



Clean the ocean

SEQUENCE 1

Age group	6-9 y.o.
Prior knowledge	None
Material needed	The Clean the Ocean box, additional liquids and solids that dissolve (or do not dissolve) in water
Subjects	Solubility
Skills involved	Learning to learn
Time to carry out the sequence	1h

Step 1: Discover the box

Use the box to mix oil or various other products in the glass of water. You do not need a big quantity of water to experiment. The goal is only to see whether the water and the additional material mix or not.

To promote the STEAM approach, make sure your pupils can formulate hypotheses about what they are about to test or what they have been testing. Allow them to make mistakes!

Step 2: Mixing water with liquids

One of the first hypotheses your pupils may make is “all liquids can mix with water”. The oil test is here to prove them wrong.

You may prove your pupils “right” by having them mix water and syrup, for example. However, they may be surprised when mixing oil with water. The conclusion is that water does not mix with all liquids.



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Step 3: Mixing water with solids

Your pupils may say, "Solids cannot mix with water".

If they put soil in water, they will believe their hypothesis is correct. If they put salt or sugar in it, they will notice that both elements mix.

Does the solid element disappear? Your pupils may tend to say yes since it is no longer visible. Make them add more of the solid: at some point, it will start to appear again. Why is that? The correct answer is that the solid did not disappear; it only dissolved in the water. At some point, there is not enough water to dissolve the solid, so it remains as it is.

Ask your pupils to weigh the amount of salt and sugar that can be mixed in a glass of water. When does the solution become saturated for each of these two elements?

Step 4: Useful vocabulary

By the end of the activity, your pupils should have acquired the following vocabulary. It is up to you to choose when to introduce your pupils to this vocabulary, either at the end of the sequence or as soon as they encounter the appropriate phenomena.

Solution: a solution is a liquid that is composed of one liquid plus at least one other liquid or solid.

Homogeneous: a state in which two items blend perfectly. A homogeneous solution will only have one texture and one colour.

Heterogeneous: a state in which two items stay separated, even when forced to blend.

Soluble: a soluble solid can dissolve in water.



SEQUENCE 2

Age group	10-12
Prior knowledge	Appropriate chemistry vocabulary, the basics about the protection of the environment
Material needed	The Clean the Ocean box, makeshift tools to remove the oil from a glass of water
Subjects	Protection of the environment, distillation
Skills involved	Problem-solving
Time to carry out the sequence	1h

Step 1: Small chat about pollution at sea

Have your pupils do some research about the effects of pollution in the seas and oceans, such as oil spills or the Great Pacific Garbage Patch.

If your pupils already know the vocabulary from the previous sequence, they can use the words they discovered to feed their research.

Step 2: Use the box to clean a glass of water

Use the box and experiment with putting oil into the glass of water. Ask your pupils to remove the oil from the glass of water using the contents of the box or other items they can think about. You may also briefly tease this experiment to your pupils and ask them to come prepared with tools to remove the oil.

If they have not succeeded in removing the oil from the glass of water, ask them what they think would work.



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Step 3: Conclusions about the environment

Ask your pupils how they can compare what they just did to oil spills. They might have seen that specific products exist to remove the oil from the beaches, but those are hard to find and very complex to create.

Although a part of the oil can be retrieved using shovels, most of it needs to be removed with the help of chemicals.

When it comes to garbage islands, the solid items could be retrieved by hand, but they may already have released some fluids that pollute the water. Remember that many solids and liquids can mix with water, and even though you cannot see them, they still affect the environment, including the fauna and flora of the ocean.



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