



**Curriculum Outdoors Learning at School Outdoors**  
Curricular Area: Sciences - Planet Earth, Processes of the Planet



Experience and Outcomes

I have investigated water samples from the environment and explored methods that can be used to clean and conserve water and I am aware of the properties and uses of water. SCN 2-18a

Learning Outcome

To be able to investigate and discuss the use of filtration to purify water

To be able to purify some water

Teacher Notes

Natural water contains insoluble impurities such as mud and the remains of plants and animals. It must be free from these substances before humans can drink it.

**The water in this experiment will not be safe to be tasted or drunk.**

**Activity could be completed indoors or outdoors**

Resources

**Activity 1 Water Filter Experiment**

- Paper and pens (for carousel/jigsaw activity)
- Dirty water from the sea or a river
- Extra objects to put into water – e.g. string, sand, grass, plastic
- A tray for each group
- 3 small sieves for each group
- Sand
- Scourer pad
- Paper filter (coffee filter) or cloth material
- Clean tap water for comparisons (optional)
- 4 clear cups for each group
- Results table
- Spoon to stir with
- Paper towels for any spills

**Further information/videos/resources found here:**

<https://www.stem.org.uk/resources/elibrary/resource/315596/how-can-we-clean-our-dirty-water>  
<https://blogs.glowscotland.org.uk/ea/learningoutdoorsupportteam/learn-how-to-filter-water/>



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Activity <b>Filtering Water</b>	<u>Suggested Assessment</u>
<p>1. Pupils work together in groups to discuss the following questions. This could be done as a carousel/jigsaw activity: What does it mean to filter water? When would someone need to filter water and why? How do you filter water? What tools might be needed to filter water?</p> <p>2. Feedback discussion from the above activity bringing up the key points the pupils have suggested – further discussion about why filtering water is important and how we can do it.</p> <p>3. Experiment</p> <ul style="list-style-type: none"> <li>- Talk about what you might expect to find in water from the sea/river (ensure you have a jug of dirty water from one of these places prepared beforehand, this can be done some days before to allow you time to prepare – if living creatures are mentioned then discuss but don't add!!)</li> <li>- The first task is for pupils to decide which order they can use the filters in to achieve the cleanest water and explain why they have chosen this sequence. They can fill in their predictions in the results table (included in the link above)</li> <li>- Give each group a plastic cup of dirty salt water. Pupils will stir this and slowly pour about three-quarters through filter 1 so it collects in a clean plastic cup underneath. They should compare this filtered water to the quarter of dirty salt water left behind in the beaker and note any changes in the results table (is it cleaner/dirtier/clean?).</li> <li>- Pupils take the water that has passed through filter 1 and pour three-quarters of it through filter 2. Compare the water that has passed through filter 2 to the water left from filter 1.</li> <li>- Pupils take the water that has passed through filter 2 and pour three-quarters of it through filter 3. Compare the water that has passed through filter 3 to the water left from filter 2.</li> <li>- Pupils should discuss what the different filters have removed and whether the filtered water is clean.</li> </ul>	<p>Hard evidence of pupil results sheets</p> <p>Observation of pupils working</p> <p>Discussion with pupils</p> <p>Photographs of pupil work</p> <p>Videos of pupils working</p> <p>Peer Assessment – comparison of what different groups have done, what sequence they have used etc.</p> <p>Possible Extensions: Small pieces of iron or steel, no smaller than 1cm<sup>2</sup>, can be added to be removed by a magnet. Food colouring can be added to represent chemicals dissolved in sea water from ships/industry/etc. Approximately 2-4 drops of colouring to 1 litre of water is recommended. The food colouring can be removed by passing it through a paper filter containing Granular Activated Carbon (GAC). This is safe and easily available online.</p> <p><u>Follow Up Activity/Homework</u>        Can you find out where our drinking water comes from?</p> <p>Plastic in our oceans - Study the current problem with plastic microbeads in the ocean. Pupils can investigate how they get in the food chain and the effects on humans. What other kinds of item can be found in the sea? What is the effect of this on the wildlife?</p>



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Scaling up - Can the filtering methods used in the activity be used on a larger scale? If not, why not? Pupils can design a device that can filter sea water without filtering out the plants/animals and ruining the ecosystem. Can they help clean up an oil spill (vegetable oil on some water)?

Think about people and communities that do not have access to clean water for use – what can they do? What could we do to help? What impact does the dirty water have on them?

Link to water theme activity on LOST website:

<https://blogs.glowscotland.org.uk/ea/public/learningoutdoorsupportteam/uploads/sites/11891/2020/08/14131636/Theme-Water.pdf>

<https://blogs.glowscotland.org.uk/ea/learningoutdoorsupportteam/2020/06/19/the-water-cycle/>