



Activity 5. A dramatic water cycle

Aim

To reinforce concepts of evaporation, condensation and precipitation and to introduce the concepts of runoff and transpiration.

Materials required

- One litre cartons, for example, milk containers
- Labels marked with the words **evaporation**, **condensation**, **precipitation** and **transpiration**

Preparation

1. Arrange the classroom (or another open space) to provide four separate areas which will represent a part of the water cycle:
 - a. a lake whose boundaries should be outlined in chalk or other suitable means
 - b. clouds which should be based on an elevated position such as desks, tables or a platform
 - c. a forest
 - d. a river
2. Students play various roles in the simulated water cycle:
 - a. **Water carriers** whose role is to take water from the lake and deliver it to the clouds.
This role represents the process of evaporation.
 - b. The **clouds** which take delivery of the water from the water carriers. Here the process of condensation can be explained. Precipitation can be demonstrated with the clouds becoming **water drops** by leaving the raised area to deliver water to the rivers and vegetation.
 - c. The **river** and **trees** receive the water from the water drops.

Procedure

1. Place all water containers in the lake.
2. Allocate roles to all students. About $\frac{1}{3}$ of the class should be **water carriers**, $\frac{1}{3}$ **clouds and water drops**, and the remaining $\frac{1}{3}$ should be divided between the **rivers and trees**.
3. Run through the following sequence three times with each process being discussed and the appropriate label presented.
 - a. Water carriers each collect a water container from the lake and travel to the cloud area.
Discuss: What is happening to the water? Present the label **evaporation**.
 - b. The clouds receive the water containers from the water carriers who then return to the lake areas.
Discuss: How cold is it up in the clouds? What effect does the cold have on the water held by the clouds? Present the label **condensation**. Ask the clouds what they are going to do with the water they are holding!
 - c. Clouds can then become water drops and leave the elevated platform.
Discuss: What is happening to the water? Where is the water going? What do we call this water? Present the label **precipitation**.

NOTE: *To further demonstrate the different forms of precipitation, students in this role should wear labels stating **rain, hail, snow and sleet**.*

- d. The water drops deliver the water containers to the trees and river and then return to the clouds. The tree and river people keep the water at this stage. After three cycles, the lake area should become depleted of water containers while the trees and river are becoming overloaded.

Discuss: What should the river be doing with the water? Introduce the term **runoff**.

- e. Continue the activity for two more cycles with the river passing some of the water containers onto the lake. The trees will now be overloaded with water containers.

Discuss: How do trees use water? Do trees store all of their water? Do trees lose some of their water? Introduce the term **transpiration** with the appropriate label. Run through the cycle with the trees giving some water containers back to the clouds.

Following up

1. Discuss why the water cycle is called a cycle. Relate this to the movement of the water containers in the activity.
2. The concept of water infiltrating into the soil and ground water can also be incorporated into the activity.

- a. Discuss as a class:
Where else could water go besides transpiration and runoff?

Water can run over the top of soil, but what else can it do?

- b. The concept of ground water can be demonstrated in the activity. Ground water can be represented by positioning some students under a cover such as a blanket. The activity can be followed through with the water drops delivering some water containers to the ground water. Some water can be stored and some passed along to the lake.