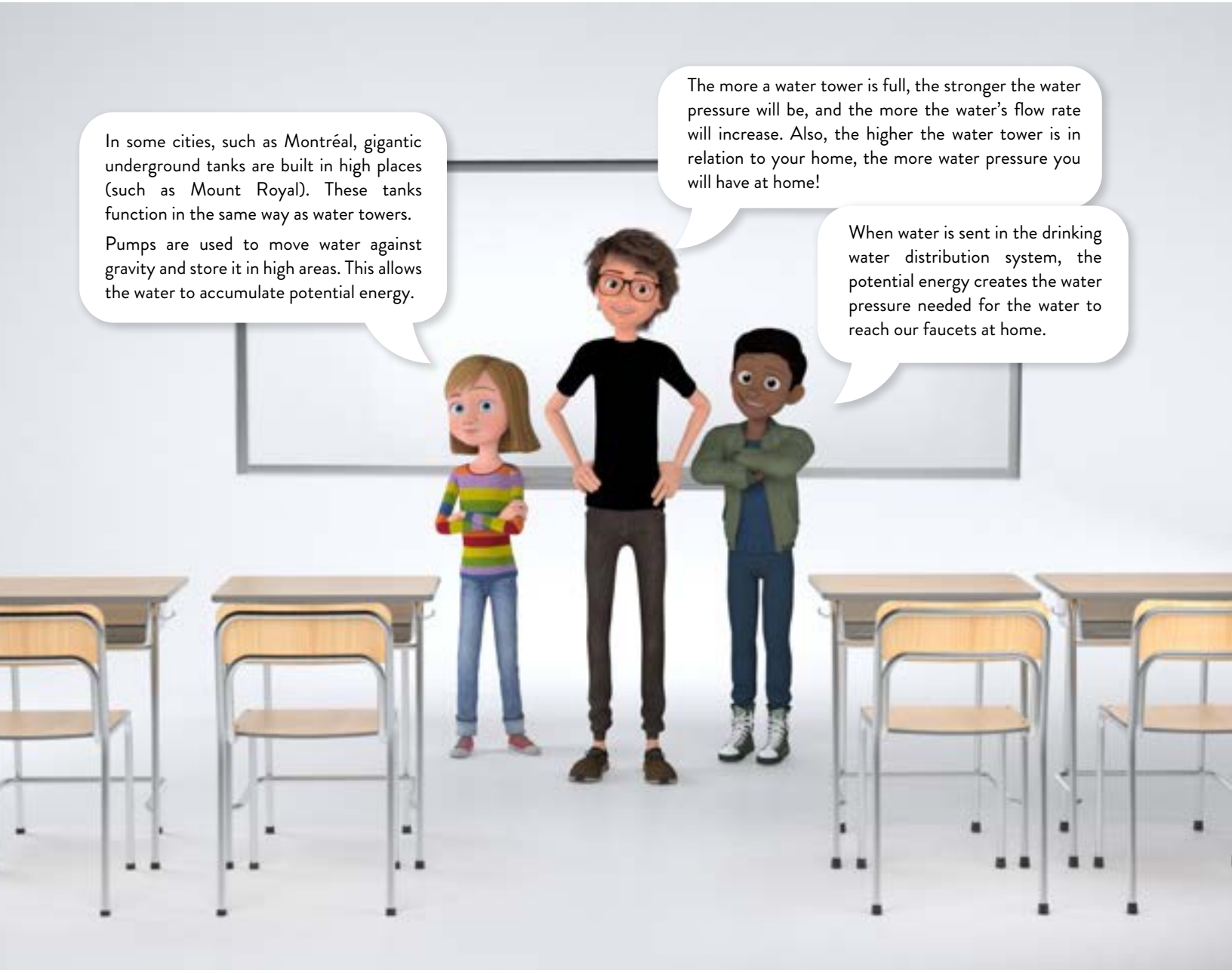
CONCLUSIONS

What observations can you make with your version of a water tower? _____

What helped you improve the water pressure? _____

USEFUL TO KNOW



EXCERPT FROM:

Fantastik'eau! I love water, I care for it! :
The Fantastik'eau educational package: Complete Guide, 2nd edition

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CREDITS

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The following is a list of books, websites, pages, and publications dealing directly with the subjects covered in the Fantastik'eau educational package.

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Centre d'interprétation de l'eau (C.I.EAU) www.cieau.org

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