

Curriculum map charting a child's journey through the Science Curriculum at Bishop Cornish School.

The national curriculum for science aims to ensure that all pupils:

- develop **scientific knowledge and conceptual understanding** through the specific disciplines of biology, chemistry and physics
- develop understanding of the **nature, processes and methods of science** through different types of science enquiries that help them to answer scientific questions about the world around them
- are equipped with the scientific knowledge required to understand the **uses and implications** of science, today and for the future.

Key stage 1

During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- asking simple questions and recognising that they can be answered in different ways
- observing closely, using simple equipment
- performing simple tests
- identifying and classifying
- using their observations and ideas to suggest answers to questions gathering and recording data to help in answering questions.

In Years 1 and 2 they will explore units of work on Plants; Animals including humans; Everyday Materials and their Uses; Seasonal Changes; Living Things and their Habitats.

Year 1

Animals including humans

- Identify and name common animals (fish, amphibians, reptiles, birds, mammals).
- Identify and name common herbivores, carnivores and omnivores.
- Identify, name, draw and label common body parts and say which part associated with each sense.



Everyday materials

- Describe the simple physical properties of a variety of everyday materials.
- Compare and group together a variety of everyday materials on the basis of their simple physical properties.
- Distinguish between an object and the material from which it is made.
 - Identify and name a variety of everyday materials including wood, plastic, glass, metal and rock.

Seasonal changes

- Observe changes across the four seasons
- Observe and describe weather associated with the seasons and how day length varies.

Plants

- Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.
- Identify and describe the basic structure of a variety of common flowering plants including trees.



Year 2

Living things and their Habitats

- Explore and compare the differences between things that are living, dead and things that have never been alive.
- Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other.
- Identify and name a variety of plants and animals in their habitats, including micro-habitats.
- Describe how animals obtain food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.

Plants

- Observe and describe how seeds and bulbs grow into mature plants; find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.

Animals (including humans)

- Notice that animals, including humans, have offspring which grow into adults.
- Find out about and describe the basic needs of animals, including humans, for survival (water, food and air).
- Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.

Uses of Everyday Materials

- Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.
- Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.

Key stage 2

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 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.

Years 3 – 6 will develop knowledge, skills and concept by exploring units of work that focus on Plants; Animals including Humans; Rocks; Light; Forces and Magnets; Livings and then habitats; Animals including Humans; States of Matter; Sound; Electricity; Properties and Changes of Materials; Earth and Space; Evolution and Inheritance.

Year 3

Plants

- Identify the basic functions of a plant's roots, stem/trunk, leaves and flowers
- Understand that plants need air, light, water, nutrients and room to grow
- Understand the role of flowers in the life cycle, including pollination and seed Dispersal. Pollination is the act of reproduction in which pollen is transferred – usually to another plant – to make seeds. Seed dispersal is the distribution of seeds by actions such as sprinkling, through the wind, or by being eaten as part of a fruit.

Animals including Humans

- Know that animals get their nutrition from food, and need the right types and amounts of nutrition
- Identify that humans and some other animals have skeletons and muscles, and know their basic functions

Rocks

- Compare and group different types of rocks based on their appearance and properties
- Describe how fossils are formed
- Recognise that soils are made from rocks and organic material

At this level, rocks are often grouped into one of three categories:

Igneous: rocks formed from magma under the Earth's surface, often after a volcano, or deep underground.

Metamorphic: rocks formed under great heat or pressure under the Earth's

surface, such as slate or marble.

Sedimentary: rocks formed where sediment builds up in deposits under lakes or oceans.

Forces and Magnets

Children investigate how forces work and what effect different surfaces have on forces. They will notice that some forces need contact between two objects and magnetic forces can act at a distance. Together, we will investigate how magnets can attract or repel, identify magnetic and non-magnetic materials and make predictions about whether two magnets will attract or repel each other.

Light

Children will recognise that they need light in order to see things and notice how light is reflected from surfaces. They will understand that light from the sun can be dangerous and that there are ways to protect their eyes. We will investigate how shadows are formed and find patterns in the way the size of shadows can change.

Year 4

Living Things and their Habitats

- Recognise that living things can be grouped in a variety of ways
- Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment
- Recognise that environments can change and that this can sometimes pose dangers to living things.

Animals including humans

- Describe the simple functions of the basic parts of the digestive system in humans
- Identify the different types of teeth in humans and their simple functions
- Construct and interpret a variety of food chains, identifying producers, predators and prey.

States of Matter

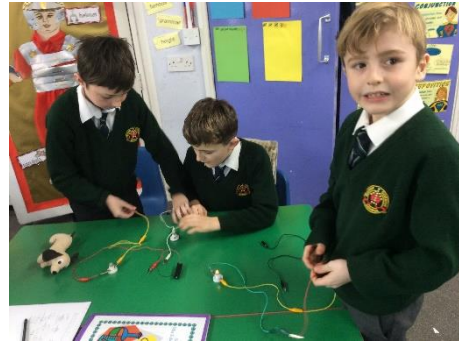
- Compare and group materials together, according to whether they are solids, liquids or gases
- Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)
- Identify the part played by evaporation and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

Sound

- Identify how sounds are made, associating some of them with something vibrating
- Recognise that vibrations from sounds travel through a medium to the ear
- Find patterns between the pitch of a sound and features of the object that produced it
- Find patterns between the volume of a sound and the strength of the vibrations that produced it
- Recognise that sounds get fainter as the distance from the sound source increases.

Electricity

- Identify common appliances that run on electricity
- Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers
- Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery
- Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit
- Recognise some common conductors and insulators, and associate metals with being good conductors.



Year 5

Working Scientifically (Upper Key Stage 2)

Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary

- taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- using test results to make predictions to set up further comparative and fair tests
- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations
- identifying scientific evidence that has been used to support or refute ideas or arguments.



Living Things & their Habitats

- describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird
- describe the life process of reproduction in some plants and animals.

Animals (including humans)

- describe the changes as humans develop to old age.

Properties & Changes of Materials

- compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets.
- know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution
- use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating
- give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic

- demonstrate that dissolving, mixing and changes of state are reversible changes
- explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.

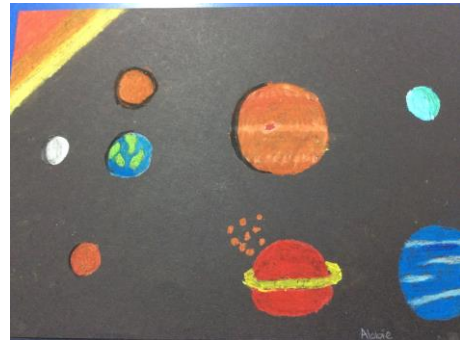


Earth & Space

- describe the movement of the Earth, and other planets, relative to the Sun in the solar system
- describe the movement of the Moon relative to the Earth
- describe the Sun, Earth and Moon as approximately spherical bodies
- use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.

Forces

- explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object
- identify the effects of air resistance, water resistance and friction, that act between moving surfaces
- recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.



Year 6

Over the year, many of the scientific concepts that children meet are more abstract, such as the study of evolution, or the behaviour of light. There are still plenty of opportunities for investigation, and also to find out about the work of some great scientists of today and the past. The areas Year 6 will be learning are as follows:

Living Things and their Habitats

- Describe how living things are classified into groups, including micro-organisms;
- Give reasons for the classification of plants and of animals according to their characteristics.

Animals including Humans

- Know the functions of the main parts of the circulatory system such as the heart, lungs, blood vessels and blood;
- Describe how nutrients and water are transported within animals;
- Recognise the impact of diet, exercise, drugs and lifestyle on the way bodies function.

Evolution and Inheritance

- Recognise that fossils provide information about life on Earth millions of years ago;

- Understand that offspring are not normally identical to their parents;
- Identify that plants and animals are adapted to their environments, and that this adaptation leads to evolution over long periods of time.



Light

- Recognise that light appears to travel in straight lines;
- Understand that we see things because light is reflected off objects and into the eye;
- Explain how shadows are formed.

Electricity

- Compare the variation in performance of bulbs and buzzers by changing the number of cells in a circuit;

- Use the recognised scientific symbols to draw a simple circuit diagram.

Throughout the Year 6 science programme of study, children will develop a variety of skills including:

- Plan a range of scientific investigations and managing the variables effectively;
- Take precise measurements, and repeat tests where appropriate to improve the validity of the results;
- Present results using tables, scatter graphs, line graphs and other diagrams;
- Explain the conclusions drawn from results, including their limitations.