Forests and Water

LESSON PLAN

INVESTIGATE FORESTS

Experiment 2: Investigating how trees prevent flooding and pollution

Aim:

To introduce students to the important role trees and forests play in the water cycle.

Curriculum Links:

Living Things
Environmental awareness and care

Global Goals/SDG Links:

Goal 3 – Good Health & Wellbeing
Goal 6 – Clean Water & Sanitation
Goal 11 – Sustainable Cities and Communities
Goal 13 – Climate Action
Goal 14 – Life below water
Goal 15 – Life on Land

Skills:

Research; Observing; Recording;

Background Information:

This Lesson Plan introduces teachers/facilitators to the connection between Forests & Water.

Support Sheet 1 will equip you with an understanding of how trees and water interact, with some age appropriate facts to share with your students.

The Student Activity Sheet will help explore the role and value of forests for the Earth's water systems. It aims to help students understand the path of water in a tree and the role that trees and forest ecosystems play in water redistribution systems. This also relates to their role as defense against flooding, soil erosion and extreme weather events.

Equipment:

- ✓ Experiment 2: Student Activity Sheet per group
- ✓ Experiment 2: Answers for teacher/facilitator
- ✓ Clipboards/Pencils
- ✓ Tablet/Camera to record work
- ✓ A well rooted pot plant (this represents a tree)
- ✓ A pot filled to the same height with compost/soil
- ✓ Two white basins or trays to collect the runoff from the two pots
- ✓ Measuring jug
- ✓ Stopwatch

Methodology:

1. Place the potted plant and the pot of compost/soil in trays/basin to catch water runoff

Potted Plant

Pot with Compost

2. Add 500 ml of water to each pot at the same time. Start timer for 2 minutes.

3. After 2 minutes, measure the amount of runoff from both pots.

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4. Compare the colour of the run-off from both pots.

5. Record results in the table in the Student Activity Sheet and answer the questions.

- Read: Forests and Climate 'Trees can Change Weather' Support Sheet 2
- Discuss the questions and answers with the group.

Useful Links:

LEAF Theme – Forests & Water:
https://leafireland.org/themes/forests-water/

Green-Schools Water Theme:
https://greenschoolsireland.org/resources/theme_category/water/

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STUDENT ACTIVITY SHEET

INVESTIGATE FORESTS

Experiment 2: Investigating how trees prevent flooding and pollution

RESULTS	Potted Plant (Tree)	Pot of Soil
Volume of runoff		
Colour of runoff		
Presence of particles		

1. Why is there a difference in the volume of runoff from both pots?

2. Explain the difference in colour between the runoff from both pots.

3. Can trees help to prevent flooding? How?

4. Can trees help to prevent pollution? How?

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SUPPORT SHEET

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Answers

Experiment 2: Investigating how trees prevent flooding and pollution

RESULTS	Potted Plant (Tree)	Pot of Soil
Volume of runoff	Lesser Volume	Greater volume
Colour of runoff	Clearer	Darker
Presence of particles	None or a small amount	Yes – a larger amount

1. Why is there a difference in the volume of runoff from both pots?

The plant roots and creatures (worms, ants, etc.) which live near plants create spaces and holes in the soil where water can be stored.

2. Explain the difference in colour between the runoff from both pots.

The runoff from the bare soil is darker as it contains more soil particles. The roots of the plant bind the soil together preventing soil loss and less soil particles runoff into the water.
More trees means less runoff.

3. Can trees help to prevent flooding?

Yes, trees can stop large volumes of water going into rivers too fast which can lead to flooding.
They do this with their roots and their relationship with the soil and local environment.
One of the many reasons that trees are so amazing!

4. Can trees help to prevent pollution?

Yes, tree roots bind the soil together and this prevents particles of soil and other materials from entering watercourses. They carry out water filtration, cleaning the soil and water.
How cool is that!

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