

Science at Oakfield

Curriculum intent: The teaching of science at Oakfield Primary aims to give all our children a first-hand understanding of the world around them whilst acquiring specific skills and knowledge to help them to think scientifically (with curiosity and with purpose, predicting and rationalising), to gain an understanding of scientific processes and also an understanding of the uses and implications of science today and for the future.

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.



Autumn 1

Autumn 2

Spring 1

Spring 2

Summer 1

Summer 2

FS The world: children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur, and talk about changes.

Content: Plants

Purpose: 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

Skills: experiencing, questioning, observing, notice patterns and relationships, simple measuring, simple testing, recording data, use scientific vocabulary

Content: Uses of everyday materials

Purpose: 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, 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 simple physical properties

Skills: experiencing, experimenting, simple testing, questioning, observing, notice patterns and relationships, drawing diagrams, comparing, simple measuring, recording data, use scientific vocabulary

Content: Animals including humans

Purpose: Identify and name a variety of common animals including fish, amphibians, reptiles, birds 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 (fish, amphibians, reptiles, birds and mammals including pets)

- Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.

Skills: experiencing, experimenting, simple testing, questioning, observing, notice patterns and relationships, drawing diagrams, comparing, simple measuring, recording data, use scientific vocabulary, sorting

Content: Uses of everyday materials/ Living things and their habitats

Purpose: identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses

Content: Seasonal Changes

Throughout the year - Content: Seasonal Changes
 - Observe changes across the four seasons
 - Describe the weather associated with the seasons and how day length varies

temperature to grow and stay healthy.

- be
- e
dead, and things that have never been alive

adults

Content: Rocks and soils

Purpose: compare and group together different kinds of rocks on the basis of their appearance and simple physical properties
- describe in simple terms how fossils are formed when things that have lived are trapped within rock
-recognise that soils are made from rocks and organic matter.

Skills: exploring, predicting, comparing, recording, observing, researching, questioning, using appropriate vocabulary

Content: Magnets and forces

Purpose: 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

Skills: exploring, predicting, comparing, recording, observing, researching, questioning, using appropriate vocabulary

Content: Magnets and forces

Purpose: - 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.

Skills: predicting, comparing, observing, recording, questioning, gathering information, sorting, identifying, investigating, exploring, using appropriate vocabulary

Content: Animals including humans

Purpose:- 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 other animals have skeletons and muscles for support, protection and movement.

Skills: predicting, comparing, observing, recording, questioning, gathering information, sorting, identifying, investigating, exploring, using appropriate vocabulary

Content: Light

Purpose:- 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 an opaque object
-find patterns in the way that the size of shadows change.

Skills: Predicting, observing, describing, recording, comparing, explaining, pattern seeking, investigating

Content: Plants

Purpose: - identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers -explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant - investigate the way in which water is transported within plants - explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.

Skills: Predicting, observing, describing, recording, comparing, explaining, pattern seeking,

Content - Electricity

Purpose: identify common appliances that run on electricity
construct a simple series electrical circuit

Content - Sound

Purpose: identify how sounds are made, associating some of them with something vibrating
recognise that vibrations from

Content - Animals including humans (y3 gap)

Purpose: - identify that animals, including humans, need the right types and

Content - Forces and objects

Purpose: - -compare how things move on different surfaces

Content - Animals including humans (y4)

Purpose: - -describe the simple functions of the basic parts of the digestive

Content - living things and their habitats

Purpose: - -recognise that living things can be grouped in a variety of ways

Content - Living things and their habitats

Purpose: - 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.
- to understand different lifecycles and life processes

Skills - scientific questioning, observing, comparing, drawing conclusions

Content - Animals including humans

Purpose: - describe the changes as humans develop to old age.
- to understand a timeline of growth and development in humans

Skills - researching, comparing, observing, questioning, drawing conclusions

Content - Properties and changes in materials

Purpose: -
-compare and group everyday materials on the basis of their properties, including hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets
-know 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 change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda
.- to understand different materials, explore changes and how new materials are created.

Skills - carry out tests, comparing, observing, scientific questioning, recording data and drawing conclusions

Content - Earth and space

Purpose: -
-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.
- to understand the concept of day and night, the extent of the solar system,

Skills - develop ideas, comparing, observing, relevant scientific questioning, recording data and drawing conclusions to explain results.

Content - Forces

Purpose: -
-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.
- to understand the concept of air resistance, look at forces that cause movement, and increase or decrease speed, explore the effects of levers and pulleys on simple mechanisms. Understand the theory of gravity.

Skills- designing fair and comparative tests, carrying out investigations, making predictions, relevant scientific questioning, recording and analysing data, drawing conclusions.

Content: Electricity

Purpose: - - 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

Content: Evolution

Purpose: - 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

Yr 6

Content: Animals including humans

Purpose: -identify and name the main parts of the human circulatory system, and describe 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.

Skills: exploring, predicting, comparing, recording, observing, researching, questioning, planning, controlling variables, concluding, explaining, using appropriate vocabulary

Content: Living things and their habitats

Purpose: - describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals
- give reasons for classifying plants and animals based on specific characteristics

Skills: using appropriate vocabulary, explaining, concluding, classifying, planning, recording, predictions, reporting, enquiring control variables,

Content: Light

Purpose: 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
Skills: using appropriate vocabulary, explaining, concluding, classifying, planning, recording, predictions, reporting, enquiring control variables,