science & technology
Department: Science and Technology
REPUBLIC OF SOUTH AFRICA

SCIENCE SPAZA

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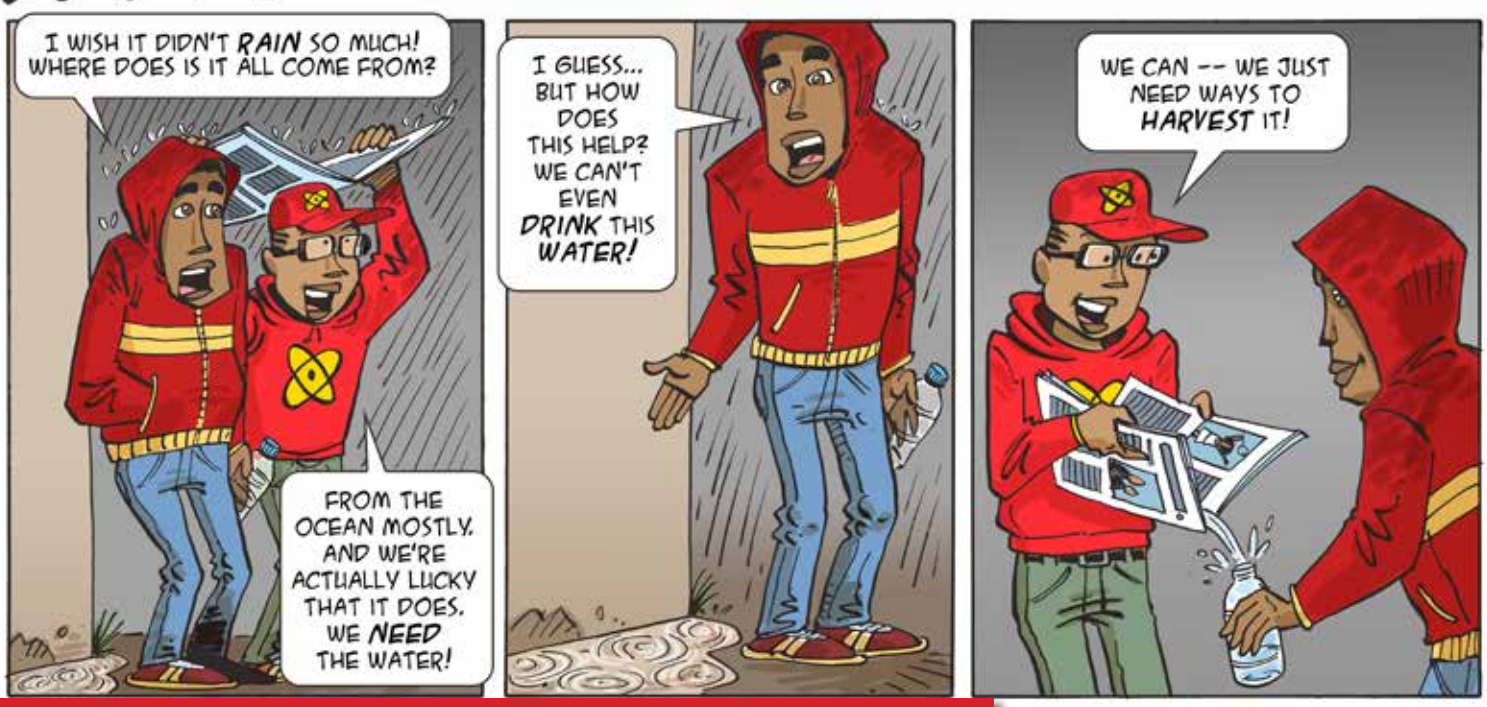
WATER FOR LIFE!



ACTIVITY: MAKE A GARDEN IN A BOTTLE

IN THIS ACTIVITY YOU WILL EXPLORE HOW PLANTS GROW IN CLOSED BOTTLES.

YOU WILL NEED:

- 2 PLASTIC 2-LITRE BOTTLES
- 2 SEEDS OF THE SAME TYPE (SUGAR BEANS WORK WELL)
- SOIL
- WATER

1 PUT SOME SOIL IN THE BOTTOM OF EACH BOTTLE, DROP ONE SEED INTO EACH BOTTLE, AND THEN COVER THEM WITH A LITTLE MORE SOIL.

2 PUT THE SAME AMOUNT OF WATER IN EACH BOTTLE (JUST ENOUGH TO MAKE THE SOIL DAMP). CLOSE THE LID ON ONE OF THE BOTTLES, AND LEAVE THE OTHER BOTTLE OPEN.

Knowledge is Ncah!

3 FOR THE NEXT FEW WEEKS, OBSERVE HOW THE PLANTS GROW IN EACH BOTTLE. DO NOT ADD ANY WATER TO ANY OF THE BOTTLES!

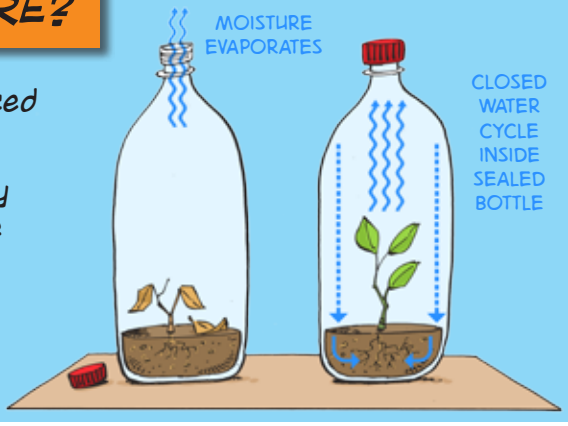
4 YOU CAN RECORD YOUR OBSERVATIONS IN A TABLE LIKE THE ONE BELOW.

Time	Open Bottle	Closed Bottle
1 week		
2 weeks		
3 weeks		

WHAT IS HAPPENING HERE?

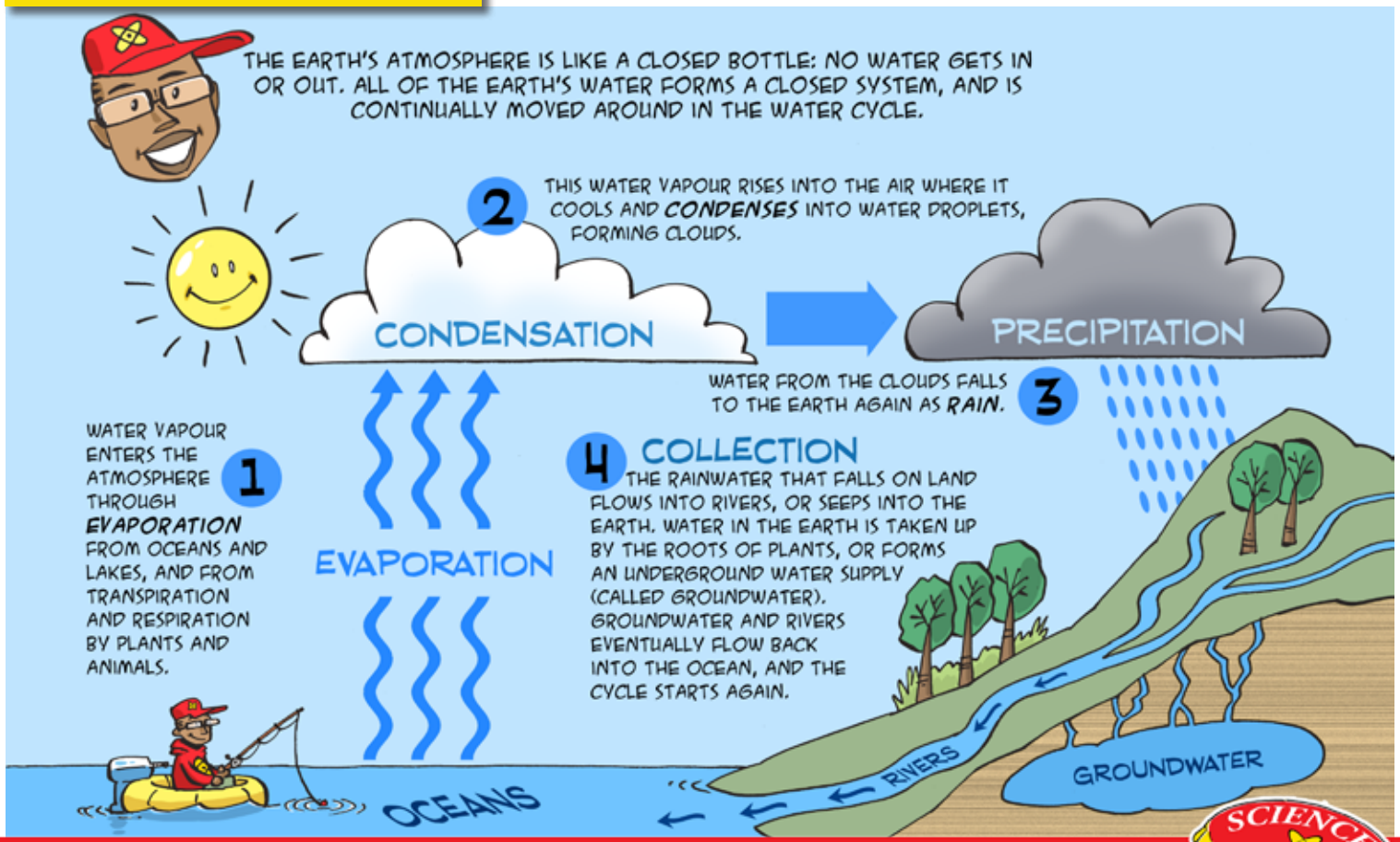
From your activity you would have noticed the following:

The plant in the open bottle became dry and eventually died. This is because the plant in this bottle is ***losing water to the environment***, and because its lid is open, this water eventually leaves the bottle.



The plant in the closed bottle grew best, because the water stayed inside the bottle. This bottle is an example of a ***closed system***, which allows the water to cycle around inside the bottle.

THE WATER CYCLE



RAINWATER HARVESTING

A lot of ***rainwater*** falls on the roofs of our houses and schools. Can you think of ways of gathering and storing this rainwater? Design a rainwater harvesting system and draw your design.

Because water is a scarce resource, we need to be careful about how much we use. Don't leave taps running to do washing, rather fill a sink. Take shorter showers, or use less water for a bath. Use rainwater and reused rinsing water to water plants, wash cars and flush the toilet. Most importantly, make sure you don't have any leaks! More than a third of our drinkable water is wasted from leaks. Fix any leaks in your home, and report any leaks in your community.

Can you think of more strategies for conserving water? Discuss your ideas in your science club.

Send a picture of your design to Science Spaza and you could ***win a science Spaza T-shirt!***

PUZZLE YOUR MIND!!!

CLUES: ACROSS

4 The name of the whole process whereby water rises into the atmosphere, cools and falls back to earth, and repeats continually is called the water _____.

8 The name of the layer of air around the earth.

9 Water that has seeped into the earth and collected underground.

10 Water vapour enters the atmosphere from transpiration and _____ by plants and animals.

11 The process of water in the atmosphere cooling to form clouds.

12 Collecting rainwater so that it can be used is called rainwater _____.

CLUES: DOWN

1 The largest places of water collection on earth.

2 The gas phase of water is called water _____.

3 When water has been purified and is safe to consume, it is said to be _____.

4 To use water sparingly.

5 In a _____ system nothing is added and nothing is removed.

6 The process of liquid water turning into gas and rising into the atmosphere.

7 The process of water from the atmosphere falling back to the earth.

CAREERS:

THERE ARE GREAT JOB OPPORTUNITIES, SUCH AS:

- HYDROLOGY
- WATER RESOURCE PLANNING
- WATER/WASTEWATER MANAGEMENT
- WATER CONSERVATION

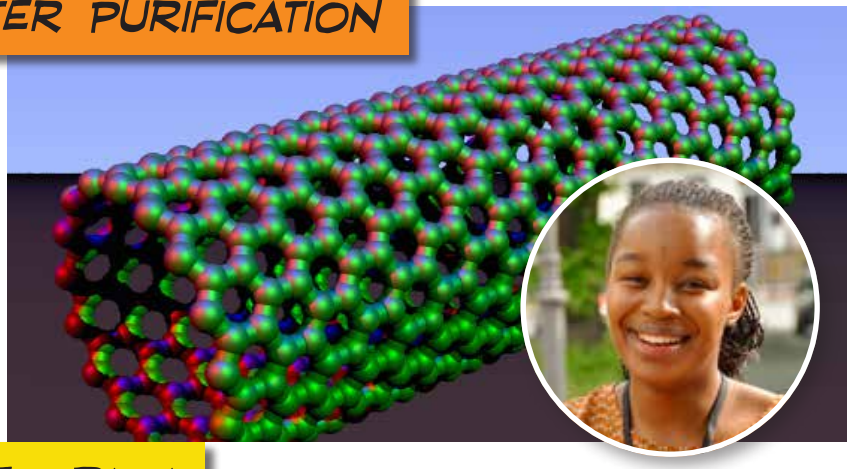
Lungile Lembede is a second year master's student at the University of KwaZulu-Natal, where her research topic is the impact of using biofuel crops on water resources. She says, "I am proud to be part of the scientific community working together to provide solutions to make our environment a better place."

CURRICULUM LINKS

- GR 6 ***MATTER & MATERIALS*** (WATER RESOURCES)
- GR 8 ***LIFE & LIVING*** (PHOTOSYNTHESIS AND RESPIRATION)
- GR 10 ***PHYSICAL SCIENCES*** (THE HYDROSPHERE)

NANOTECHNOLOGY FOR WATER PURIFICATION

Your water may not be as clean as it looks! The Department of Science and Technology through the National Research Foundation supports research into the use of nanotechnology for water purification. ***Nozipho Gumbi*** from UNISA makes carbon nanotubes to remove micro-pollutants from water.



START YOUR OWN SCIENCE SPAZA

Name of school: _____

Municipality: _____

Province: _____

Name of your science club:

_____

Name of contact person: _____

Telephone number: _____

Email address: _____

Postal address: _____

_____

To be filled in by responsible adult (parent/teacher)

Name: _____

Surname: _____

Position: _____

ID Number: _____

Signature (parent/teacher):

_____

Date: _____

Send to PO Box 22106, Mayor's Walk, 3208 Fax to 086 610 5453 email: info@sciencespaza.org or submit your application online at www.sciencespaza.org

This Science Spaza resource was produced for the National Science Week celebrations of Science for Sustainable Development and Improved Quality of Life. National Science Week is an initiative of the Department of Science and Technology (DST). It is implemented by the South African Agency for Science and Technology Advancement (SAASTA), a business unit of the National Research Foundation. For more information visit www.saasta.ac.za