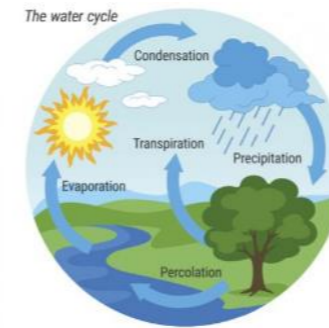
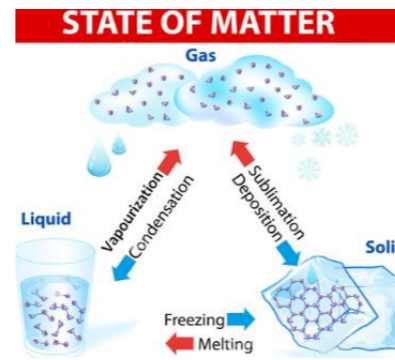


# Year 4 – Spring 2– ‘States of Matter’

## NC Science – ‘States of Matter’

Pupils should be taught to:

- Compare and group materials together, according to whether they are solids, liquids or gases.
- Observe that some materials change state when heated or cooled, and measure and research the temperature at which this happens in degrees Celsius.
- Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.



I can explain how the water cycle works.

What do you know about water from last week’s learning? What key words can you remember about the water cycle? Discuss with the children the different forms it can take: ice, water and condensation.

Discuss which state each of these reflect, e.g ice being a solid. Discuss what happens when ice cream is left in the sun and if they are cooking in the kitchen what happens on the windows.

Explain to the children today that we are going to investigate what happens to ice when it melts and chocolate when it is heated up. Allow time for the children to have ice cubes and investigate what happens when they melt. Use with melting chocolate and water as the two examples for reversible changes.

What if... I toasted a piece of bread? Can it return to bread? No, these are called irreversible changes.

What else do you know is a reversible/irreversible change?

I can explain how reversible changes happen.

Children to plan an investigation around the condition in which ice can melt. Have 1, 2, 3 and 5 ice cubes together in a bowl. Children to pose their own questions around the ice melting.

e.g Do ice cubes melt faster on their own? This will need to be a longer session today as we want the children to pose, predict, plan, present and provide all today.

Children to decide how they are going to carry out the investigation, decide who does what role in their group, observe the ice cubes over time to record and then present their results.

Bring the children back together and discuss what they have found out. Model by providing a whole class conclusion and then children to write their own conclusion based on what their results show them.

I can plan and carry out an investigation.

As this is the last session of the topic, I would like the children to work in small groups and plan and carry out their own investigation around the following posed question:

Does the type of chocolate affect its melting ability?

The children will need to melt chocolate the old fashioned way using a bowl of warm water. The children can use the thermometers to see what temperature the water is and then begin to melt the chocolate. Which chocolate melted the best? Could there possibly be any explanations for this?

A suggestion for which chocolate to use would be Cadbury’s Dairy Milk, Area bubbles and cheap thin chocolate. Children to follow the P’s for writing up the investigation.

I can carry out a fair test.

## Solids, Liquids and Gases



I can identify the differences between solids, liquids and gases.

Introduce the new topic to the children and see what they already understand about solids, liquids and gases. Explain the main difference through watching the following clip:

<https://www.bbc.com/bitesize/articles/zsgwvx>

Start a discussion with the children about what they learnt from the clip, making sure they use the correct scientific language. Now show the children a variety of materials and ask them to sort them into those they think are solids, those they think are liquids and those they think are gases then share what they have found out.

Use large sheets of paper for this and ask the children to present what they know to the rest of the class. Do all the children agree with each other? Are there any things that could go into all three? E.g. water?

Children to create a table in books organising the materials under the headings: solid, liquid, gas.

Children to then choose a material, draw it in their book, state if it is a solid, liquid or gas and explain how they know. Ensure the children use scientific language relating to the particles.

I can plan and carry out an investigation.

Explain to the children that today they are going to be planning their own investigation around the theme of the volume of liquid in different containers. Does the volume of liquid change when we use a different container?

Children to lead the investigation themselves and share the initial idea of the question and see if they can pose their own question.

Children to follow the Ps for the rest of the investigation: Plan, predict, present and provide.

Discuss how to make it a fair test.

Provide the children with a variety of containers to use just make sure they all have measurements on the side to make it a fair test.

TTYP- Tell them three things you have learn so far in our new science topic.

Pose the following question to the children:

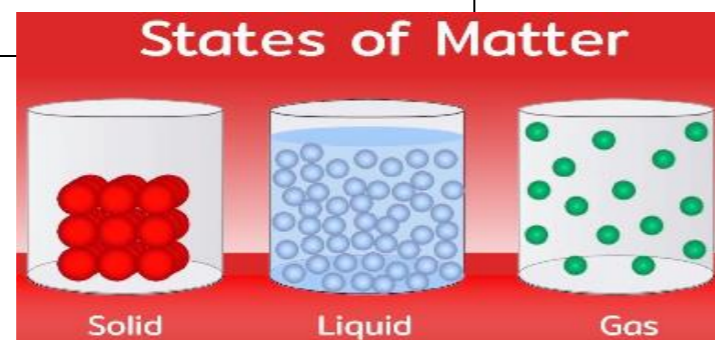
What do you know about the water cycle? Allow time for the children to share what they know. Now show the children an image of the water cycle and discuss each part in turn, making sure the correct language is used.

Play the children the water cycle song:

[https://www.youtube.com/watch?v=qrl\\_FHV58OMg](https://www.youtube.com/watch?v=qrl_FHV58OMg)

This should reinforce their understanding and make it fun for them.

Children to draw their own water cycle in their book and ensure they have labelled each part correctly. At the end of the lesson, fire some questions at the children related to an element of the water cycle to check they have understood the learning.



## NC Working Scientifically (LWKS2)

During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- Asking relevant questions and using different types of scientific enquiries to answer them.
- Setting up simple practical enquiries, comparative and fair tests making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions using

## Year 4 – Spring 2– 'States of Matter'

--

results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions

- Identifying differences, similarities or changes related to simple scientific ideas and processes using straightforward scientific evidence to answer questions or to support their findings.

