



States of water

HOW TO CREATE YOUR ELEMENTS

Disclaimer: the second activity described below is using hot water. Perform this second activity only with a calm group of pupils.

STORAGE

For those activities, the biggest materials you need are a jar and a bottle; a bag or a shoebox would be enough to store them. But you also need some external machines: a freezer (for both activities) and a microwave (for the second activity).

CRAFT THE ELEMENTS

A. Creating instant frozen water:

Warning: To perform this activity, you need to have access to a freezer. Be aware that, regarding the machine setup (Temperature, Kind of freezing system), the durations mentioned below could change. We recommend you to test the activity before performing it with your class.

For this activity, you only need:

- 1 flexible plastic bottle per group,
- Water
- A freezer

Before your class, put the bottle full of water in the freezer for 4 hours.

When you remove it, it should still be liquid.



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Important: Do not shake or shock the bottle before the activity; otherwise, your pupils won't see the water freezing instantly.

For a practical example, you can follow this video on YouTube:

<https://www.youtube.com/watch?v=hd4Z86sIJGk>

B. Boiling water with ice cubes

Warning: To perform this activity, you need to have access to a microwave and a freezer where you have stored ice cubes.

For this activity, you only need:

- An elastic transparent film
- A scissor or a knife
- Gloves protecting against heat
- An elastic band
- A glass jar with its cap
- A microwave
- Ice cubes
- Water

Then you can experiment:

1. Put water in the jar (2/3).
2. Close the jar with the plastic film and fix it with the elastic band.
3. Do 3 little holes in the plastic film with scissors or a knife.
4. Put the jar in the microwave until it is boiling and let it for a few more seconds; the boiling effect will stop.
5. With the gloves, remove the jar from the microwave and close it immediately
6. Tear the plastic film that remained.



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8. Then, you can place ice cubes on the top of the jar cap to see the water boiling again.

For a practical example, you can follow this video on YouTube:

https://www.youtube.com/watch?v=i0FrX_bPsT8

C.Storytelling resource

As you read the story, pupils are led to illustrate the changes in the states of water using the pictures provided in the Storytelling Elements files. Here is how to proceed:

1. Print the Storytelling elements for the teacher. You should have the story and all the character figures.
2. Print the Storytelling elements for the children on tracing or glossy paper.
3. As you tell the story, show the water figures to the pupils and ask them to recreate the designs on their drawings. First, they represent liquid water, then solid water (ice) and finally, gaseous water (vapour). Once they have filled in all the figures, ask your pupils to superimpose each figure: they match, which shows that despite its numerous states, what they are looking at is still water.

POTENTIAL DIFFICULTIES

The first experiment mentioned in this document can be a bit tricky to get right. Practice before the activity with pupils to make sure you get the timings right. The water in the bottle must not be frozen when you take it out of the freezer, and it must solidify when you tap it in front of the children.

It is better to use distilled or bottled water to complete the first experiment. Tap water often has impurities that will turn the water into ice in the freezer, so you would not be able to see the transformation. Once the experiment is over, you can still use the water as you normally would: you will not waste any of it!



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SCIENCES

Consider making one large drawing for the storytelling resource to avoid using too much paper. If you have access to it, you may print the water figure on A4 paper and have several of your pupils colour parts of it!



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