



## Growing moss

### SEQUENCE 1

Age group	6-9 y.o
Prior knowledge	None
Material needed	The Growing moss box, four glasses
Subjects	Science
Skills involved	Scientific methodology
Time to carry out the sequence	1 week to observe the consequences of the experiment

#### Step 1: What is moss?

Moss is a type of plant with leaves and small “roots” that does not produce flowers. It is more primitive than other sorts of plants but is also more resilient.

Have your pupils already seen moss? Where? Actually, you can find moss everywhere: on walls and trees, in the grass, etc. Don't hesitate to show your pupils pictures of moss or, if possible, to show them examples around the school. Use the story to elaborate on the importance of moss on the ecosystem!

#### Step 2: Test with the box

Have your pupils put the dehydrated moss in the four glasses (one remaining empty, one with water only, one with dry soil and one with water and soil). Have them formulate hypotheses about what will happen: which moss will grow? Which ones won't? Only the moss with both the water and soil should grow. If the one in the soil grows too, it means that there is still some water in it.

The moss in the glass of water should grow larger but should not be able to develop (and may even rot at some point). Indeed, since the moss is not attached to a solid



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surface, its roots will not be able to provide the nutrients it needs to grow. However, the “leaves” still keep their absorption properties, which is why the moss looks bigger.

You may then use the glasses in which the experiment succeeded to make the light test: what happens when moss is deprived of light? Once again, ask your pupils to draw hypotheses about the consequences of this action.

- Moss requires only a little bit of light. If you want to conduct this experiment, make sure to place the moss in a dark room to avoid the light: remember that moss is often found in the undergrowth.

### Step 3: The needs of the flora

Plants (such as moss) need to have access to both water and nutrients to survive. Moss requires little maintenance and has the ability to regenerate if it does not have access to its needs. Other plants, such as trees or herbaceous plants, are more fragile, which is why we do not use them in this kind of experiment.

So what should happen in the previously conducted experiments?

1. With no water and no soil, the plant cannot grow at all, and simply dries out with the sunlight.
2. With soil only, the plant has access to a stable place to grow with nutrients, but the lack of water makes it impossible to grow: the plant will very likely dry out, although if the soil was not completely dry, it might start to grow.
3. With water only, the plant will rapidly run out of nutrients. If the water you're using has a lot of minerals in it, then the plant may start to grow before drowning in the glass.
4. With both elements, the plant will live a happy life!
5. If you remove the light from the plant, it will start to grow in an attempt to reach the light and stop after some point.



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## SEQUENCE 2

Age group	10-12 y.o
Prior knowledge	None
Material needed	The Growing moss box, a scale
Subjects	Science
Skills involved	
Time to carry out the sequence	1 week to observe the consequences of the experiment

### Step 1: Test with the box

You may start by recreating the experiment from the box to see how to grow moss. In this sequence, we will mostly consider the amount of water that moss is able to absorb.

Before starting the activity, weigh the moss you will put in the glass of water and in the glass with both soil and water. Weigh the moss after the experiment. What happened?

### Step 2: Calculate and compare

Ask your pupils to illustrate the result of the experiment as a fraction. Depending on the type of moss you selected, it can absorb up to 20 times its own weight in water!

You may then compare this absorption rate with other items, such as: cotton (you may bring a t-shirt to conduct this experiment since it will simply be dipped in water), a wooden stick (not too thin), or any other vegetal material such as straw or linen if you have some. Ask your pupils to weigh the materials before and after they have been put in water, and to represent the results as fractions. Which weight do they expect to vary the most? Once your pupils have figured out which material absorbed more water compared to its size/weight, you may start an activity about the fractions (not discussed here).



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## Step 3: To go further

The absorption rate of materials is used in architecture. What is the goal of doing this? Guide your pupils towards: keeping the house warm in winter and cool in summer, reduce the noise, limit the pollution with plants that absorb CO<sub>2</sub>.

To illustrate this fact, you may conduct an extra activity using soil, moss and water. More explanations in the Creation of the elements and Box notice! Use the STEAM approach with this experiment: what do children think will happen? Ask them to write hypotheses. What will the water colour be in each glass? What does it mean about the quality of the water? What does it mean about the utility of the moss and leaves?

This experiment also shows that moss and vegetation in general help prevent soil erosion during heavy rains, for example.



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