Oughtibridge Primary School
Science Long Term Plan

	Autumn Term	Spring Term	Summer Term
Foundation Stage	**Being Safe and Healthy** Children will learn to… • understand why we need to exercise • name and sort healthy and unhealthy foods • understand how to look after our teeth Aim: to understand how to look after ourselves and be healthy. **Light and Dark** Children will learn to… • name light sources and non-light sources • investigate and explore using light sources to create shadows and reflections Aim: to explore ways to produce light and dark. **Nocturnal Animals** Children will learn to... • talk about nocturnal and diurnal animals Aim: to understand differences between animals and their habitats.	**Forces and Motion** Children will learn to… • observe, investigate and ask questions about how toys work • sort toys by how they work • use language to describe how toys work (push, pull, twist, turn, rotate, spin, force) • investigate how different forms of transport move • investigate magnetism • ask how and why questions Aims: To explore toys and how they work. To begin to understand and describe what a force is. **Use of Everyday Materials** Children will learn to… • understand what an object is and what a material is • name everyday materials • investigate the properties of everyday materials • explore the properties of materials through investigations e.g. do they float/sink?	**Lifecycles** Children will learn to… • know what a life cycle is • observe the changes of things overtime as they grow (eggs to chicks, caterpillars to butterflies) • ask questions and make predictions • record changes through drawing and labels • draw and label simple life cycles Aim: to understand simple life cycles and how things grow. **Plants** Children will learn to… • plant and observe how bulbs change over time • know what a plant needs to grow • label parts of a plant • observe changes of a plant over time through drawings Aim: to begin to understand how plants grow and change. **Sea Creatures** Children will learn to… • talk about and compare habitats of sea creatures

<table>
<tr><td></td><td><u>Space</u>
Children will learn to...
understand where the Earth is
name some planets in the Solar System and talk about features of space
Aim: to begin to understand and explore Space and the Solar System.</td><td>ask how and why questions about materials
sort materials by their properties
Aims:
To investigate the best material to use to make different things by selecting and testing them e.g. a bridge for the Three Billy Goats Gruff.
To say why they have chosen a specific material based on its properties.</td><td>talk about features and adaptations of sea creatures
Aim: to understand about features and habitats of creatures in and near the sea.</td></tr>
<tr><td rowspan="2">Year 1</td><td colspan="3"><u>Working Scientifically</u>
Children will learn to…
work scientifically
ask simple questions and recognise they can be answered in different ways
observe closely, using simple equipment
perform simple tests
identify and classify
use their observations and ideas to suggest answers to questions
gather and record data to help answer questions</td></tr>
<tr><td><u>Animals, including Humans: Ourselves</u>
Children will learn to…
identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.
Aim: to gain a better understanding of the basic parts of the human body and the senses.

<u>Animals, including Humans: Our Pets</u>
Children will learn to…
identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals</td><td><u>Everyday Materials</u>
Children will learn to…
identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock
distinguish between an object and the material from which it is made
describe the physical properties of a variety of everyday materials on the basis of their simple physical properties
compare and group together a variety of everyday materials on the basis of their simple physical properties
Aims:</td><td><u>Seasonal Changes</u>
Children will learn to…
observe changes across Spring and Summer
observe and describe weather associated with the seasons and how day length varies
recognise that weather patterns are different in different areas of the world
Aim: to explore and observe the changes in seasons and produce a class calendar.

<u>Plants</u>
Children will learn to…
identify and name a variety of common wild and garden plants,</td></tr>
</table>

<table>
<tr><td></td><td>

- to identify and name 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)

Aim: to gain a better understanding of the animals that live around us and their habitats.

</td><td>

To explore different materials and sort them into groups based on their properties.
To explore different materials and their properties and decide how each might best be used.

</td><td>

including deciduous and evergreen trees
- identify and describe the basic structure of a variety of common flowering plants, including trees

Aim: to name and label the parts of a common plant and name different types of trees in the surrounding area.

</td></tr>
<tr><td>Year 2</td><td colspan="3">

<u>Working Scientifically</u>
Children will learn to…

- ask simple questions and recognise that they can be answered in different ways
- observe closely, using simple equipment
- perform simple tests
- identify and classify
- use their observations and ideas to suggest answers to questions
- gather and record data to help in answering questions

</td></tr>
<tr><td></td><td>

<u>Materials Matter</u>
Children will learn 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

Aim: to explore and understand different materials and their properties in relation to absorbency and flexibility.

<u>Everyday Materials</u>
Children will learn to...

- find out how the shapes of solid objects made from some materials, can be changed by squashing, bending, twisting and stretching

</td><td>

<u>Living Things and their Habitats</u>
Children will learn to…

- explore and compare the differences between things that are living, dead, and things that have never been alive
- identify and name a variety of plants and animals in their habitats
- describe how habitats are suited to the animals that live in them
- describe how animals obtain their food from plants or other animals using simple food chains

Aim: to be able to identify living things and describe suitable conditions in which they can live

<u>Animals, including Humans</u>
Children will learn to:

</td><td>

<u>Plants</u>
Children will learn to...

- find out and describe how plants need water, light and a suitable temperature to grow and stay healthy
- observe and describe how seeds and bulbs grow into mature plants

Aim: to name and label the parts of a common plant and name different types of trees in the surrounding area.

<u>Living Things and their Habitats</u>
Children will learn to:

- group common animals into herbivores, carnivores and omnivores
- build on prior knowledge to further develop an understanding of habitats and their features

</td></tr>
</table>

	Aim: to explore and understand different materials and their properties in relation to elasticity and flexibility.	• match sort and group young animals and their adults • explain how animals change as they grow • compare the stages of the human life cycle • research and describe what animals and humans need to survive • describe the importance and the effects of exercise • describe the importance of a balanced diet Aim: to be able to describe how humans and animals change at different points in their life cycles, as well as understand and describe how diet and exercise can have an impact on the body.	• identify and create food chains from a range of habitats and microhabitats • understand that animals take energy from their food, and recognise that energy is passed through a food chain Aim: to describe how animals survive in the habitats in which they live
Year 3	**<u>Working Scientifically</u>** Children will learn to… • 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 • 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		
	<u>Animals including Humans</u> Children will learn to... • use practical scientific methods, processes and skills • identify that animals, including humans, need the right types and amount of nutrition and that they cannot make their own food	**<u>Rocks and Soils</u>** Children will learn to... • use practical scientific methods, processes and skills • compare and group together different kinds of rocks on the basis of their appearance and simple physical properties	**<u>Plants</u>** Children will learn to... • identify and describe the functions of different parts of flowering plants (e.g. roots, stem/trunk, leaves and flowers) • explore the requirements of plants for life and growth (air, light, water,

	• identify that humans and some other animals have skeletons and muscles for support, protection and movement Aim: to understand that human and animal bodies are similar/different and how to ensure our bodies stay healthy. **Light** Children will learn 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 an opaque object Aim: understand that light comes from a source and that darkness is the absence of light.	• recognise that soils are made from rocks and organic matter • use practical scientific methods, processes and skills • describe in simple terms how fossils are formed when things that have lived are trapped within rock Aim: to understand how rocks and fossils are formed. **Forces and Magnets** Children will learn 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 and predict whether two magnets will attract or repel each other, depending on which poles are facing Aims: To understand that most forces require contact and are affected by different surfaces. To understand that magnetism is a force and that it does not require contact.	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 Aim: to be able to describe the parts and processes involved within the life cycle of a plant. **Plants** Children will learn to... • explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal Aim: to be able to describe how flowers transform into fruits and seeds to perpetuate the cycle of life.

Year 4

Working Scientifically

Children will learn to…

- 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 using straightforward scientific evidence to answer questions or to support their findings

Electricity

Children will learn to...

- identify common appliances that run on electricity
- construct a simple series electrical circuit, identifying and naming its basic parts
- 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 power source
- recognise that a switch opens and closes a circuit
- recognise some common conductors and insulators, and associate metals with being good conductors

Aims:

To begin to understand electrical circuits through using batteries, wires, bulbs, switches and buzzers.

To understand the term 'electrical conductor'.

States of Matter

Children will learn 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
- identify the part played by evaporation and condensation in the water cycle

Aim: to know there are 3 different states of matter and to explain their similarities and differences and how they can be changed.

Sound and Hearing

Children will learn to...

- identify how sounds are made, associating some of them with something vibrating
- recognise that vibrations from sounds travel through a medium to the ear

Living Things and their Habitats

Children will learn 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

Aim: to know more about living things in the local environment and how to classify them scientifically.

Living Things and their Habitats

Children will learn to...

- recognise that environments can change and that this can sometimes pose dangers to living things

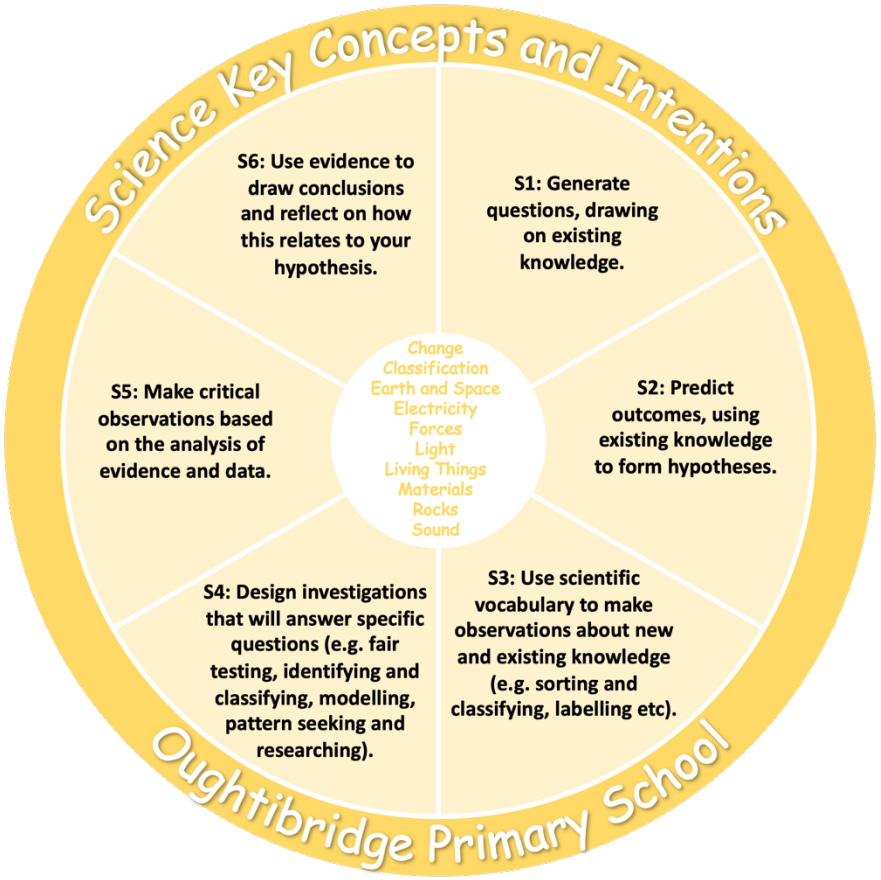
Aim: to build on their understanding that habitats support life and that changing the habitat may affect the life within it.

	The Digestive System Children will learn 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 Aim: to understand the importance of food to animals and how it is processed and used by their bodies.	• find patterns between the pitch and volume of a sound and the strength of vibrations that produced it • recognise that sounds get fainter as the distance from the sound source increases Aim: to explore how sound is made and how sound travels in order to be heard.	
Year 5	**Working Scientifically** Children will learn to… • plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • record results using scientific diagrams and labels • use test results to make predictions to set up further comparative and fair tests • report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations • identify scientific evidence that has been used to support or refute ideas or arguments		
	Earth and Space Children will learn 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	**Properties and Changes of Materials** Children will learn to... • compare and group everyday materials based on their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal) and response to magnets • give reasons, based on evidence from comparative and fair test, for particular uses of everyday	**Living Things and their Habitats** Children will learn 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 plants and animals Aim: to understand the life processes of plants and animals.

	apparent movement of the sun across the sky Aim: to gain a greater understanding and write about our Solar System and the planets. **Forces** Children will learn to... ● explain that unsupported objects ● fall towards the earth because of the force of gravity acting between Earth and a falling object ● identify the effects of air resistance, water resistance and friction that act between moving surfaces ● recognise that some mechanisms, including leavers, pulleys and gears, allow a smaller force to have a greater effect ● study how scientists, for example, Galileo Galilei and Isaac Newton helped to develop the theory of gravitation ● explore resistance in water by making and testing boats of different shapes Aim: to expand our understanding of forces and the impact they have on everyday life.	materials, including metals, wood and plastic Aim: to expand our understanding that materials have different properties and that these properties need to be considered when designing products. **Properties and Changes of Materials** Children will learn to... ● compare and group everyday materials based on their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal) and response to magnets ● know 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, through sieving, filtering and evaporating ● 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 actions of acid on bicarbonate of soda Aims: To understand that some materials can change state – either reversible or irreversible. To understand that this change in state may affect their properties.	**Animals including Humans** Children will learn to... ● describe the changes as humans develop to old age Aim: to understand how humans develop and grow throughout life.

Year 6	**Working Scientifically** Children will learn to… • plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs • use test results to make predictions to set up further comparative and fair tests • report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations • identify scientific evidence that has been used to support or refute ideas or arguments		
	Light Children will learn to... • use test results to make predictions to set up further tests and to compare results • 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 • use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them Aim: to understand how we can see objects and colours. **Electricity** Children will learn to... • use recognised symbols when representing a simple circuit in a diagram • compare and give reasons for variations in how components work, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches	**Animals, including Humans** Children will learn to... • 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 Aim: to develop their understanding of how the main organs within the body work together to help us grow and survive.	**Evolution and Inheritance** Children will learn 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 Aim: to develop a deeper understanding of how scientists have found ways of placing both plants and animals into groups.

	• associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit Aim: to understand that the parts of a circuit have specific vocabulary which connects with the job they do in the circuit **<u>Living Things and Their Habitats</u>** Children will learn to... • 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 Aim: to gain a greater understanding of how living things have changed over a long period.		



Living Things – What does it mean to be alive?

Classification – How does similarity and difference add to our understanding**?**

Materials – What are things made from and why?

Change – Why do some things transform from one state to another?

Forces – What is a force and how does it affect the world around us?

Electricity – Where does the energy come from and what happens when it flows?

Light – How do we see things?

Sound – How do we hear things?

Earth and Space - How does the movement of the planets and the sun affect the world around us?

Rocks – Why aren't all rocks the same?