



<b>Year 3</b> <b>Science:</b> <b>Autumn 1 and 2</b> <b>Physics - Forces and Magnets</b>	
<b>Previous learning</b>	
<p>In Year 2, the children learnt that objects can move. They learnt that objects that float are typically light or hollow and objects that sink are typically heavy or dense.</p> <p>This project teaches children about contact and non-contact forces, including friction and magnetism. They investigate frictional and magnetic forces, and identify parts of a magnet and magnetic materials.</p>	
<b>Substantive Knowledge in Science</b>	<b>Disciplinary knowledge in Science</b>
<p>Forces cause objects to move, change speed or change shape.</p> <p>Forces need contact between two objects, but magnetic forces can act at a distance.</p> <p>Magnets have two poles (north and south).</p> <p>Magnets have invisible magnetic fields that can be seen using iron filings.</p>	<p>Ask relevant questions and use different types of scientific enquiries to answer them.</p> <p>Set up simple practical enquiries, comparative and fair tests.</p> <p>Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.</p> <p>Gather, record, classify and present data in a variety of ways to help in answering questions.</p> <p>Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.</p> <p>Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</p> <p>Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.</p> <p>Identify differences, similarities or changes related to simple scientific ideas and processes.</p> <p>Use straightforward scientific evidence to answer questions or to support their findings.</p>
Lesson 1	<b>What is a force?</b> <ul style="list-style-type: none"> <li>To identify magnetic materials and the pushing and pulling forces.</li> </ul>
Lesson 2	<b>Points of contact (contact force)</b> <ul style="list-style-type: none"> <li>To understand that two 'bodies' need to touch each other for the force to occur (including predictions depending on which poles are facing).</li> </ul>
Lesson 3	<b>Frictional forces</b> <ul style="list-style-type: none"> <li>To observe the pushing force and the opposing frictional force on smooth and rough surfaces.</li> </ul>
Lesson 4	<b>Exploring force metres</b> <ul style="list-style-type: none"> <li>To measure the forces needed to carry out everyday tasks.</li> </ul>
Lesson 5	<b>Magnetic forces (non-contact force)</b> <ul style="list-style-type: none"> <li>To investigate and compare a range of magnets (bar, horseshoe and floating).</li> </ul>
Lesson 6	<b>Magnetic fields – Breadth and depth</b> <ul style="list-style-type: none"> <li>To make increasingly careful observations, identifying similarities, differences and changes and making simple connections.</li> </ul>
<b>Vocabulary</b>	

**Year 3**  
**Science:**  
**Spring 1**  
**Biology - Animals, including humans**

**Previous learning**

In Year 2, children learnt about the growth in animals by exploring the life cycles of some familiar animals. They built on learning about the survival of humans by identifying the basic needs of animals for survival, including food, water, air and shelter. Pupils learnt about the importance of exercise, and that we must eat the right amounts of different types of food, and have good hygiene.

This project teaches children further about the importance of nutrition for humans and other animals. They learn about the role of a skeleton and muscles and identify animals with different types of skeletons.

Substantive Knowledge in Science	Disciplinary knowledge in Science
<p>Animals cannot make their own food and need to get nutrition from the food they eat.</p> <p>Carnivores get their nutrition from eating other animals. Herbivores get their nutrition from plants. Omnivores get their nutrition from eating a combination of both plants and other animals.</p> <p>A balanced diet contains the right proportions of foods from 5 different food groups: fruit, vegetable, carbohydrates, protein and dairy.</p> <p>A skeleton is a frame of bones that supports the body and gives it shape. A joint is a place where two or more bones meet and connect.</p>	<p>Ask relevant questions and use different types of scientific enquiries to answer them.</p> <p>Set up simple practical enquiries, comparative and fair tests.</p> <p>Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.</p> <p>Gather, record, classify and present data in a variety of ways to help in answering questions.</p> <p>Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.</p> <p>Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</p> <p>Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.</p> <p>Identify differences, similarities or changes related to simple scientific ideas and processes.</p> <p>Use straightforward scientific evidence to answer questions or to support their findings.</p>

Lesson 1	<p><b>Asking questions</b></p> <ul style="list-style-type: none"> <li>To understand that nutrition allows plants and animals to grow, stay healthy, and survive.</li> </ul>
Lesson 2	<p><b>Balanced and nutritious</b></p> <ul style="list-style-type: none"> <li>To explain the importance and characteristics of a healthy, balanced diet.</li> </ul>
Lesson 3	<p><b>Investigating fatty foods</b></p> <ul style="list-style-type: none"> <li>To test to compare the fattiness of different foods.</li> </ul>
Lesson 4	<p><b>Animal diets</b></p> <ul style="list-style-type: none"> <li>To describe how and why animals' diets change over the year.</li> </ul>
Lesson 5	<p><b>Bones</b></p> <ul style="list-style-type: none"> <li>To learn more about the major bones and their important functions.</li> </ul>
Lesson 6	<p><b>Joints investigation</b></p> <ul style="list-style-type: none"> <li>To understand the parts of a joint and what they are for.</li> </ul>

**Vocabulary**

joint, cartilage, synovial fluid and ligaments, Major bones: skull, ribs, spine, humerus, ulna, radius, pelvis, femur, tibia, fibula, nutrition, carbohydrates, protein, fats, sugar,

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This project teaches children further about the importance of nutrition for humans and other animals. They learn about the role of a skeleton and muscles and identify animals with different types of skeletons.

Substantive Knowledge in Science	Disciplinary knowledge in Science
<p>Muscles are soft tissues made up of many stretchy fibres. They allow humans to move, breathe and digest food.</p> <p>There are three main types of muscle in the human body: smooth muscle, skeletal muscle and cardiac muscle.</p> <p>Major muscle groups in the human body include the biceps, triceps, and abdominals.</p>	<p>Ask relevant questions and use different types of scientific enquiries to answer them.</p> <p>Set up simple practical enquiries, comparative and fair tests.</p> <p>Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.</p> <p>Gather, record, classify and present data in a variety of ways to help in answering questions.</p> <p>Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.</p> <p>Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</p> <p>Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.</p> <p>Identify differences, similarities or changes related to simple scientific ideas and processes.</p> <p>Use straightforward scientific evidence to answer questions or to support their findings.</p>
Lesson 1	<p><b>Muscles</b></p> <ul style="list-style-type: none"> <li>To describe the different types of muscles which are used for support, protection and movement.</li> </ul>
Lesson 2	<p><b>Skeleton types</b></p> <ul style="list-style-type: none"> <li>To know the different skeleton types and the advantages and disadvantages of each.</li> </ul>
Lesson 3	<p><b>Investigation</b></p> <ul style="list-style-type: none"> <li>To ask relevant questions and use different types of scientific enquiries to answer them.</li> </ul>
Lesson 4	<p><b>Research</b></p> <ul style="list-style-type: none"> <li>To name and find reliable sources of information, including books and websites.</li> </ul>
Lesson 5	<p><b>Data</b></p> <ul style="list-style-type: none"> <li>To gather, record, classify and present data in a variety of ways to help in answering questions.</li> </ul>
Lesson 6	<p><b>Conclusions</b></p> <ul style="list-style-type: none"> <li>To draw conclusions from their research or investigation and to answer their initial question.</li> </ul>
<p><b>Vocabulary</b></p>	

joint, cartilage, synovial fluid and ligaments, Major bones: skull, ribs, spine, humerus, ulna, radius, pelvis, femur, tibia, fibula, nutrition, carbohydrates, protein, fats, sugar, dairy, fruit and vegetables, balanced diet, energy

**Year 3  
Science  
Spring 2  
Biology - Plant Nutrition and Reproduction**

**Previous learning**

In Year 2, the children learnt that plants grow from seeds and bulbs. They learnt that plants need water, light and a suitable temperature to grow and stay healthy.

This project teaches children about the requirements of plants for growth and survival. They describe the parts of flowering plants and relate structure to function, including the roots and stem for transporting water, leaves for making food and the flower for reproduction.

**Substantive Knowledge in Science**

Plants require air, light, water and nutrients for life and grow.

Water is transported in plants from the roots, through the stem and to the leaves, through tiny tubes called xylem.

The processes of a plant's life cycle include germination, flower production, pollination, seed formation and seed dispersal.

The parts of a flower include the sepal, petal, stamen and carpel.

**Disciplinary knowledge in Science**

Ask relevant questions and use different types of scientific enquiries to answer them.

Set up simple practical enquiries, comparative and fair tests.

Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.

Gather, record, classify and present data in a variety of ways to help in answering questions.

Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.

Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.

Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.

Identify differences, similarities or changes related to simple scientific ideas and processes.

Use straightforward scientific evidence to answer questions or to support their findings.

Lesson 1

**Function of plant parts - including plant requirements**

- To identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.

Lesson 2

**Focus on roots**

- To investigate the way in which water is transported within plants.

Lesson 3

**Focus on stems**

- To make increasingly careful observations, identifying similarities, differences and changes and making simple connections.

Lesson 4

**Flower anatomy**

- To name the parts of a flower and describe their functions.

Lesson 5

**Flowering plant life cycle**

- To explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.

Lesson 6

**Pollination and seed dispersal**

- To know how pollen grains are transferred and how seeds are transported.

## Vocabulary

flower production, pollination, seed formation, seed dispersal, pollen, roots, stem/trunk, leaves and flowers

<b>Year 3</b> <b>Science</b> <b>Summer 1</b> <b>Physics - Light and Shadows</b>	
<b>Previous learning</b>	
<p>In Year 2, the children learnt that daylight varies through the year.</p> <p>This project teaches children about light and dark. They investigate the phenomena of reflections and shadows, looking for patterns in collected data. The risks associated with the Sun are also explored.</p>	
<b>Substantive Knowledge in Science</b>	<b>Disciplinary knowledge in Science</b>
<p>A light source produces light. A reflector reflects light.</p> <p>Light sources and reflectors can be natural, such as the Sun and Moon, or artificial, such as a light bulb or bike reflector.</p> <p>Protection from the Sun includes sun cream, sun hats, sunglasses and staying indoors or in the shade.</p> <p>A shadow is made when an object blocks the passage of light from a light source.</p>	<p>Ask relevant questions and use different types of scientific enquiries to answer them.</p> <p>Set up simple practical enquiries, comparative and fair tests.</p> <p>Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.</p> <p>Gather, record, classify and present data in a variety of ways to help in answering questions.</p> <p>Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.</p> <p>Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</p> <p>Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.</p> <p>Identify differences, similarities or changes related to simple scientific ideas and processes.</p> <p>Use straightforward scientific evidence to answer questions or to support their findings.</p>
Lesson 1	<b>Exploring light</b> <ul style="list-style-type: none"> <li>● To recognise that they need light in order to see things and that dark is the absence of light.</li> </ul>
Lesson 2	<b>Identify and classify</b> <ul style="list-style-type: none"> <li>● To identify and classify light sources and reflectors.</li> </ul>
Lesson 3	<b>Sun safety</b> <ul style="list-style-type: none"> <li>● To recognise that light from the sun can be dangerous and that there are ways to protect their eyes.</li> </ul>
Lesson 4	<b>Exploring shadows</b> <ul style="list-style-type: none"> <li>● To recognise that shadows are formed when the light from a light source is blocked by a solid object.</li> </ul>
Lesson 5	<b>Observing changes in shadows</b> <ul style="list-style-type: none"> <li>● To compare the suitability of a range of everyday materials for particular uses, including wood, metal, plastic, glass, brick, rock, paper and cardboard.</li> </ul>
Lesson 6	<b>Investigate</b>

- To investigate what will happen to shadows during the day.

### Vocabulary

dark, dull, light, non-reflective, reflective, rough, shiny, smooth, translucent, transparent, opaque, SPF, Sun, sunburn, sun cream, sunglasses, sun hat, sun protection factor, ultraviolet light, UV

**Year 3**  
**Science**  
**Summer 2**  
**Chemistry - Rocks**

#### Previous learning

In Year 2, the children learnt that a material's physical properties make it suitable for particular purposes and that many materials are used for more than one purpose.

This project teaches children about the features and characteristics of Earth's layers, including a detailed exploration of volcanic, tectonic and seismic activity.

#### Substantive Knowledge in Science

Sedimentary rocks are often soft, permeable, and have layers and may contain fossils.

Igneous rocks are usually hard, shiny and contain visible crystals.

Metamorphic rocks are usually very hard and often shiny.

Soils are made from tiny pieces of eroded rock, air and organic matter.

#### Disciplinary knowledge in Science

Ask relevant questions and use different types of scientific enquiries to answer them.

Set up simple practical enquiries, comparative and fair tests.

Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.

Gather, record, classify and present data in a variety of ways to help in answering questions.

Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.

Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.

Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.

Identify differences, similarities or changes related to simple scientific ideas and processes.

Use straightforward scientific evidence to answer questions or to support their findings.

Lesson 1

#### Properties of rocks

- To explore, sort and classify different types of rock and investigate their properties.

Lesson 2

#### Physical properties

- To know that different properties makes rocks suitable for different uses.

Lesson 3

#### Fossil formation

- To recall and describe each step of fossil formation.

Lesson 4

#### How is soil made?

- To recognise that soils are made from rocks and organic matter.

Lesson 5

#### Soil types

- To understand the importance of soil and the three basic types.

Lesson 6

#### Investigation

- To investigate what happens when rocks are rubbed together or what changes occur when they are in water.

## Vocabulary

dissolve, erosion, fossil, mineral, mould, pressure, rock, sediment, skeleton, crystalline, dull

hard, impermeable, layer, permeable, property

rock, shiny, soft, suitability