Water Cycle: The Life of a Drip
(Adapted from “The Incredible Journey”
Project WET Curriculum and Activity Guide
Resource available only through a workshop)

Grade 5 curriculum expectations
Matter and Materials – Properties and Changes in Matter:
Overall Expectations
- Demonstrate an understanding of the three states of matter and of changes in state;
- Investigate common changes of state (e.g., melting, freezing, condensing, evaporating)

Specific Expectations
Understanding Basic Concepts
- Identify the three different states of matter – solid, liquid, and gas – and give examples of each state

Developing Skills of Inquiry, Design and Communication
- Use appropriate vocabulary, including correct science and technology terminology, in describing their investigations and observations
- Compile data gathered through investigation in order to record and present results, using tally charts, tables, and labelled graphs produced by hand or with a computer.

Earth and Space Systems
Specific Expectations
Understanding Basic Concepts
- Describe the water cycle in terms of evaporation, condensation, and precipitation;
- Describe the ways in which energy from the sun affects weather conditions

Developing Skills
- Compile data gathered through investigation in order to record and present results, using tally charts, tables, and labelled graphs produced by hand or with a computer.

Grade 8 curriculum expectations
Earth and Space Systems
Specific Expectations
Understanding Basic Concepts
- Identify the various states of water on the earth’s surface and the conditions under which they exist
- Describe the distribution and circulation of water on the earth

Developing Skills
- Use appropriate vocabulary, including correct science and technology terminology, to communicate ideas, procedures, and results

Vocabulary:
Condensation, Evaporation, Freezes, Incorporation, Melts, Precipitation, Respiration, Run-off, Saturation, Sublimation, Transpiration, Urination
<table>
<thead>
<tr>
<th>Activity</th>
<th>Description</th>
<th>Equipment</th>
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| Pre-trip                 | Read to the students “The Water Dance.”  
Ask students about their knowledge of the water cycle  
Explain to the students that they will be working in pairs to experience the life of a water droplet – remind them that we will not be pouring water on them..... | ▪ Water Dance by Thomas Locker                                                                                                                                   |
| Introduction (5 minutes) | Using a blackboard/whiteboard, have the students describe what they know about the water cycle. Draw the water cycle according to their description.                                                                                                                                  | ▪ Blackboard/Whiteboard                                                                                                                                     |
| Brief description of outdoor activity | Tell the students that they are going to become water molecules. They will work in pairs – they must stick together as a pair – to follow the “Life of a Drip.” Introduce the nine water stations that will be placed outside. At each station there will be one die. The action for the students is to roll the die to determine where they, as a water molecule, will travel next. Describe to the students how to complete the worksheet. Each pair of students will get one clipboard and one worksheet. The students are to write the station at which they start in the first rectangle. They are then to roll the die to determine where they will go next. After rolling the die, they check the chart on the sign to determine their next action and location. They are to put “What happened” in the arrow on their worksheet and then write down the station they are to go to next. (See attached worksheet -- Rectangle = Station name; Arrow = What happened information) | ▪ Signs for each station (See attached instruction sheet and sign sheets)  
▪ Clipboards with worksheets and pencil (one for every 2 students) |
| Outside – Follow the life of a drip | Set up the stations in a large circle in a large open area.  
Have each pair of students stand behind one of the stations.  
Review the instructions for the activity. Remind students that they are to write down the “what happened” and “Go to” before moving onto the next water station.  
Rules:  
▪ Die are to be rolled below the waist  
▪ Leave die at the water station after it has been rolled  
▪ Students are to “stick” with their water molecule partner throughout the activity.  
If there is more than one pair of students at any station, pairs are to line up and wait their turn. When they reach the front of the line, they roll the die and move to the next station. If, as a result of their roll, they are to stay at the same station, they are to go to the end of the line.  
There will probably be a line up formed at clouds, as water molecules often stay at this station for a few rolls of the die.  
Once a pair of students has completed both sides of the sheet, have them tally how many times they visited each water station. Remind them of the vocabulary box on the worksheet to learn new terms. | ▪ Large Open Area  
▪ 9 station signs on metre sticks  
▪ 9 pylons to place the signs in  
▪ 9 large dice  
▪ Worksheet |
## Wrap-up (Inside or outside)

Have the students add or change information on the water cycle diagram created at the beginning of the activity.

Ask students where they travelled the most (refer to the tally), the least. Ask students why they went to some stations often, and did not go to other stations. Encourage students to understand that water does not travel in a simple cycle, that water sometimes stays in one state for a period of time. Discuss any cycling that took place (that is, if any students returned to the same station.)

Relate to the students that the water we have on earth now is all we will have. The water we have on the earth now is the same water that was on the earth when the dinosaurs walked the earth. Encourage the students to keep water clean, use less.

## Follow-up Activities

1. Have the students write a story about the places water has been. They should include a description of what conditions were necessary for water to move to each location and the state water was in as it moved.
2. Have the students compare the movement of water during different seasons and at different locations around the globe.
3. Have students investigate how water becomes polluted and is cleaned as it moves through the water cycle. For instance, it might pick up contaminants as it travels through the soil, which is then left behind as water evaporates at the surface. Challenge students to adapt the activity to include these processes. For example, rolled-up pieces of masking tape can represent pollutants and be stuck to students as they travel to the soil station. Some materials will be filtered out as the water moves to the lake. Show this by having students rub their arms to slough off some tape. If they roll clouds, they remove all the tape; when water evaporates, it leaves pollutants behind.

## Resources


If you roll: What happened? Go To:

1 or 2 Water is absorbed by plant roots Plants

3 The soil is saturated, so water runs off into a river Rivers

4 Water is pulled by gravity; it filters into the soil Ground Water

5 Heat energy is added, so the water evaporates and goes to the clouds Clouds

6 Water remains on the surface (in a puddle, or attached soil particles) Stay
**Clouds**

If you roll: **What happened?**

1. Water condenses and falls on soil → Soil

2 or 3. Water condenses and falls as snow onto a glacier → Glacier

4. Water condenses and falls into a lake → Lake

5. Water condenses and falls into the ocean → Ocean

6. Water remains as a water droplet clinging to a dust particle → Stay
Oceans

If you roll:  What happened?  Go To:

1, 3, or 5  Heat energy is added, so the water evaporates and goes to the clouds  Clouds

2, 4, or 6  Water remains in the ocean  Stay
Glaciers

If you roll:  What happened?  Go To:

1 or 2  Ice melts and water filters into the ground  Ground Water

3  Ice evaporates and water goes to the clouds (sublimation)  Clouds

4 or 5  Ice melts and water flows into a river  River

6  Ice stays frozen in the glacier  Stay
Animals

If you roll: What happened? Go To:

1 or 3 Water is excreted through feces and urine Soil

2 or 5 Water is respired or evaporated from the body Clouds

4 or 6 Water is incorporated into the body Stay
Ground Water

If you roll: | What happened? | Go To:
--- | --- | ---
1 or 4 | Water filters into a river | River
2, 3, or 5 | Water filters into a lake | Lake
6 | Water stays underground | Stay
Lakes

If you roll:  What happened?  Go To:

1. Water is pulled by gravity; it filters into the soil  Ground Water

2. An animal drinks water  Animal

3 or 4. Water flows into a river  River

5. Heat energy is added so the water evaporates and goes to the clouds  Clouds

6. Water remains within the lake  Stay
Plants

If you roll:  What happened?  Go To:

1, 3, or 5  Water leaves the plant through the process of transpiration  Clouds

2, 4, or 6  Water is used by the plant and stays in the cells  Stay
Rivers

If you roll:

1. Water flows into a lake → Lake
2. Water is pulled by gravity; it filters into the soil → Ground Water
3. Water flows into the ocean → Ocean
4. An animal drinks water → Animal
5. Heat energy is added, so the water evaporates and goes to the clouds → Clouds
6. Water remains in the current of the river → Stay
My Life As A Drip

Name(s): ________________________________

Record your journey as a water droplet through the water cycle.

Flip page
Some key words that you may need:

- **Condensation** - Water vapour cools from a gas and becomes a liquid
- **Evaporation** - Water becomes a gas and moves to the clouds
- **Freezes** - Water temperature cools and it becomes ice
- **Incorporation** - Water becomes a part of the cells of an animal or plant
- **Melts** - Frozen water (snow or ice) heats up and changes state to become liquid
- **Precipitation** - Water falls as rain, hail, or snow (and others)
- **Respiration** - Water vapour is exhaled from an animal into the air
- **Run-off** - Water runs along the surface of the earth
- **Saturation** - Water can no longer absorb because there is already too much water in the ground
- **Sublimation** - Ice changes to a gas and goes to the clouds
- **Transpiration** - Water “sweats” off of a living thing and moves to the clouds (example - humans sweat; dogs pant; plants transpire)
- **Urination** - Water is peed out of an animal