

Intent – what do we want our pupils to learn in Science at Peter Gladwin?

At Peter Gladwin, we want our pupils to gain an understanding of the world around them, become inquisitive scientists, by asking questions, observing and noticing patterns and links between different areas of the curriculum.

Pupils at Peter Gladwin learn Science through a spiral curriculum. This means pupils learn topics at in Key stage 1 (Year 1 and Year 2), then later revisit the same topics, building on their prior knowledge of the subject and study in greater depth further up the school.

Pupils gain an understanding of scientific vocabulary through the explicit teaching of new words. In addition to this, for every Science topic, children have a 'Knowledge Organiser' which explains the key words and concepts within the subject area. Knowledge Organisers reflect the content being taught: in Key stage 1, they are more picture based with a few key words, whereas in Key stage 2, more detailed definitions of scientific vocabulary and diagrams are shown.



Science in EYFS – where children learn about 'Growing' through planting bulbs in time for Spring!

Year 1 Knowledge Organiser – Antarctic Adventures

The Four Seasons

Season	Months
autumn	September, October, November
winter	December, January, February
spring	March, April, May
summer	June, July, August

Key Vocabulary

seasons	There are four seasons each year, autumn , winter , spring and summer .
autumn	In autumn , the weather begins to get colder. The leaves start to fall from the trees. The amount of daylight becomes less. This means the daytimes are shorter and the night times are longer.
winter	In winter , the weather is much colder. Sometimes it is cold enough to freeze, leaving frost and ice on the ground. It sometimes snows. Many trees have bare branches as all their leaves have fallen off. The daytimes are the shortest in the year and the night times are the longest.
weather	The weather includes the temperature outside, the wind direction and strength, as well as rain, cloud, snow and sun.
daylight	Daylight is when it is light outside. The amount of daylight changes with each season .

Examples of 'Knowledge Organisers' used across the school for every Science topic.

Peter Gladwin School

Topic: Earth and Space

Years 5 and 6

Physics

Day and Night

Earth rotates (spins) on its axis. It does a full spin once every 24 hours, which is our day and night. Daytime occurs when the side of the Earth is facing the sun and night occurs when the side of the Earth is facing away from the sun.

Investigate!

THE PLANETS

What should I already know?

- I recognise light from the sun can be dangerous and can find ways to protect my eyes.
- I recognise that we need light in order to see things and that dark is the absence of light.

The Earth and The Moon

The moon orbits Earth in an oval-shaped path whilst it spins on its axis. At different times in the month the moon appears to be different shapes, this is because the sun lights up different parts of the moon as the moon moves around the Earth.

Vocabulary

Planet	an object that orbits a star and does not emit its own light
Star	a burning mass of gas that makes heat and light energy (e.g. the sun)
Gravity	the force that attracts an object towards a larger object
Solar system	a star with objects (such as planets) orbiting it
Orbit	a curved path of a planet or satellite around an object
Satellite	an object either natural (moon) or man-made that orbits around a planet
NASA	the National Aeronautics and Space Administration, a US agency responsible for the exploration and study of space
Universe	all of space and everything in it
Astronomy	the branch of science that deals with space and the physical universe as a whole
Asteroid	a small rocky body orbiting the sun

Learning in Science is revisited and recapped often, so children gain a better understanding of what they have learnt. Teachers make quizzes for their classes to test their knowledge of the topic and understanding of new vocabulary. Quizzes support the pupils to reflect on what they know already and how to progress their learning further.

What do you remember about separating materials?

Match the state of matter to the picture that shows how the particles behave.

solid	
liquid	
gas	

Fill in the missing words:

A _____ change is when a material changes state but can change back to its original state.

What is the scientific term given to a material that dissolves in water?

Fill in the gaps by writing the name of the state of matter next to the correct description.

_____ are materials that take the shape of their container. They can flow or be poured.

_____ are materials that keep their shape unless force is applied to them. They can be hard, soft or squishy.

_____ are materials that do not have a fixed shape but do have a fixed mass.

Put a circle around all the materials that will dissolve in water.

coffee granules sugar pepper salt

sand jelly cubes olive oil

An example of a quiz for Year 5 during their Properties and Material topic.

Implementation – how do our pupils learn Science at Peter Gladwin?

Hypothesis/ question

Peter Gladwin follows PlanBee Science scheme, which supports teachers with overviews, planning and resourcing alongside teachers using their own creative ideas to provide their class with high-quality and engaging lessons.

Prediction

At Peter Gladwin, we believe that pupils learn best when practical, hands-on investigations are used to support children's understanding of concepts. For example, pupils in Year 5 are taught about soluble and insoluble materials through investigating whether substances can dissolve in water. We aim to offer children in every class at least one practical, experimental lesson during every Science topic.

Diagram

Pupils are introduced to symbols to represent each stage of their scientific enquiry. This is a whole school approach which begins in Key stage 1 and is revisited every time children conduct investigations.

Method

We are also very fortunate to have an amazing outdoor area and a large school field, which can be used during Science lessons. In Year 2, children learn about microhabitats by observing animals in their own microhabitats on the school grounds.



Year 2 using Peter Gladwin's outdoor environment to find microhabitats.

Conclusion

Results

Impact – what have our pupils learnt in Science at Peter Gladwin?

Pupils at Peter Gladwin know that Science involves understanding the world around them. They enjoy learning Science because of the rich, practical investigations, which provide them with excitement and challenge. A Year 5 pupil said, "Doing experiments makes the learning enjoyable".

Example of symbols used to represent each part of investigations.

Across the school, from pupil book studies (Alex Bedford) it was found that pupils are using accurate scientific vocabulary, which has been taught to them explicitly through high-quality teaching. Pupils are given a range of activities within the Science lesson: retrieval questions, recap of previous learning or quizzes, the opportunity to implement vocabulary taught in the lesson and then complete an independent or group task.

In addition, every year, all pupils at Peter Gladwin take part in a STEAM (Science, Technology, Engineering, Art and Maths) day where they are faced with a challenge and work together to complete an exciting, practical task. For example, in 2023, every child was asked to design and make a functional marble run, using their previous knowledge and learning from all STEAM subjects. In 2024, all pupils were tasked with designing and building a boat to float with a weighted object on.



2023 STEAM day – Marble runs