

Science

In accordance with the guidance in the new National Curriculum, the Kent Scheme of Work has clearly indicated a progression in the key scientific knowledge and concepts, from Year 1 to Year 6. Throughout each and every unit of study the emphasis is on the children learning by doing. In accordance with the constructivist theory of learning, the units encourage the teachers to provide activities that will enable the children to test their previously held ideas. In doing so, they will also be encouraged to develop a bank of skills and an understanding of the processes required to be able to do good science.

The teachers provide a range of activities that will enable the children to develop both their scientific understanding and their mastery of the nature, processes and method of science.

Year Group	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 1	Animals including Humans	Seasonal Change <i>Autumn</i>	Everyday Materials	Seasonal Change <i>Spring</i>	Plants	Seasonal Change <i>Summer</i>
Year 2	All Living Things and their Habitats	Everyday Materials	Animals including Humans		Plants	Plants
Year 3	Animals including Humans	Light	Forces and Magnets	Plants		Rocks
Year 4	Animals including Humans	All Living Things	States of Matter	Sound	Electricity	All Living Things
Year 5	Animals including Humans	Earth and Space	Forces	Forces (it might need two terms to cover the learning expectations)	Properties and Changes of Materials	All Living Things
Year 6	All Living Things	Evolution and Inheritance	Electricity	Light	Animals including Humans	



Year I Science Topics

Year I - Animals including Humans

Pupils should be taught to:

- Identify and name a variety of common animals that are birds, fish, amphibians, reptiles and mammals
- Identify and name a variety of common animals that are carnivores, herbivores and omnivores.
- Describe and compare the structure of a variety of common animals (birds, fish, amphibians, reptiles and mammals, and including pets).
- Identify, name draw and label the basic parts of the human body and say which parts of the body is associated with each sense.

Year I - Everyday Materials

Pupils should be taught to:

- Distinguish between an object and the material from which it is made.
- Identify and name a variety of everyday materials, including wood, plastic, glass, water and rock.
- 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 physical properties.

Year I - Plants

Pupils should be taught to:

- Identify and name a variety of common plants, including garden plants, wild plants and trees, and those classified as deciduous and evergreen
- Identify and describe the basic structure of a variety of common plants including roots, stem/trunk, leaves and flowers.

Year I - Seasonal Change

Pupils should be taught to:

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



Year 2 Science Topics

Year 2 - Animals including Humans

Pupils should be taught to:

- 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.

Year 2 - Living Things and their Habitats

Pupils should be taught to:

- 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 their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.

Year 2 - Plants

Pupils should be taught to:

- 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.

Year 2 - Uses of Everyday Materials

Pupils should be taught to:

- 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.



Year 3 Science Topics

Year 3 - Animals including Humans

Pupils should be taught to:

- Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat.
- Identify that humans and some animals have skeletons and muscles for support, protection and movement.

Year 3 - Forces and Magnets

Pupils should be taught to:

- Compare how things move on different surfaces
- Notice that some forces need contact between two objects, but magnetic forces can act at a distance
- Observe how magnets attract or repel each other and attract some materials and not others
- Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials
- Describe magnets as having two poles
- Predict whether two magnets will attract or repel each other, depending on which poles are facing.

Year 3 - Light

Pupils should be taught to:

- Recognise that they need light in order to see things and that dark is the absence of light.
- Notice that light is reflected from surfaces.
- Recognise that light from the sun can be dangerous and that there are ways to protect their eyes.
- Recognise that shadows are formed when the light from a light source is blocked by a solid object.
- Find patterns in the way that the sizes of shadows change.

Year 3 - Plants

Pupils should be taught to:

- Identify and describe the functions of different parts of plants; roots, stem, leaves and flowers.



Year 4 Science Topics

Year 4 - Animals including Humans

Pupils should be taught to:

- 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.

Year 4 - Electricity

Pupils should be taught to:

- 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 4 - Living Things and their Habitats

Pupils should be taught to:

- 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.

Year 4 - Sound

Pupils should be taught to:

- Identify how sounds are made, associating some of them with something vibrating.
- Recognise that vibrations from a sound 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.

Year 4 - 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 they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius ($^{\circ}\text{C}$).
- Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.



Year 5 Science Topics

Year 5 - Animals including Humans

This unit of study will need to be taught in conjunction with the school's sex education policy. This unit involves the children learning about the changes in the human body, including puberty.

Pupils should be taught to:

- Describe the changes as humans develop from birth to old age.

Year 5 - Earth and Space

Pupils should be taught to:

- 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.

Year 5 - Forces

Pupils should be taught to:

- 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 acts between moving surfaces.
- Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.

Year 5 - Living Things and their Habitats.

Pupils should be taught to:

- 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.

Year 5 - Properties and Changes of Materials

Pupils should be taught to:

- 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.
- Understand 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.



Year 6 Science Topics

Year 6 - Animals including Humans

NB – Parts of this unit will need to be taught in accordance with your school's drug education policy.

Pupils should be taught to:

- Identify and name the main parts of the human circulatory system, and explain the functions of the heart, blood vessels and blood.
- Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function
- Describe the ways in which nutrients and water are transported within animals, including humans.

Year 6 - Electricity

Pupils should be taught to:

- Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.
- Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches.
- Use recognised symbols when representing a simple circuit in a diagram.

Year 6 - Evolution

NB – Your school will need to consider how this unit of work will fit in with other viewpoints as to how animals and plants were created and changed over time.

Pupils should be taught to:

- Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.
- Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.
- Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.

Year 6 - Light

Pupils should be taught to:

- Recognise that light appears to travel in straight lines.
- Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye.
- Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes.
- Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.

Year 6 - Living things and their Habitats

Pupils should be taught to:

- Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals.
- Give reasons for classifying plants and animals based on specific characteristics.

