

St Joseph's Catholic Primary School



Science Rationale

At St. Joseph's the children are taught Science on a two year rolling programme.

Key Stage 1 – Cycle A

Autumn Term

In autumn term, the focus is on plants and seasonal changes. Children are taught to identify and name common wild and garden plants (including evergreen and deciduous trees) as well as being able to identify and describe the basic structure of common flowering plants. We use the local environment as much as possible for this unit to allow the children to explore the area in which they live. Where possible, we also give children the opportunity to observe plants and flowers which they have planted themselves. Pupils will work scientifically by observing closely (using magnifying glasses) and comparing and contrasting plants; they will describe how they could identify them and move onto grouping plants and flowers. Pupils may also keep records of observations over time.

In seasonal changes, children observe the changes across the four seasons and will be able to describe the weather associated with each season along with a developing understanding of how the length of day varies. Lots of talking opportunities will take place to allow them to discuss the changes in the weather and the seasons. Working scientifically will be taught by making tables and charts and making displays about the weather around the world.

Cycle A science units for KS1 work alongside the Geography unit for this term of 'The Naughty Bus'.

Spring Term

In spring, the units are seasonal changes continued and living things and their habitats. In seasonal changes during the spring term, the focus is on trees and children being able to identify a wide variety of common trees. Again, the local area is used predominantly to teach this unit to allow children to see what grows in their local environment.

In living things and their habitats, children are taught to explore and compare the differences between things that are living, dead and things that have never been alive; they will identify living things which are suited to their environment and identify plants and animals which may be found in these habitats. They will begin to look at simple food chains and identify and name different sources of food. Working scientifically will include sorting and classifying things according to whether they are living, dead or have never lived and will record findings using charts. They will raise their own questions and construct simple food chains.

Summer Term

For the first half of the summer term, the children will continue with living things and their habitats unit. The second half of the summer term looks at everyday materials. This includes children identifying and comparing the suitability of everyday materials for particular uses and finding out how the shapes of solid objects can be changed by squashing, bending, twisting and stretching. Children will have opportunities to find out about people who developed new materials such as John Dunlop and Charles McIntosh.

Working scientifically includes comparing the uses of everyday materials such as wood, glass, plastic, metal, paper and observing closely and classifying materials.

Key Stage 1 – Cycle B

Autumn Term

In autumn term, we use the year 2 unit of plants to continue the learning from the autumn and spring terms. Children move onto observing and describing how seeds and bulbs grow into mature plants. They will also find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. The local environment is used to allow them to observe how different plants grow. Working scientifically will include observing and recording (with some accuracy) the growth of plants; they will set up a comparative test to show that plants need water and light to stay healthy. Animals including humans is the second half of the autumn term and includes the children being taught to identify and name common animals including fish, amphibians, reptiles, birds and mammals and identify whether animals are carnivores, herbivores or omnivores. They will be taught to describe and compare the structure of a variety of common animals and will be able to identify, name, draw and label parts of the human body and link each sense to the correct body part.

Spring Term

The first half of the spring term allows the children to continue to work on animals including humans and the second half moves on to everyday materials. The children will look at materials and be able to distinguish between them; they will be able to describe properties of materials and compare and group them together accordingly. They will begin to use an increasing range of scientific vocabulary: opaque / transparent, absorbent / non-absorbent, rough / smooth etc.

Summer Term

Animals including humans (y2 unit) is taught this term and the children are taught to notice that animals (including humans) have offspring which grow into adults. They will find out about and be able to describe the basic needs of animals and humans for survival and will describe the importance of exercise. The children WILL NOT be expected to understand how reproduction occurs. Working scientifically will occur through first-hand observation and measurements; asking questions and suggesting ways to find answers to their questions.

Lower Key Stage 2 - Cycle A

Autumn Term

In autumn term, rocks and light are the topics to be covered with plants being linked closely to the history unit of Changes in Britain (Stone Age – Iron Age). Children are taught to compare and group different types of rock based on their properties; they will be able to describe how fossils are formed and how soils are made from rocks. Observations and classification will form part of the working scientifically angle for rocks. In light, the children will be taught to recognise that dark is the absence of light and notice that light is reflected from surfaces; they will be taught that light from the sun is dangerous and they will recognise how shadows are formed. This unit offers lots of opportunities for the children to work scientifically.

Spring Term

The unit for the whole of this term is living things and their habitats. Children will look at how living things can be grouped together in different ways and by doing so, they will use classification keys to help group, identify and name living things. We will look at how sometimes our environment can pose a danger to living things. The local environment will be used to allow the children to raise and answer questions about plants and animals in their habitat. Children also look at the negative and positive impacts of humans on the environment. Working scientifically will include making simple guides to allow others to explore the environment. Observations of animals will be conducted also.

Summer Term

In summer, states of matter will be taught and children will explore everyday materials; they will look at how they can be grouped together according to their properties and look at whether something is a solid, liquid or a gas. Children will have opportunities to observe materials and how they change state when they are heated or cooled. They will also look at evaporation and condensation in the water cycle.

Lower Key Stage 2 - Cycle B

In autumn term, we look at plants and forces. In the plant unit, the children will be taught to identify and describe the functions of different parts of flowering plants – roots, stem / trunk, leaves and flowers; children will explore the requirements of plants for life and growth and will investigate how water is transported within plants. Children will also explore the part of the flowers which play a part in the life cycle of flowering plants. In the forces unit, children will look at how things move on different surfaces and look at how magnets attract and repel one another; different magnets will be used – bar, horseshoe, ring and button.

In the spring term, both the year 3 and year 4 unit for animals including humans is taught and this involves the children looking at nutrition and the skeletal and muscular systems; the children then move onto looking at the digestive system in humans and will look at identifying different types of teeth in humans and what their functions are. Finally, they will look at producers, predators and prey and will construct a variety of food chains.

In the summer term, sound and electricity are taught. The children will identify how sounds are made and will understand that sounds travel through a medium to get to the ear; they will find patterns between pitch and sound and will recognise that sounds get fainter as the distance from the source increases. For light, they will be taught about common household appliances which use electricity and will be able to construct a simple series circuit and accompany it with the correct scientific drawings. Working scientifically, children will observe patterns and conduct investigations.

Upper Key Stage 2 - Cycle A

In autumn term, we look at light and electricity. Children will build on the work done in year 3 and 4 and will explore the way light behaves, including light sources, reflections and shadows. The children will construct series circuits and they will represent these circuits using scientific drawings using the recognised symbols. These units provide ample opportunity for the children to work scientifically and plan and conduct their own experiments and investigations.

In the spring term, we look at earth and space and properties and changes in materials. Children will be taught about Earth and the other planets in relation to the Sun and will be able to describe the movement of the Moon. They will be taught about rotation and day and night. The materials unit build on the prior learning from year 3 and year 4 and will look at exploring reversible changes such as evaporating, filtering, sieving, melting and dissolving. Children will be able to raise their own questions to test out and will plan and conduct their own investigations.

Summer term covers the year 6 unit of animals including humans and children are taught about the circulatory system and the impact of diet, exercise and drugs on the body; healthy lifestyles will be covered in humans and animals.

Upper Key Stage 2 - Cycle B

In autumn term, we cover the year 5 unit of animals including humans and evolution and inheritance. The children will be taught to describe the changes as humans develop to old age and will be able to indicate on a timeline the different stages of growth and development of humans. Changes experienced in puberty will be covered also and this fits in with the RSE plan. The children will work scientifically by researching gestation periods of other animals and compare them with humans. Evolution and inheritance involves the children learning more about fossils which builds on the work they did in year 3. They will be taught to recognise how living things have changed over time and will identify how plants are adapted to suit their environment. Children will look at the work of Charles Darwin. This unit is linked to our guided reading book for English – Darwin's Voyage of Discovery.

In the spring term, children are taught the forces unit and the year 5 unit of living things. Children are taught about air resistance, water resistance and friction; they will look at levers, pulleys and gears. They will look at the work of Isaac Newton and how he helped develop the theory of gravity. Working scientifically will be exploring air and water resistance. In living things, children

will be taught to describe the differences in the life-cycles of a mammal, an amphibian, an insect and a bird and they will be able to describe the life processes of reproduction in some plants and animals.

Finally in the summer term, the children will continue with living things and do the year 6 unit. Here they are taught to classify groups according to observable characteristics based on similarities and differences; they will also be able to give reasons for their choices.