Lesson plan

Intermediate Phase
Grade 6: A wetland is like a sponge (part 1 on wetlands)

Subject	CAPS requirements	Knowledge	Skills
Natural Sciences	**Grade 6 Term 2** Matter and materials. Environment and water resources. Wetlands. Sponges to regulate flow of water.	Investigation on sponges absorbing water. Vocabulary. Information about wetlands. Investigation on soils absorbing water. Maths formula. Wetlands exploration.	Follows instructions. Investigates how sponges absorb water. Writes a paragraph. Unscrambles vocabulary. Listens to, observes and discusses information. Investigates how soils absorb water. Works out a maths formula. Draws a conclusion. Writes a report on an experiment. Writes a report on a visit to a wetland.

Resources
Activity 1: Place the learners in pairs. They will need a sponge and a bowl of water.
Activity 2: Each group will need the following items for their water experiment: peat moss, sand gravel, potting soil, cheesecloth, four sieves, a 250ml measuring cup, four bowls for catching water, a scale and a recording sheet. For '*word scramble',* paper for each pair to write words and definitions, worksheet, YouTube video: *What is a wetland* http://www.youtube.com/watch?v=1VeF8jOuvlY (2 mins); or *Bill Nye the Science Guy episodes 57: Wetlands* http://www.youtube.com/watch?v=3oGymnSJ4Ek (23 mins).

Objectives
Learners will:
- Discover practically how sponges absorb water, and record their findings
- Relate how a sponge works from absorbing and filtering excess water to the activity of wetlands by means of an experiment

Background
This is the first of two worksheets about a wetland. Wetlands are a very important resource for wildlife, and they give you as an educator, a great opportunity to teach your learners about different topics including the water cycle, food chains, food webs, the importance of habitats, human impacts and how to get involved in conservation activities. Wetland vegetation plays an important role in keeping water clean for wildlife, since it acts as a natural filter in many streams. It would be very useful if you could take your class on a visit to a wetland. Make your own list of why wetlands are important so that you can discuss these with the learners.

Vocabulary
conservation, wetlands, ecosystems, filter, organic materials, absorb, retain, vegetation, solids, excess water, ground water, pollution, habitats

Note: One idea for teaching this vocabulary to the class is to play a game called *Word Scramble*. First discuss the vocabulary above and define the words. Write the definitions only on the board. After that, give the learner the vocabulary words in a scrambled form. e.g. conservation could be written as *vatconionser.* Place the learners in pairs and see who can unscramble the correct words with their defintions first.

Teacher preparation before starting
Before teaching this activity, make sure that you have obtained all the materials needed in the two experiments.
If you decide to use the *Word Scramble* idea for the vocabulary, ensure you scramble the words beforehand and have written good definitions for each word.
Set up your observation sheet for informal assessment recording.
Do the two experiments beforehand so that you know the procedure.
Find a suitable video on YouTube that explains wetland activity to learners in a thought provoking way such as: '*What is a wetland':* http://www.youtube.com/watch?v=1VeF8jOuvlY (2 mins); or '*Bill Nye' the Science Guy episodes 57: Wetlands:* http://www.youtube.com/watch?v=3oGymnSJ4Ek (23 mins).

Lesson plan continued

Make your own list of the importance of wetlands so that you can discuss this with the learners at the end of the lesson. Examples could be that they store water, purify water, help with erosion control, can be used for recreation, they recharge groundwater, they regulate floodwater and streams, they conserve special plants and animals, they are useful for environmental education, they provide habitats for a rich diversity of plants and animals and they help maintain water quality.

Teaching the Activity

Begin the lesson by placing the learners in pairs and asking them to do an experiment, namely, Activity 1. Do not relate this to wetlands or even mention wetlands before this experiment is complete. Learners must write a paragraph about what they discovered in the experiment. (The resemblance to the way a wetland operates will be discovered after this activity.)
Introduce the concept of wetlands and find out how much the learners know about them. Show the YouTube video on wetlands that you have selected.
Ask the learners to work in the same pairs and attempt to relate the sponge activity to a wetland activity. They report back to the class.

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.
This leads to the second activity where the learners investigate exactly how a wetland works like a sponge and absorbs water. Wetlands can absorb a large amount of water and release it slowly to rivers, streams and ground water. This is partly due to the organic materials in the wetland soils. The learners investigate this by completing an experiment in groups.
Place the learners in groups and ensure that they have all the required materials.
Ensure the learners know about the importance of following instructions very carefully in science experiments.
Ensure that they understand how to work out the formula in point 4.
The groups use the results of the experiment to discuss the questions in point 5, namely, 'which *of the four soils retained the most water and why?'* and '*how do you think this relates to wetlands?*' Let the learners present their discussion as a written contribution.

Worksheet link

The worksheet link to this activity is entitled ***'A wetland is like a sponge'.***

Expanded activity

Visit a wetland near you with the class and conduct a science investigation in groups. Let the learners take photos and notice the plants, the animals, the soil, the pollution and the human impact. Encourage the learners to think about how a wetland can make money for a community. Each group writes up a short report on what they discovered.

Informal Assessment

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

Assessment Criteria

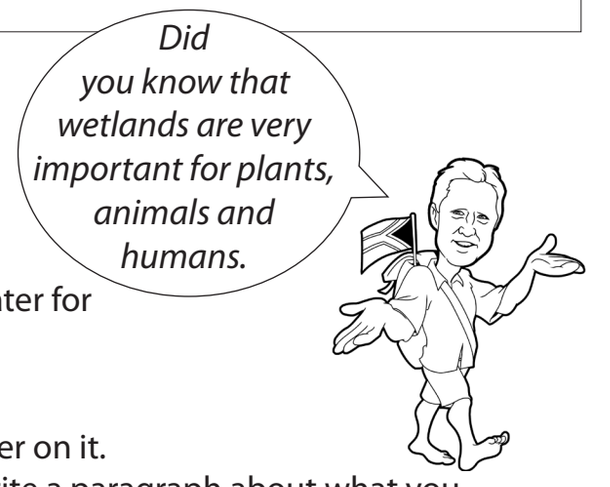
Did the learners discover practically and record how sponges absorb water and record their findings?
Were the learners able to relate the working of a sponge to the activity of a wetland by means of an experiment?

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 is like a sponge

Name:

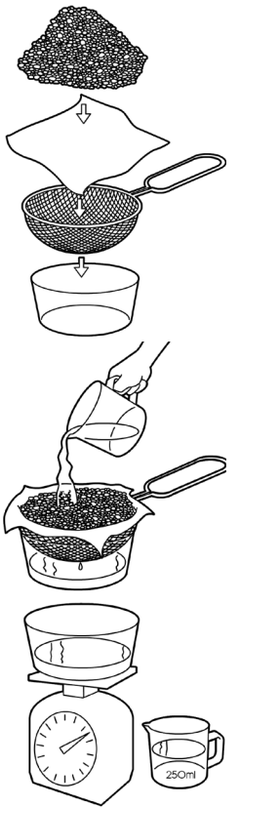


Background knowledge
Wetlands are areas where land and water ecosystems come together. They are important for acting like sponges to regulate the flow of water, for removing soluble and insoluble substances from the water and for providing water for animals and humans.

Activity 1: How does a sponge absorb water?
Work with a friend. Take a sponge and pour water on it.
What happens to the sponge and the water? Write a paragraph about what you discover.

Activity 2: How does a wetland work like a sponge?
Wetlands can absorb a large amount of water and release it slowly to rivers, streams and ground water. This is partly due to the organic materials in the wetland soils. Complete a soil experiment in groups.

<u>Each group needs:</u>
Peat moss, sand, gravel, potting soil, cheesecloth, four sieves, a 250ml measuring cup, four bowls for catching water, a scale, a recording sheet.



<u>Procedure</u>

1. Place the cheesecloth over the sieve with a bowl to catch the water underneath. Put a different type of soil in each sieve.
2. Find and record the mass of each bowl with the sieve and soil in it.
3. Fill the measuring cup with exactly 250ml water and place it in the first bowl. Do this for all four bowls and leave for five minutes.
3. Pour out the water from each bowl and find the new mass of the bowl, sieve and soil. Record this.
4. Find the percentage of mass gained by each type of soil. Use this formula:
   Dry soil = A. Wet soil = B. Subtract A from B to give you C.
   To find the percentage of water absorbed: $\frac{C}{A} \times 100$
5. Discuss the following questions.

a) Which of the four soils retained the most water and why?
b) How do you think this relates to wetlands?

SCIENCE INVESTIGATION: Visit a wetland near you. Take photos and take note of the plants, the animals, the soil, the pollution and the human impact. Think about how wetlands can make money for a community. Write your ideas in your work book.