Easington
CHURCH OF ENGLAND PRIMARY ACADEMY

Year 3/4
Science:
Autumn 1
Physics - Sound

Previous learning

In EYFS and KS1, children learnt that ears are used for hearing. Different body parts are used for different things.

This project teaches children about sound, how sound is made and how sound travels as vibrations through a medium to the ear. They learn about pitch and volume and find out how both can be changed.

Substantive Knowledge in Science	Disciplinary knowledge in Science
When vibrations stop, the sound stops. The volume of sound is measured in decibels (dB). The more energy put into a sound source, the larger the vibrations and the larger the sound waves. Pitch is how high or low a sound is.	Ask relevant questions and using 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	**Exploring sound** • To identify how sounds are made, associating some of them with something vibrating.
Lesson 2	**How does sound travel?** • To recognise that vibrations from sounds travel through a medium to the ear.
Lesson 3	**Muffling sounds – Breadth and depth** • To measure sound in a unit of measurement called decibels (dB).

Lesson 4	**Volume and distance investigation**
	• To recognise that sounds get fainter as the distance from the sound source increases.
Lesson 5	**Changing the volume and pitch of sounds**
	• To find patterns between the volume and pitch of a sound and features of the object that produced it.
Lesson 6	**Sound Investigation**
	• To ask relevant scientific questions, independently, about the world around them and begin to identify how they can answer them.
Vocabulary	
high pitch, low pitch, vibration, volume	

Year 3/4
Science
Autumn 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	Disciplinary 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.	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 make 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	

Year 3/4
Science:
Spring 1 and 2
Chemistry - States of Matter

Previous learning

In Year 3, the children learnt about materials such as rocks and minerals. They explored the process of dissolving in relation to fossils and sediments.

This project teaches children about solids, liquids and gases and their characteristic properties. They observe how materials change state as they are heated and cooled, and learn key terminology associated with these processes.

Substantive Knowledge in Science	Disciplinary knowledge in Science
Water changes state from solid (ice) ⇌ liquid (water) at 0°C and from liquid (water) ⇌ gas (water vapour) at 100°C.	Ask relevant questions and using different types of scientific enquiries to answer them.

The process of changing from a solid to liquid is called melting. The reverse process of changing from a liquid to a solid is called freezing. The process of changing from a liquid to a gas is called evaporation. The reverse process of changing from a gas to a liquid is called condensation.	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	**Classifying solids, liquids and gases**
	● To compare and group materials together, according to whether they are solids, liquids or gases.
Lesson 2	**Particle theory**
	● To explain why solids, liquids and gases have different properties.
Lesson 3	**Melting, freezing, evaporation and condensation**
	● To observe and explain how some materials change state when they are heated or cooled, (including links to the water cycle).
Lesson 4	**Focus on water**
	● To take accurate measurements in standard units, using a range of equipment.
Lesson 5	**Observing, measuring and recording changes over time**
	● To understand that different materials have different melting and boiling points.
Lesson 6	**Melting investigation**
	● To investigate the factors that affect the rate that ice melts.

Vocabulary
boiling point, condensation, condense, cool, freeze, heat, melt, reversible, water vapour

Year 3/4
Science:
Summer 1
Biology - Food and the Digestive System

Previous learning

In Year 3, children learnt that humans have a skeleton and muscles for movement, support and protecting organs. The children learnt that animals, including humans, need the right types and amounts of nutrition, and that they cannot make their own food.

This project teaches children about the human digestive system. They explore the main parts, starting with the mouth and teeth, identifying teeth types and their functions. They link this learning to animals' diets and construct food chains to show the flow of energy.

Substantive Knowledge in Science	Disciplinary knowledge in Science
An ecosystem is a community of living organisms and their environments that interact with each other. The digestive system is responsible for digesting food and absorbing nutrients and water. The main parts of the digestive system are the mouth, oesophagus, stomach, small intestines, large intestines and rectum. There are four different types of teeth: incisors, canines, premolars and molars.	Ask relevant questions and using 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	**Ecosystems** ● To understand the features of ecosystems.

Lesson 2	**Food chains**
	● To construct and interpret a variety of food chains, identifying producers, predators and prey.
Lesson 3	**Changes in habitats**
	● To understand living things within an ecosystem being interdependent.
Lesson 4	**Purpose and parts**
	● To describe the simple functions of the basic parts of the digestive system in humans.
Lesson 5	**Teeth types**
	● To identify the different types of teeth in humans and their simple functions.
Lesson 6	**Toothpaste investigation**
	● To investigate the effectiveness of different toothpaste.
Vocabulary	
mouth, oesophagus, saliva, stomach, small intestines, large intestines, rectum, excretion, molars, canines, incisors food chain, energy, producer, predator, prey, decomposer	

Year 3/4
Science:
Summer 2
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**
Animals cannot make their own food and need to get nutrition from the food they eat. Carnivores get their nutrition from eating other animals. Herbivores get their nutrition from	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.

plants. Omnivores get their nutrition from eating a combination of both plants and other animals. A balanced diet contains the right proportions of foods from 5 different food groups: fruit, vegetable, carbohydrates, protein and dairy. 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.	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	**Asking questions** ● To understand that nutrition allows plants and animals to grow, stay healthy, and survive.
Lesson 2	**Balanced and nutritious** ● To explain the importance and characteristics of a healthy, balanced diet.
Lesson 3	**Investigating fatty foods** ● To test to compare the fattiness of different foods.
Lesson 4	**Animal diets** ● To describe how and why animals' diets change over the year.
Lesson 5	**Bones** ● To learn more about the major bones and their important functions.
Lesson 6	**Joints investigation** ● To understand the parts of a joint and what they are for.

Vocabulary

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