

Lesson plan

Intermediate Phase

Grade 6: Wetlands keep water clean (part 2 on Wetlands)

Subject	CAPS requirements	Knowledge	Skills
Natural Sciences	<p>Grade 6 Term 2 Matter and materials.</p> <p>Environment and water resources.</p> <p>Wetlands; concept of a wetland.</p> <p>Groundwater and wetlands act as resources for humans.</p> <p>Water needed to support all life.</p>	<p>Water filter.</p> <p>Experiment.</p> <p>Vocabulary.</p> <p>Information on a wetland.</p> <p>Investigate the effects of placing layers in different orders with differing amounts.</p>	<p>Follows instructions to make a water filter.</p> <p>Writes a report about the findings of the experiment.</p> <p>Writes meanings of vocabulary words.</p> <p>Recalls previous information learned about wetlands.</p> <p>Discusses information.</p>

Resources

Each group of learners will need: a two litre plastic bottle, scissors, pebbles, gravel, sand, water, a small jug, soil, cotton wool, explanation for making a water filter such as: http://www.epa.gov/ogwdw/kids/flash/flash_filtration.html (*Thirstin's Water Filtration Lesson*); the worksheet.

Objectives

Learners will:

- Investigate ways of removing soil and plant pollutants from water by filtering it
- Make their own filter using sand, gravel, pebbles and cotton wool

Background

This lesson builds on the previous lesson where the focus was on how a wetland absorbs water in the same way that a sponge absorbs water. In this lesson, learners investigate how a wetland removes soluble substances from water. Bulrushes and reeds grow in wetlands. As they grow, they take up dissolved substances from the water. If the substances contain chemicals, the plants absorb the chemicals from the water and use the nutrients. Wetlands remove insoluble substances from water.

Vocabulary

soluble substances, insoluble substances, dissolved substances, chemicals, nutrients, filter, pollutants, layers

Teacher preparation before starting

Before teaching this activity, ensure that you have obtained all the materials needed for the experiment.

Work out how to divide the learners into their groups.

Set up your observation sheet for informal assessment recording.

Plan to do the vocabulary exercise at the end so the learners can use their dictionaries and define the words accurately.

Ensure that you have tried out the two experiments and the final investigation first so that you know the procedure.

Find a suitable explanation for making a water filter such as *Thirstin's Water Filtration Lesson*: http://www.epa.gov/ogwdw/kids/flash/flash_filtration.html This can be shown to the learners at the end of the lesson after they have conducted their own experiment and completed and handed in their report.

Teaching the Activity

Revise the previous lesson and its findings about different soils in a wetland with the learners. Ask learners to relate what they learned.

Place the learners in groups for the main part of the lesson.

Main Activity

Discuss the various vocabulary terms listed under 'vocabulary' that will be used in this lesson and reinforce the vocabulary that the learners are unfamiliar with.

Ask the learners to conduct an experiment by filtering water as a way of understanding how a wetland cleans water by removing soil and plant pollutants from the water. Ensure that each group has the required items for the activity.

Observe the learners as they conduct their experiments. When they are finished, the learners record their findings.

Discuss how this experiment is similar to the way a wetland cleans water.

Discuss how a wetland acts as resources for all humans, and how clean water is essential for human life.

At the end of the lesson, show the learners the animated internet lesson on making a water filter.



Lesson plan continued

Worksheet link

The worksheet part of this lesson is entitled '*Wetlands keep water clean.*'

Expanded activity

Once the experiment is completed and recorded, allow the learners to conduct a further investigation.

The learners dis-assemble their filters to see the different layers filtered from the water.

After that, they experiment by putting the materials in different layers and different amounts to see if this makes the water even cleaner.

Discuss these investigations with the learners.

Informal Assessment

Record each learner's progress continually on your observation sheet.

Assessment Criteria

Did the learner investigate ways of removing soil and plant pollutants from water by filtering it?

Did the learner successfully make their own water filter using sand, gravel, pebbles and cotton wool?

Assessment rubric

Rating code	Description of competence
7	Outstanding achievement
6	Meritorious achievement
5	Substantial achievement
4	Adequate achievement
3	Moderate achievement
2	Elementary achievement
1	Not achieved



A wetland keeps water clean

Name: _____

Did you know that wetlands remove soluble and insoluble substances from water?



Background

- a) How does a wetland remove soluble substances from water?
 You will notice that bulrushes and reeds grow in a wetland. As they grow, they take up dissolved substances from the water. If the substances contain chemicals, the plants take the chemicals from the water and use the nutrients.
- b) How does a wetland remove insoluble substances from water?
 These substances eventually settle to the bottom of the wetlands and they filter the water as they do, so keeping the water above clean.

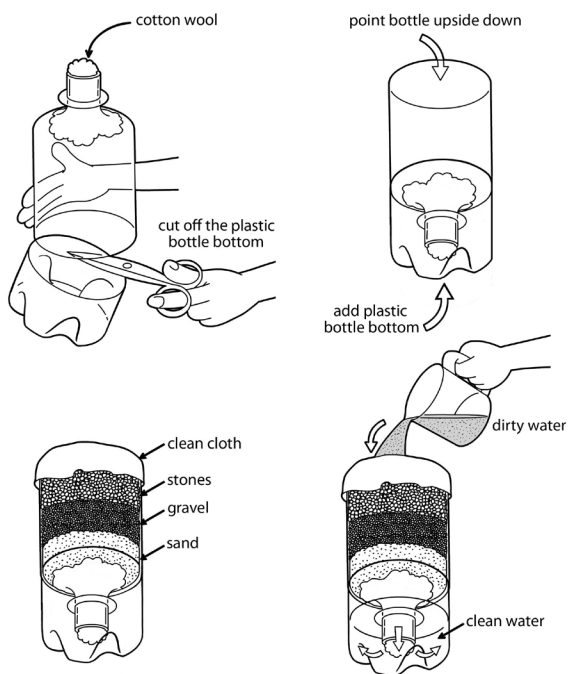
Activity: Make a water filter

We can remove soil and plant pollutants from water by filtering it. Make your own filter using sand, gravel, pebbles and cotton wool.

You will need

A two litre plastic bottle, scissors, pebbles, gravel, sand, water, a small jug, soil, cotton wool and a clean cloth.

1. Cut off the bottle about one third of the way down.
2. Turn the top upside down to fit into the cut off piece of the bottle. Put cotton wool at the thinnest part of the bottle neck .
3. Next add small pebbles.
4. Now place the gravel.
5. Finally add the sand.
6. Fill a jug with water and add 2 or 3 teaspoons of soil and other materials like grass and small leaves to it to make polluted water. Stir it and then pour it slowly into the upside down bottle.
7. Record what happens.
8. Discuss how this is similar to what a wetland does.



SCIENCE INVESTIGATION

Take your filter apart. Can you see the different layers filtered from the water? Try putting the materials in separate layers using different quantities to see if this makes the water even cleaner.