

Western Engineering Outreach

Water Cycle In A Bag

Grade K-2

Meet Today's ENG HERO!



Clare Robinson - Associate Professor with Western Engineering

Clare is an associate professor with the Civil and Environmental Engineering in the Faculty of Engineering. Her research focuses groundwater-surface water interactions in coastal environments and water quality, supply and treatment in developing countries.

To learn more about Dr. Robinson visit:

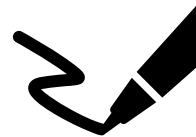
<https://www.eng.uwo.ca/civil/faculty/robinson.c/index.html>

Learning Goal:

- Students will consider how the water cycle is being used around them and the effects it has on the environment.
- Curriculum Connections: Grade 1 -Daily and Seasonal Changes: Grade 2 - Air and Water in the Environment

Materials Needed:

- Ziploc Sandwich Bag
- Sharpie
- Water
- Blue Food Coloring
- Tape



Engineering and Science Connections:

Pour yourself a glass of water and take a sip. Did you know that the water you've just swallowed is the same water that the dinosaurs and the first humans drank? That is because Earth has been recycling water for over 4 billion years!

The world's water is mostly found in lakes, rivers, oceans, the atmosphere, and the land in an ongoing cycle called the water cycle. As it goes through this continuous cycle it can be found in all 3 forms of matter, a liquid (water), a gas (vapor), or a solid (ice).

The cycle goes through 4 different processes

1. Evaporation

Energy from the sun heats up the surface of the Earth, causing the temperature of the water in our rivers, lakes and oceans to warm up. When this happens, some of the water **evaporates** into the air, turning into a gas called "vapor."

2. Condensation

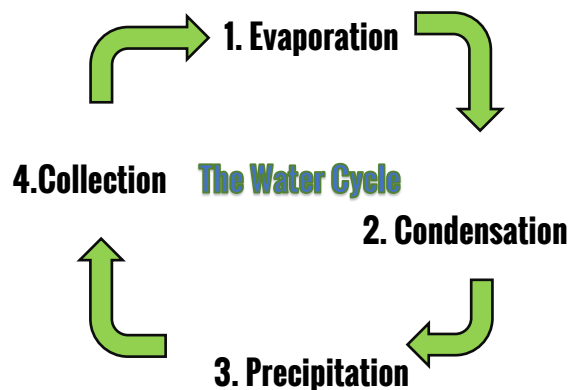
As water vapor rises into the sky, it cools and turns back into a liquid and forms clouds. This process is called **condensation**. Wind currents high up in the air move these clouds around the globe.

3. Precipitation

When too much water has condensed in the cloud, the water droplets become too heavy for the air to hold them. So they fall back down to earth as rain, snow, hail or sleet. This process is called **precipitation**.

4. Collection

The fallen precipitation is then **collected** in bodies of water such as rivers, lakes, and oceans from where it will eventually evaporate back into the air, beginning the cycle all over again.



What engineer deals with the water cycle?

An environmental engineer! Environmental engineers can help create solutions to problems involving the environment such as global warming and water treatment. Treating lead pipes is a big problem right now since lead is a toxic heavy metal that corrodes the pipes into the water

Video Recommendation: The Water Cycle / Educational Video For Kids

<https://www.youtube.com/watch?v=y5gFl3pMvol>

Activity:

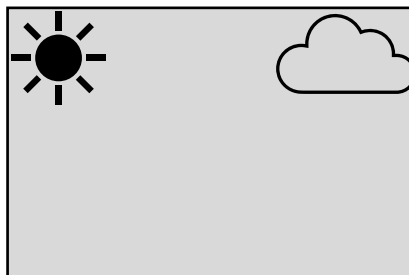
Before beginning, think about the following questions:

- In what form can we see water in the atmosphere?
- Where is most of the water on Earth stored?
- Which of the following is a form a precipitation?
 - Rain
 - Snow
 - Sleet
 - Hail
 - All of the above

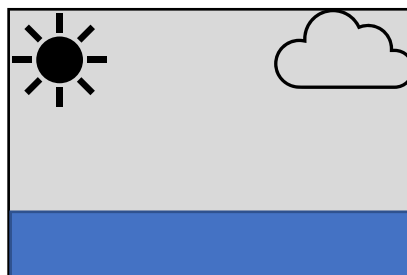
Time to begin

You and your team of environmental engineers have been tasked to show the water cycle in a bag.

Step 1. Get your plastic bag and near the top of the bag draw the sun and the clouds



Step 2. Add water and blue food coloring to fill 2 cm of the bottom of the bag



Step 3. Tape the bag to a window, adding tape to all 4 corners

Step 4. Observe the water over the next couple of days. Pay special attention to how the sun causes the water to evaporates into a vapor. Also, watch when enough water has condensed in the clouds of the bag it starts to fall back down (precipitate) into the bottom of the bag. This cycle will continue over and over again, just like the water cycle.

What Did You Learn?



- What is most of the world's water?
- What is evaporation?
- What is condensation?
- What is precipitation?
- What is collection?

Future Learning



- Add ice into the bag and see what it does to the water cycle? What did you notice to the water level once the ice melted? Who is affected by melting ice due to global warming?

Share your creations!

We would love to see what you made. Email as at discover@uwo.ca or tag us on social media.

Instagram: @westernueng

Twitter: @westernueng

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Thanks for discovering with us!