19. The Water Cycle

Classroom Activity: Students will gain an understanding of the water cycle through discussion and demonstration.

Grade: 2

Strand(s): Understanding Earth and Space Systems

This task addresses the following overall expectations:

- investigate the characteristics of air and water and the visible/invisible effects of and changes to air and/or water in the environment;
- demonstrate an understanding of the ways in which air and water are used by living things to help them meet their basic needs.

and the following specific expectations:

- follow established safety procedures during science and technology investigations;
- investigate the stages of the water cycle, including evaporation, condensation, precipitation, and collection;
- use appropriate science and technology vocabulary, including solid, liquid, vapour, evaporation, condensation, and precipitation, in oral and written communication;
- use a variety of forms (e.g., oral, written, graphic, multimedia) to communicate with different audiences and for a variety of purposes.

Assessment Categories:

- Knowledge and Understanding
- Thinking and Investigation
- Communication

Cross-discipline connections:

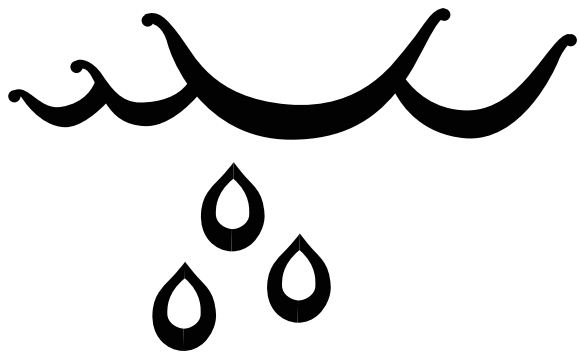
Understanding Life Systems

Type of Activity: Classroom

Preparation: (approx. 30 minutes)

Gathering materials for demonstrations

Time needed to complete the task: 90 minutes + time for students to write their reports



Materials/Resources for teachers:

Berger, Melvin and Berger, Gilda, Water, Water Everywhere, Ideal's Children's Books, Nashville, 1995

Kalman, Bobbie and Janine School, Wonderful Water, Crabtree Publishing, New York, 1992

Science Everywhere 2, Harcourt Brace Canada, Toronto, 1999

illustration of the water cycle

electric griddle or frying pan

kettle

can

tongs

ice

water

food colouring

meter stick

chalk

measuring cup

Materials/Resources for students:

No additional resources required

Activity Description:

Begin by reviewing the water cycle:

Ask students:

What does the inside of a cloud look like?

(note that fog is a cloud on the ground)

Evaporation Demonstration:

Melt an ice cube on the electric griddle.

Ask students where snow and freezing rain come from.

Evaporate the water, pointing out that the water vapour is in the thin invisible layer immediately above the griddle. The steam is the water vapour condensing to form tiny droplets (i.e. a cloud).

Condensation Demonstration:

Fill a can with ice, a few drops of food colouring and water. Observe water condensing on the side of the can. (This happens almost immediately on a warm humid day, but it's almost impossible to achieve in winter when the air is dry. In the winter, try breathing on the can to provide warm, moist air.)

Leave the can on the table and look back periodically to see water droplets forming. It should take about 10-15 minutes in warm weather.

Water Cycle Demonstration:

Boil water in a kettle and hold a can of ice water above the steam. Let the water vapour condense on the can and drip back into the kettle.

Evaporation Experiment:

Pour 50 ml of water on the pavement in the sun.

Pour 50 ml of water on the pavement in the shade.

Draw a chalk mark around the water spots - note the colour and shininess and relate back to the wet-ness of the spots.

Check the spots every 10 to 15 minutes.

Have students write and describe experiments and demonstrations independently in class.

Tips: The best order to do these demonstration is as follows:

1. Set-up condensation demonstration
2. Set-up evaporation experiment

    check 1

3. Do evaporation demonstration

    check1

    check 2

4. Do water cycle demonstration

    check 1

    check 2