



# Science Curriculum Pathway

Peters Hill Primary School  
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## **Intent Statement**

We want all children to understand and demonstrate our underlying principles of **Ambition, Belief, Compassion, Pride and Respect**. We want our curriculum to enable children to become **successful, confident, motivated and responsible** individuals with a **wealth of knowledge** about the world around them. We want all children to develop their full potential in a structured, caring and purposeful learning environment. We want all children to understand the connections that exist between new learning and existing knowledge through an awareness of carefully chosen pathways.

## **At Peters Hill Primary School the curriculum is designed to:**

- Recognise all pupils as individuals and encourage positive self-worth and self-esteem.
- Promote curiosity, enthusiasm and engagement through a range of topics and themes.
- Encourage resilience and confidence to face challenges and tackle problems.
- Foster logical, creative and deep thinking to solve challenges and problems.
- Develop Independence and promote responsibility for learning.
- Nurture respect for others and value differences within our school community.
- Grow an awareness of civic responsibility and global citizenship.
- Develop a strong awareness of prior learning and the links that exist to new knowledge.
- Develop new learning and understand the impact on ourselves, the school and the wider community.

## **Our Science Pathways are:**

**Pathway 1 - Physics**

**Pathway 2 – Chemistry**

**Pathway 3 – Biology**

**Pathway 4 – Working Scientifically**

Pathway 1	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>Physics</b>	<b>Seasonal changes</b> <ul style="list-style-type: none"> <li>• I can observe and comment on changes in the seasons.</li> <li>• I can name the seasons and suggest the type of weather in each season.</li> </ul>	Physics No content	<b>Light</b> <ul style="list-style-type: none"> <li>• I can describe what dark is (the absence of light).</li> <li>• I can explain that light is needed in order to see.</li> <li>• I can explain that light is reflected from a surface.</li> <li>• I can explain and demonstrate how a shadow is formed.</li> <li>• I can explore shadow size and explain.</li> <li>• I can explain the danger of direct sunlight and describe how to keep protected.</li> </ul> <b>Forces and magnets</b> <ul style="list-style-type: none"> <li>• I can explore and describe how objects move on different surfaces.</li> <li>• I can explain how some forces require contact and some do not, giving examples.</li> <li>• I can explore and explain how objects attract and repel in relation to objects and other magnets.</li> <li>• I can predict whether objects will be magnetic and carry out an enquiry to test this out.</li> <li>• I can describe how magnets work.</li> <li>• I can predict whether magnets will attract or repel and give a reason.</li> </ul>	<b>Sound</b> <ul style="list-style-type: none"> <li>• I can describe how sound is made.</li> <li>• I can explain how sound travels from a source to our ears.</li> <li>• I can explain the place of vibration in hearing.</li> <li>• I can explore the correlation between pitch and the object producing a sound.</li> <li>• I can explore the correlation between the volume of a sound and the strength of the vibrations that produced it.</li> <li>• I can describe what happens to a sound as it travels away from its source.</li> </ul> <b>Electricity</b> <ul style="list-style-type: none"> <li>• I can identify and name appliances that require electricity to function.</li> <li>• I can construct a series circuit.</li> <li>• I can identify and name the components in a series circuit (including cells, wires, bulbs, switches and buzzers).</li> <li>• I can draw a circuit diagram.</li> <li>• I can predict and test whether a lamp will light within a circuit.</li> <li>• I can describe the function of a switch in a circuit.</li> <li>• I can describe the difference between a conductor and insulators; giving examples of each.</li> </ul>	<b>Earth and space</b> <ul style="list-style-type: none"> <li>• I can describe and explain the movement of the Earth and other planets relative to the Sun.</li> <li>• I can describe and explain the movement of the Moon relative to the Earth.</li> <li>• I can explain and demonstrate how night and day are created.</li> <li>• I can describe the Sun, Earth and Moon (using the term spherical).</li> </ul> <b>Forces</b> <ul style="list-style-type: none"> <li>• I can explain what gravity is and its impact on our lives.</li> <li>• I can identify and explain the effect of air resistance.</li> <li>• I can identify and explain the effect of water resistance.</li> <li>• I can identify and explain the effect of friction.</li> <li>• I can explain how levers, pulleys and gears allow a smaller force to have a greater effect.</li> </ul>	<b>Light</b> <ul style="list-style-type: none"> <li>• I can explain how light travels.</li> <li>• I can explain and demonstrate how we see objects.</li> <li>• I can explain why shadows have the same shape as the object that casts them.</li> <li>• I can explain how simple optical instruments work, e.g. periscope, telescope, binoculars, mirror, magnifying glass etc.</li> </ul> <b>Electricity</b> <ul style="list-style-type: none"> <li>• I can explain how the number &amp; voltage of cells in a circuit links to the brightness of a lamp or the volume of a buzzer.</li> <li>• I can compare and give reasons for why components work and do not work in a circuit.</li> <li>• I can draw circuit diagrams using correct symbols.</li> </ul>

Pathway 2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>Chemistry</b>	<b>Everyday materials</b> <ul style="list-style-type: none"> <li>• I can distinguish between an object and the material it is made from.</li> <li>• I can explain the materials that an object is made from.</li> <li>• I can name wood, plastic, glass, metal, water and rock.</li> <li>• I can describe the properties of everyday materials.</li> <li>• I can group objects based on the materials they are made from.</li> </ul>	<b>Uses of everyday materials</b> <ul style="list-style-type: none"> <li>• I can identify and name a range of materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard.</li> <li>• I can suggest why a material might or might not be used for a specific job.</li> <li>• I can explore how shapes can be changed by squashing, bending, twisting and stretching.</li> </ul>	<b>Rocks</b> <ul style="list-style-type: none"> <li>• I can compare and group rocks based on their appearance and physical properties, giving a reason.</li> <li>• I can describe how fossils are formed.</li> <li>• I can describe how soil is made.</li> <li>• I can describe and explain the difference between sedimentary and igneous rock.</li> </ul>	<b>States of matter</b> <ul style="list-style-type: none"> <li>• I can group materials based on their state of matter (solid, liquid, gas).</li> <li>• I can describe how some materials can change state.</li> <li>• I can explore how materials change state.</li> <li>• I can measure the temperature at which materials change state.</li> <li>• I can describe the water cycle.</li> <li>• I can explain the part played by evaporation and condensation in the water cycle.</li> </ul>	<b>Properties and changes of materials</b> <ul style="list-style-type: none"> <li>• I can compare and group materials based on their properties (e.g. hardness, solubility, transparency, conductivity, [electrical &amp; thermal], and response to magnets).</li> <li>• I can describe how a material dissolves to form a solution; explaining the process of dissolving.</li> <li>• I can describe and show how to recover a substance from a solution.</li> <li>• I can describe how some materials can be separated.</li> <li>• I can demonstrate how materials can be separated (e.g. through filtering, sieving and evaporating).</li> <li>• I know and can demonstrate that some changes are reversible and some are not.</li> <li>• I can explain how some changes result in the formation of a new material and that this is usually irreversible.</li> <li>• I can discuss reversible and irreversible changes.</li> <li>• I can give evidenced reasons why materials should be used for specific purposes.</li> </ul>	<b>Chemistry</b> No content

## Pathway 3

# Biology

### Year 1

- I can name a variety of common wild and garden plants.
- I can name the petals, stem, leaf and root of a plant.
- I can name the roots, trunk, branches and leaves of a tree.
- I can name a variety of animals including fish, amphibians, reptiles birds and mammals.
- I can classify and name animals by what they eat (carnivore, herbivore and omnivore).
- I can sort animals into categories (including fish, amphibians, reptiles, birds and mammals).
- I can sort living and non-living things.
- I can name the parts of the human body that I can see.
- I can link the correct part of the human body to each sense.

### Year 2

- I can identify things that are living, dead and never lived.
- I can describe how a specific habitat provides for the basic needs of things living there (plants and animals).
- I can identify and name plants and animals in a range of habitats.
- I can match living things to their habitat.
- I can describe how animals find their food.
- I can name some different sources of food for animals.
- I can explain a simple food chain.
- I can describe how seeds and bulbs grow into plants.
- I can describe what plants need in order to grow and stay healthy (water, light & suitable temperature).
- I can explain the basic stages in a life cycle for animals, including humans.
- I can describe what animals and humans need to survive.
- I can describe why exercise, a balanced diet and good hygiene are important for humans.

### Year 3

- I can describe the function of different parts of flowering plants and trees.
- I can explore and describe the needs of different plants for survival.
- I can explore and describe how water is transported within plants.
- I can describe the plant life cycle, especially the importance of flowers.
- I can explain the importance of a nutritious, balanced diet.
- I can explain how nutrients, water and oxygen are transported within animals and humans.
- I can describe and explain the skeletal system of a human.
- I can describe and explain the muscular system of a human.
- I can describe the purpose of the skeleton in humans and animals.

### Year 4

- I can group living things in different ways.
- I can use classification keys to group, identify and name living things.
- I can create classification keys to group, identify and name living things (for others to use).
- I can describe how changes to an environment could endanger living things.
- I can identify and name the parts of the human digestive system.
- I can describe the functions of the organs in the human digestive system.
- I can identify and describe the different types of teeth in humans.
- I can describe the functions of different human teeth.
- I can use food chains to identify producers, predators and prey.
- I can construct food chains to identify producers, predators and prey.

### Year 5

- I can describe the life cycle of different living things, e.g. mammal, amphibian, insect bird.
- I can describe the differences between different life cycles.
- I can describe the process of reproduction in plants.
- I can describe the process of reproduction in animals.
- I can create a timeline to indicate stages of growth in humans.

### Year 6

- I can classify living things into broad groups according to observable characteristics and based on similarities & differences.
- I can describe how living things have been classified.
- I can give reasons for classifying plants and animals in a specific way.
- Animals, including humans
- I can identify and name the main parts of the human circulatory system.
- I can describe the function of the heart, blood vessels and blood.
- I can discuss the impact of diet, exercise, drugs and life style on health.
- I can describe the ways in which nutrients and water are transported in animals, including humans.
- Evolution and inheritance
- I can describe how the earth and living things have changed over time.
- I can explain how fossils can be used to find out about the past.
- I can explain about reproduction and offspring (recognising that offspring normally vary and are not identical to their parents).
- I can explain how animals and plants are adapted to suit their environment.
- I can link adaptation over time to evolution.
- I can explain evolution.

Pathway 4	By the end of Year 2	By the end of Year 4	By the end of Year 6
<b>Working Scientifically</b>	<ul style="list-style-type: none"> <li>• I can ask simple scientific questions.</li> <li>• I can use simple equipment to make observations.</li> <li>• I can carry out simple tests.</li> <li>• I can identify and classify things.</li> <li>• I can suggest what I have found out.</li> <li>• I can use simple data to answer questions</li> </ul>	<ul style="list-style-type: none"> <li>• I can ask relevant scientific questions.</li> <li>• I can use observations and knowledge to answer scientific questions.</li> <li>• I can set up a simple enquiry to explore a scientific question.</li> <li>• I can set up a test to compare two things.</li> <li>• I can set up a fair test and explain why it is fair.</li> <li>• I can make careful and accurate observations, including the use of standard units.</li> <li>• I can use equipment, including thermometers and data loggers to make measurements.</li> <li>• I can gather, record, classify and present data in different ways to answer scientific questions.</li> <li>• I can use diagrams, keys, bar charts and tables; using scientific language.</li> <li>• I can use findings to report in different ways, including oral and written explanations, presentation.</li> <li>• I can draw conclusions and suggest improvements.</li> <li>• I can make a prediction with a reason.</li> <li>• I can identify differences, similarities and changes related to an enquiry.</li> </ul>	<ul style="list-style-type: none"> <li>• I can plan different types of scientific enquiry.</li> <li>• I can control variables in an enquiry.</li> <li>• I can measure accurate and precisely using a range of equipment.</li> <li>• I can record data and results using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.</li> <li>• I can use the outcome of test results to make predictions and set up a further comparative fair test.</li> <li>• I can report findings from enquiries in a range of ways.</li> <li>• I can explain a conclusion from an enquiry.</li> <li>• I can explain causal relationships in an enquiry.</li> <li>• I can relate the outcome from an enquiry to scientific knowledge in order to state whether evidence supports or refutes an argument or theory.</li> <li>• Read, spell and pronounce scientific vocabulary accurately.</li> </ul>