



Osmotherley CP Primary School
Science Curriculum

“A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world’s future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes. ”

Science National Curriculum Purpose of Study 2014.

EYFS (Reception): (Taken from EYFS Framework 2021.)

UNDERSTANDING THE WORLD:

The Natural World ELG

Children at the expected level of development will:

Explore the natural world around them, making observations and drawing pictures of animals and plants;

Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class;

Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.

PERSONAL, SOCIAL AND EMOTIONAL DEVELOPMENT

Managing Self ELG

Children at the expected level of development will:

Understand the importance of healthy food choices.

KEY STAGE ONE (Years 1 and 2)

“The principal focus of science teaching in key stage 1 is to enable pupils to experience and observe phenomena, looking more closely at the natural and humanly constructed world around them. They should be encouraged to be curious and ask questions about what they notice. They should be helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests, and finding things out using secondary sources of information. They should begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways. Most of the learning about science should be done through the use of first-hand practical experiences, but there should also be some use of appropriate secondary sources, such as books, photographs and videos.

‘Working scientifically’ is described separately in the programme of study, but must always be taught through and clearly related to the teaching of substantive science content in the programme of study.

Pupils should read and spell scientific vocabulary at a level consistent with their increasing word-reading and spelling knowledge at key stage 1.”
(Programme of Study 2014)

LOWER KEY STAGE TWO (Years 3 and 4).

“The principal focus of science teaching in lower key stage 2 is to enable pupils to broaden their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. They should ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple comparative and fair tests and finding things out using secondary sources of information. They should draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out.

'Working scientifically' is described separately at the beginning of the programme of study, but must always be taught through and clearly related to substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content.

Pupils should read and spell scientific vocabulary correctly and with confidence, using their growing word-reading and spelling knowledge. ”
(Programme of Study 2014).

UPPER KEY STAGE TWO (Years 5 and 6).

“The principal focus of science teaching in upper key stage 2 is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. At upper key stage 2, they should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should also begin to recognise that scientific ideas change and develop over time. They should select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information. Pupils should draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings.

'Working and thinking scientifically' is described separately at the beginning of the programme of study, but must always be taught through and clearly related to substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content.

Pupils should read, spell and pronounce scientific vocabulary correctly.”
(Programme of Study 2014).

How will Science be taught at Osmotherley School?

Within the teaching of Science at Osmotherley School, we want to encourage a curiosity and fascination of the world around them. There will be an emphasis on developing and deepening scientific knowledge and 'working and thinking scientifically' will be taught throughout the content of the programme of study. Hands-on, practical science, using the opportunities afforded by our local environment and Forest Schools, will allow the children opportunities for deliberate practise, to embed scientific knowledge and skills in their long-term memories.

Science at Osmotherley will be taught by delivering the statutory requirements of the Science National Curriculum in Key Stage 1 and 2. Reception children will explore Science through the EYFS framework, looking closely at the Specific Area of Understanding the World and Personal, Social and Emotional Development.

Science within Key Stage 1 and 2 will be taught discreetly although opportunities for links with our curriculum enquiries will be made. Years 1 and 2 will follow their Year appropriate programme of study; Lower Key Stage 2 (Years 3 and 4) and Upper Key Stage 2 (Years 5 and 6) will follow their programmes of study as a 2 year rolling programme.

There will be opportunities for children to practise their literacy and numeracy skills. Within both Key Stages, assessment of children's prior knowledge will be set at the beginning of each topic through a Key Question sheet. Recalls of that knowledge will then be introduced at 2 weeks, 6 weeks and 12 weeks to ensure that key knowledge is committed to the long-term memory. Knowledge mats will be sent home with the key knowledge and vocabulary, which needs to be learnt.

How will science knowledge and skills be taught?

They will leave their Reception Year knowing:

The names of the 4 seasons

Names of parts of their body and names of animal body parts

Names of the parts of plants – leaves, flower, roots

Names of some materials which are solids or liquids

Names of some healthy foods.

During their Reception Year,

Children will be given opportunities to:

Explore their school environment and look how it changes through the seasons.

Explore, ask questions and begin to talk about some similarities and differences they find in the natural world around them.

Make observations and draw pictures of animals and plants.

Begin to talk about materials and changing states of matter.

Begin to talk about healthy food choices.

Within Key Stage 1:

Pupils will leave Key Stage 1 with this key knowledge:

Plants

- identify and name a variety of common wild and garden plants, (daisy, nettle, grass, dandelion, daffodil, rose,)
- Identify and name deciduous and evergreen trees, (oak, horse chestnut, fir, holly)
- identify and describe the basic structure of a variety of common flowering plants, including trees
- Name what plants need to grow and stay healthy

Seasonal changes

- Name and describe changes across the 4 seasons
- Describe weather associated with the seasons and say how day length varies

Animals, including humans

- 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
- Name 4 baby animals and their adult parents.
- Name the basic needs of animals, including humans, for survival (water, food and air)
- Name some healthy foods and group foods into dairy, fruit and vegetables, meat and fish, carbohydrates.
- Say how humans can keep clean and physically fit.

Everyday materials

- Name 6 different types of materials, (wood, plastic, glass, metal, water, and rock).
- Name at least 2 simple physical properties of a variety of everyday materials
- Group everyday materials according to their simple physical properties
- Say why a material is suitable for its particular use.
- Name some ways a solid material can be changed.

Living things and their habitats

- Recognise things that are living, dead, and things that have never been alive.
- Name at least 2 habitats and at least 2 animals and plants which they would find there.
- Name a food source for a given animal and explain what a food chain shows.

The children will be given opportunities to:

Develop their understanding of scientific enquiry through being taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- asking simple questions and recognising that they can be answered in different ways
- observing closely, using simple equipment
- performing simple tests
- identifying and classifying
- using their observations and ideas to suggest answers to questions
- gathering and recording data to help in answering questions

Within Lower Key Stage 2:

Pupils will leave Lower Key Stage 2 with this key knowledge:

Plants

- Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers
- Know plants need air, light, water, nutrients from soil, and room to grow.
- Know water is transported from the roots up the stem and into the leaves/flower.
- Know flowers are the reproductive part of the plant and describe a method of pollination, seed formation and seed dispersal

Rocks

- Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties
- Know how sedimentary rocks are made.
- 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

Animals, including humans

- Know 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 food groups i.e. proteins, carbohydrates, fats and oils, vitamins and minerals,
- Say how the body uses each food group.
- Plan a balanced/healthy meal.
- Say why humans and some other animals have skeletons and muscles for support, protection and movement
- Name the main bones in the human body.

- Name a hinge joint/ball and socket joint.

Light

- 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
- Recognise and use the terms, transparent, translucent and opaque

Forces and magnets

- Compare how things move on different surfaces
- Notice that some forces need contact between 2 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 2 poles
- Predict whether 2 magnets will attract or repel each other, depending on which poles are facing

Living things and their habitats

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

Animals, including humans

- 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

States of matter

- 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, and measure or research the temperature at which this happens in degrees Celsius (°C)
- Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature

Sound

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

- Find patterns between the pitch of a sound and features of the object that produced it
- Find patterns between the volume of a sound and the strength of the vibrations that produced it
- Recognise that sounds get fainter as the distance from the sound source increases

Electricity

- Identify common appliances that run on electricity
- Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers
- 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 battery
- Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit
- Recognise some common conductors and insulators, and associate metals with being good conductors

Earth and space (Y5/6 topic taught early)

- 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
- Know that the sun is a star.
- Know it is not safe to look at the sun.

The children will be given opportunities to:

Expand on the knowledge that they have learnt in Key Stage 1.

Broaden and deepen their knowledge of the world through working scientifically. They should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- asking relevant questions and using different types of scientific enquiries to answer them
- setting up simple practical enquiries, comparative and fair tests
- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- identifying differences, similarities or changes related to simple scientific ideas and processes
- using straightforward scientific evidence to answer questions or to support their findings.

Within Upper Key Stage 2

Pupils will leave Upper Key Stage 2 with this Key Knowledge:

Living things and their habitats

- 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

Animals, including humans

- Describe the changes as humans develop to old age
- Describe what happens in puberty to human bodies

Forces

- 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

Properties and changes of materials

- Compare and group together everyday materials on the basis of 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, 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 kind of change is not usually reversible

Earth and space

- Describe the movement of the Earth and other planets relative to the sun in the solar system

- Name the 8 planets found in our solar system
- Describe the movement of the moon relative to the Earth
- Know how our knowledge of the solar system has changed over time e.g. Galileo, Aristotle

Living things and their habitats

- Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals
- Name these classification groups: plants, micro-organisms, vertebrates, invertebrates, reptiles, amphibians, mammals, fish and birds.
- Give reasons for classifying plants and animals based on specific characteristics

Animals including humans

- 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

Evolution and inheritance

- 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
- Know who Darwin was and that he wrote the Theory of Evolution

Light

- 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

Electricity

- 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 bulbs, the loudness of buzzers and the on/off position of switches
- Use recognised symbols when representing a simple circuit in a diagram

The children will be given opportunities to:

Expand on the knowledge that they have learnt in Lower Key Stage 2.

Broaden and deepen their knowledge of the world through working scientifically. They should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- using test results to make predictions to set up further comparative and fair tests
- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations
- identifying scientific evidence that has been used to support or refute ideas or arguments

SCIENCE CURRICULUM: PROGRESSION THROUGH THE NATIONAL CURRICULUM

	Early Years Reception Expected	Key Stage 1 Years 1 Expected	Key Stage 1 Year 2 Expected	Lower Key Stage 2 Years 3 and 4 Expected	Upper Key Stage 2 Years 5 and 6 Expected
<u>WORKING SCIENTIFICALLY</u>	<p>Ask questions and listen to answers</p> <p>Observe closely including using magnifying glasses</p> <p>Draw pictures of what they see.</p> <p>Talk about objects, animals, materials, the world around them</p>	<p>Ask simple questions and recognising that they can be answered in different ways</p> <p>Observe closely, using simple equipment</p> <p>Make observational drawings and label them.</p> <p>Perform simple tests identifying and grouping</p> <p>Gather and record data to help in answering questions</p>	<p>Ask simple questions and recognising that they can be answered in different ways</p> <p>Observe closely, using simple equipment</p> <p>Make observational drawings and label them.</p> <p>Perform simple tests identifying and classifying using their observations and ideas to suggest answers to questions</p>	<p>Ask relevant questions and using 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</p> <p>Take accurate measurements using standard units, using a range of equipment,</p>	<p>Plan different types of scientific enquiries to answer questions</p> <p>Recognise and control variables where necessary</p> <p>Take measurements, using a range of scientific equipment, with increasing accuracy and precision</p> <p>Take repeat readings when appropriate</p>

			<p>Gather and record data to help in answering questions</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,</p> <p>Present results and conclusions</p> <p>Make predictions for new values, suggest improvements and raise further questions</p> <p>Use straightforward scientific evidence to answer questions or to support their findings.</p>	<p>Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</p> <p>Use test results to make predictions</p> <p>Set up further comparative and fair tests</p> <p>Report and present findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results,</p> <p>Identify scientific evidence that has been used to support or</p>
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					refute ideas or arguments
Working Scientifically Vocabulary	Question, observe, draw, talk about, describe, think (verbal)	Questions, observe, draw, label, test, record, science enquiry, observe over time, identify and classify.	Questions, observe, draw, label, test, record, science enquiry, observe over time, identify and classify.	Scientific enquiry, observation over time, identifying and classifying, pattern seeking, Research, comparative and fair testing, Observe, label, drawings, labelled diagrams, keys, bar charts, tables, question, prediction, method, results, conclusion, evidence.	Scientific enquiry, observation over time, identifying and classifying, pattern seeking, Research, comparative and fair testing, Observe, label, drawings, labelled diagrams, keys, tables, question, prediction, method, results, conclusion, evidence. classification key, scatter graph, bar graph, line graph, repeat, trust,
Seasonal Changes	Name the 4 seasons	Know the weather associated with each season (Taught throughout year)	Know how the day length changes across the 4 seasons (From Y1) (Taught throughout year)		
Seasonal Changes Vocabulary	Spring, summer, autumn, winter	Spring, summer, autumn, winter,	Spring, summer, hot, cold, autumn, winter,		

		weather, cold, hot, rainy, cloudy, misty, sunny, icy, snow.	weather, rainy, cloudy, misty, sunny, icy, day, snow, night, long, short		
Plants	<p>Name parts of plant: flower, root, leaf</p> <p>Name parts of a tree: branches, leaves, (Taught Summer 1)</p>	<p>YEAR 1 Name parts of plant: flower, root, stem, leaf (Taught Summer 1)</p>	<p>YEAR 2 Name parts of tree: leaves, branch, trunk, roots, blossom, fruit,</p> <p>Know that plants need water, air and light to grow (Taught Summer 1)</p>	<p>Describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers</p> <p>Know plants need air, light, water, nutrients from soil, and room to grow.</p> <p>Know water is transported from the roots up the stem and into the leaves/flower.</p> <p>(Taught in Year B Summer 1)</p>	<p>Know flowers are the reproductive part of the plant and describe a method of pollination, seed formation and seed dispersal (from LKS2) (Taught in Year B Summer 1)</p>
Plants vocabulary	Flower. Root, leaf Branches, leaves	Flower, root, leaf, stem Leaves, branch, trunk, roots, blossom, fruit	Water, air, light, grow	Function, flowering plant, roots, stem, leaves, flower, Seed, germination, air, light, water, nutrients, soil, warmth,	Reproduction, pollination, (wind, insect), seed formation, seed dispersal (explosion, wind, animal)

Animals and humans	<p>Name some common animals e.g. pets</p> <p>Name body parts of animals e.g. Head, ears, nose, legs, tail</p> <p>Name basic human body parts</p> <p>(Taught Summer 2)</p>	<p>YEAR 1</p> <p>Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals</p> <p>Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets)</p> <p>identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense</p> <p>(Taught Summer 2)</p>	<p>YEAR 2</p> <p>Name 4 baby animals and their adult parents.</p> <p>Name the basic needs of animals, including humans, for survival (water, food and air)</p> <p>Name some healthy foods and group foods into dairy, fruit and vegetables, meat and fish, carbohydrates.</p> <p>Say how humans can keep clean (hygiene) and physically fit (exercise)</p> <p>(Taught Summer 2)</p>	<p>Identify the different types of teeth in humans and their simple functions</p> <p>Identify that humans and some other animals have skeletons and muscles for support, protection and movement</p> <p>(Taught in Year A Autumn 2)</p>	<p>Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</p> <p>(Taught in Year A Autumn 2)</p>
		<p>Construct and interpret a variety of food chains, identifying producers, predators and prey</p> <p>Describe the simple functions of the basic parts of the digestive system in humans</p> <p>Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own</p>	<p>Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood</p> <p>Describe the ways in which nutrients and water are transported within animals, including humans</p> <p>(Taught in Year B Spring 2)</p>		

				food; they get nutrition from what they eat (Taught in Year B Spring 2)	
Animals and humans vocabulary	(Verbal) cat, dog, goldfish, hamster, sheep, cow, rabbit, head, ears, nose, tail, body, legs, mouth, shoulders, knees, toes, hands	Carnivores, herbivores and omnivores, animals, fish, amphibians, reptiles, birds, mammals, pets, human body, senses, touch, hear, see, smell, taste,	baby, parent, water, food and air, healthy, dairy, fruit and vegetables, meat and fish, carbohydrates. hygiene, exercise	Digestive system, function, mouth, tongue, teeth, stomach, small intestines, large intestines, anus, incisors, canines, premolars, molars, enamel, food chains, producers, predators and prey	Circulatory system, function, heart, pump, veins, arteries, oxygen, oxygenated blood, deoxygenated blood, lungs, diet, exercise, drugs, lifestyle, health Nutrients, water, transport, digestive system, urinary system, plants,
Living things and their habitats	Talk about some animals and plants they find in the school and forest school environment	(YEAR 1 – Taken from Animals and Humans for further learning) Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals Describe and compare the structure of a variety of common animals (fish,	Year 2 Name at least 2 habitats and at least 2 animals and plants which they would find there. Recognise things that are living, dead, and things that have never been alive. Name a food source for a given animal and	Recognise that living things can be grouped in a variety of ways Explore and use classification keys to help group, identify and (Taught in Year A Summer 2)	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

		<p>amphibians, reptiles, birds and mammals including pets)</p> <p>Identify and name a variety of common animals that are carnivores, herbivores and omnivores (Taught Autumn 1)</p>	<p>explain what a food chain shows. (Taught Autumn 1)</p>	<p>Name these classification groups: plants, micro-organisms, vertebrates, invertebrates, reptiles, amphibians, mammals, fish and birds.</p> <p>Give reasons for classifying plants and animals based on specific characteristics (Taught in Year A Summer 2)</p>	<p>Name a variety of living things in their local and wider environment</p> <p>Recognise that environments can change and that this can sometimes pose dangers to living things</p> <p>Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, focusing on micro-organisms,</p>
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				(Taught in Year B Summer 2)	Name these classification groups: micro-organisms, (Taught in Year B Summer 2)
Living things and their habitats	(Verbal) Animals, plants, live, tree,	Carnivores, herbivores and omnivores, animals, fish, amphibians, reptiles, birds, mammals,	Animal, mini-beast, plant, habitat, woodland, field, river, alive, dead, never alive, food source, food chain	Living things, animals, plants, group, classification, key, identify, habitats, environment, destroy, harm,	Living things, animals, plants, micro-organisms, virus, bacteria, mammals, reptiles, amphibians, fish, birds, invertebrates, vertebrates, group, classification, key, identify, characteristics,
Materials	Materials Name some materials which are solids or liquids Name a property of a given material (taught Spring 1)	Materials and their properties Name 6 different types of materials, (wood, plastic, glass, metal, water, and rock). Name at least 2 simple physical properties of a variety of everyday materials	Materials and their properties Say why a material is suitable for its particular use. Name some ways a solid material can be changed. (Taught Spring 1)	States of matter 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, and measure or research the temperature at	Properties and changes of materials Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets

		<p>Group everyday materials according to their simple physical properties (Taught Spring 1)</p>		<p>which this happens in degrees Celsius (°C)</p> <p>Identify the part played by evaporation and condensation in the water cycle.</p> <p>Associate the rate of evaporation with temperature (Taught in Year B Spring 1)</p>	<p>Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</p> <p>Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</p> <p>Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</p>
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					<p>Demonstrate that dissolving, mixing and changes of state are reversible changes</p> <p>Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible (Taught in Year B Spring 1)</p>
Materials Vocabulary	(Verbal) Solid, wood, stone, plastic, metal, glass, liquid, water, milk, hard, soft, rough, smooth, shiny,	Material, properties, solids, wood, plastic, stone, glass, metal, liquids, water, milk, oil, strong, weak, soft, hard, rough, smooth, shiny, dull,	Material, properties, solids, wood, plastic, stone, glass, metal, liquids, water, milk, oil, change, squash, twist, bend, stretch, elastic, absorb, waterproof, test, strong, weak, soft, hard, rough, smooth, shiny, dull,	Materials, properties, states of matter, solid, liquid, gas, change state, melting, freezing, cooling, heating, boiling, evaporation, condensing, condensation. Water cycle, Temperature, degrees Celcius	Materials, properties, states of matter, hardness, solubility, soluble, insoluble, dissolve, mix, changes of state, reversible, irreversible, separate, sieving, filter, evaporation, boiling, heating, cooling, transparency, conductivity (electrical and thermal), and Magnetic

<p>Forces and magnets (Taught in Year A Summer 1)</p>				<p>Forces and magnets Compare how things move on different surfaces Notice that some forces need contact between 2 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. Identify some magnetic materials Describe magnets as having 2 poles Predict whether 2 magnets will attract or repel each other, depending on which poles are facing</p>	<p>Forces 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</p>
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Forces and Magnets				Magnet, poles, south, north, attract, repel, force, distance, materials, magnetic materials, metals	Magnet, gravity, attract, force, fall, friction, surface, resistance, water resistance, air resistance, lever, pulley, gears, work, mechanism,
Rocks and Soils LKS2 Evolution and Inheritance UKS2 (Taught in Year A Spring 2)				Rocks and soils (taught with evolution and inheritance in KS2 class) 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 Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties	Evolution and inheritance 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

				<p>Know how sedimentary rocks are made.</p>	<p>environment in different ways and that adaptation may lead to evolution</p> <p>Know who Darwin was and that he wrote the Theory of Evolution</p>
<p>Rocks and soils (LKS2) taught with Evolution and Inheritance (UKS2)</p>				<p>Fossils, rocks, sedimentary, metamorphic, igneous, properties, MOH's hardness test, compare, group, test, soils, organic matter, humus, top soil, parent rock,</p>	<p>Fossils, records, reproduce, evolution, change, adapt, adaptation, identical, environment, Darwin, Theory of Evolution</p>
<p>Earth and Space (Taught in Year B Autumn 2)</p>				<p>Earth and space (UKS2 topic taught early)</p> <p>Describe the sun, Earth and moon as approximately spherical bodies</p> <p>Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky</p>	<p>Earth and space</p> <p>Describe the movement of the Earth and other planets relative to the sun in the solar system</p> <p>Describe the movement of the moon relative to the Earth</p>

				<p>Know the sun is a star</p> <p>Know it is not safe to look at the sun.</p>	<p>Name the 8 planets found in our solar system</p> <p>Know how our knowledge of the solar system has changed over time e.g. Galileo, Aristotle</p>
<p>Earth and Space Vocabulary</p>				<p>Earth, moon, planets, solar system, sun, gas, hydrogen, star, spheres, spherical, day, night, shadow, damage,</p>	<p>Earth, moon, Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune, Pluto, dwarf planet, Milky Way, reflect, change, Full moon, New moon, cycle, Lunar month, theories,</p>
<p>Electricity (Taught in Year A Spring 1)</p>				<p>Electricity</p> <p>Identify common appliances that run on electricity</p> <p>Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers</p>	<p>Electricity</p> <p>Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</p>

				<p>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 battery</p> <p>Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit</p> <p>Recognise some common conductors and insulators,</p> <p>Associate metals with being good conductors</p>	<p>Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches</p> <p>Use recognised symbols when representing a simple circuit in a diagram</p>
Electricity Vocabulary				Electricity, electrical equipment, circuit, open, closed, switch, lamp, light, buzzer, sound, battery, wires, conductors, metals, insulators, test	Electricity, electrical equipment, circuit, open, closed, switch, lamp, light, buzzer, sound, battery, wires, conductors, metals, insulators, test, brightness, loudness, circuit diagram, electrical symbols

**Light (Taught in Year A
Autumn 1)**

Light

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

Recognise and use the terms, transparent, translucent and opaque

Light

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

Know that light is measured in lumens

<p>Light Vocabulary</p>				<p>Light source, sun, Light, dark, shadow, block, reflect, Transparent, translucent, opaque, protect, eye, damage, lumins</p>	<p>Light source, sun, Light, dark, shadow, reflect, Transparent, translucent, opaque, protect, damage, lumins, straight lines, block, eye, lens, focus</p>
<p>Sound (LKS2) Taught alongside Properties of materials (UKS2)</p> <p>(Taught in Year B Autumn 1)</p>				<p>Sound (taught in KS2 class with practical testing of properties of materials UKS2)</p> <p>Identify how sounds are made, associating some of them with something vibrating</p> <p>Recognise that vibrations from sounds travel through a medium to the ear</p> <p>Find patterns between the pitch of a sound and features of the object that produced it</p> <p>Find patterns between the volume of a sound and the strength of the vibrations that produced it</p>	<p>Properties of Materials</p> <p>Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets</p> <p>Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</p>

				<p>Recognise that sounds get fainter as the distance from the sound source increases</p> <p>Know that sound can be measured in decibels</p> <p>Know loud sounds can permanently damage hearing</p>	
Vocabulary				<p>Sound, sound source, vibration, medium, volume, pitch, travel, ear, vacuum, decibels, safety.</p>	<p>Testing, materials, properties, evidence, comparative testing, fair testing, strength, hardness, solubility, transparency, electrical conductivity, thermal conductivity, insulators, conductors, magnetic,</p>

IN KEY STAGE ONE, ALL ASPECTS OF THE CURRICULUM WILL BE COVERED IN EACH YEAR GROUP

IN KEY STAGE TWO, ALL ASPECTS OF THE LOWER KEY STAGE AND UPPER KEY STAGE WILL BE COVERED IN A 2 YEAR CYCLE AND TOPICS ARE MATCHED, AS CLOSELY AS POSSIBLE, SO THAT THEY CAN BE TAUGHT IN ONE CLASS. THIS WILL AID WITH PROGRESSION AND ALLOW REVISITING OF PRIOR LEARNING.

HIGHLIGHTS ARE NON-STATUTORY LEARNING.

