

Subject Intent – Science



Pupils will develop:

The ability to think independently and raise questions about working scientifically and the knowledge and skills that it brings.

Confidence and competence in the full range of practical skills, taking the initiative in, for example, planning and carrying out scientific investigations.

Excellent scientific knowledge and understanding which is demonstrated in written and verbal explanations, solving challenging problems and reporting scientific findings.

High levels of originality, imagination or innovation in the application of skills.

The ability to undertake practical work in a variety of contexts, including fieldwork.

A passion for science and its application in past, present and future technologies.

Disciplinary Knowledge

Work scientifically This concept involves learning the methodologies of the discipline of science..

Substantive Knowledge

BIOLOGY

Understand plants - This concept involves becoming familiar with different types of plants, their structure and reproduction.

Understand animals and humans - This concept involves becoming familiar with different types of animals, humans and the life processes they share.

Investigate living things - This concept involves becoming familiar with a wider range of living things, including insects and understanding life processes.

Understand evolution and inheritance - This concept involves understanding that organisms come into existence, adapt, change and evolve and become extinct

CHEMISTRY

Investigate materials - This concept involves becoming familiar with a range of materials, their properties, uses and how they may be altered or changed

PHYSICS

Understand movement, forces and magnets - This concept involves understanding what causes motion.

Understand the Earth's movement in space - This concept involves understanding what causes seasonal changes, day and night.

Investigate light and seeing - This concept involves understanding how light and reflection affect sight.

Investigate sound and hearing - This concept involves understanding how sound is produced, how it travels and how they are heard.

Understand electrical circuits - This concept involves understanding circuits and their role in electrical applications.



Godley Science Approach.

- “The important thing is not to stop questioning. Curiosity has its own reason for existence.” Albert Einstein.
- Our Science curriculum aims to develop our pupils’ inquisitive natures and a curiosity in how the world works. The foundation of our Science Curriculum is carefully planned to be progressive, with an aim to consolidate learning and build upon prior knowledge and skills. Children build upon their previous year’s learning to create a deeper scientific understanding within their given topic/year group.
- Our curriculum is taught focusing on Chemistry, Physics and Biology we strive to go beyond the National Curriculum to ensure that our pupils have a foundation of knowledge which is then developed and deepened through scientific research, an independent practical task, recording their findings and evaluation of their results which will then inform their future scientific learning.
- Science is assessed through the children’s ability to draw upon research, to plan and carry out a practical scientific experiment and this will then contribute towards the children being able to provide an accurate response/development using their Scientific vocabulary.
- Working scientifically is a theme which runs throughout our Science Curriculum. We support pupils to work scientifically, carrying out tests and experiments with increasing independence, accuracy and precision.
- We teach science weekly whilst our annual ‘Science week’ is an additional opportunity for pupils to engage in a range of experiments and have fun!

EYFS

Humans – parts of the body, growth, life cycle, changes.
Animals - woodland animals, Animals in the Savanah



Animals - life cycles
Plants - basic plant parts, growing, observe growth, what do plants need.



Materials – floating and sinking
Earth and Space – Forces-Nursery
The earth, the sun, the moon



Godley Primary Science Learning Journey – Long term Plan

EXCELLENCE – HAPPINESS AND NURTURE – POWERFUL LEARNING



Biology



Chemistry



Physics

Seasonal Changes

Year 1

Everyday Materials name, describe, classify, compare properties and changes
Living Things and their habitats
Dead, alive or never been alive
Plants and animals are named
Habitats – identify, name, state how they provide basic need. Simple food chains.



Seasonal changes
Know the name and features of each seasons. Explore weather changes in the season.
Plants
identify, classify and describe basic structures. Identify and name a variety of common wild and garden plants Observe and describe growth and conditions for growth



Animals Inc. Humans
identify, classify and observe, identify basic parts. Look at growth, basic needs, exercise, food and hygiene
Forces and motion
Push and pull
Sorting and describing movement
Magnets – prep for Year 3

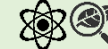


Year 2

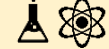
Living Things and their Habitats different habitats – suitability and interdependence. Microhabitats Name plants and animals, simple food chains. Evolution and inheritance
Animals Inc. humans – Offspring, basic needs for survival, importance of healthy diet and exercise.



Plants – identify, classify and describe basic structures. Identify and name a larger variety of plants and trees. Test plant growth in different conditions
Electricity – identify electrical appliances and focus on safe use of these and how to save energy



Uses of Everyday materials
Identify and compare the suitability of everyday materials – wood, metal, plastic, glass...
Discover how shapes of solid objects can be changed by squashing, bending, twisting, stretching



Seasonal Changes

Working Scientifically

Year 4

States of Matter – look at solids, liquids and gases, changes of state, evaporation, condensation, water cycle.
Sound – identify how sounds are made. Vibrations and the ear. Pitch, volume, distance from sound sources



Animals Inc. humans
digestive system, teeth and functions, food chains – producers, predators and prey
Living Things and their habitats
identify and name plants/animals, classification of plants/animals. Environments can change and pose dangers to living things



Working Scientifically - Practical enquiry skills

Electricity – look at appliances (solar, wired, battery), simple series, circuits, lamps, switches, insulators and conductors



Rocks and fossils compare and group rocks, describe formation of fossils. Recognise that soils are made from rocks and organic matter.



Forces and Magnets – contact and distant forces, attraction and repulsion, compare and group materials, look at pulls, attraction and repulsion

Animals Inc. humans the skeleton system and muscles
Nutrition – food/diet



Plants – function of parts, water transportation, requirements of growth, life cycles, seed dispersal

Working Scientifically - Practical enquiry skills

Light – sources, seeing, reflections, shadows, straight lines, sun safety.



Year 3

Working Scientifically

Year 5

Earth and Space – explain day and night, Look at the movement of the sun, the earth and the moon. Explain the seasons



Working Scientifically
Practical enquiry skills - Science Fair

Animals Inc. humans
Stages of growth and development of humans. Changes to body. Gestation period of other animals
Living things and their environments – reproduction of plants and animals, human growth and changes.



Materials – properties of materials with various tests, solubility and recovering dissolved substances, separating mixtures. Changes of materials – reversible and non-reversible changes
Forces – gravity and drag forces, transference of forces in gears, pulleys, levers and springs



Year 6

Animals Inc. Humans – nutrition, transportation of nutrients and water in the body, circulatory system. Effect of diet, exercise and drugs
Living things and their habitats - Classification of micro-organisms, plants and animals. Reasons for classification



Light - Light sources, seeing, reflections, shadows, straight lines - how this effects seeing and shadows
Electricity – Circuits the effect of voltage in cells, resistance and conductivity of materials. Symbols in diagrams



Evolution and inheritance – look at resemblance/differences of off-spring, look at changes in animals over time, adaptation to environments, evolution, changes to human skeleton



Year 7

Godley Primary – Approach to Teaching - Science



Enquiry Question



Prior Learning

Knowledge
Organiser



Research

Experiment

Investigate



Record

Report



Respond

Summary of
Learning

Working Scientifically – Key Threshold Concepts

Nursery Substantive Knowledge

Autumn 1- Humans	Autumn 2- Animals	Spring 1- Animals	Spring 2- plants	Summer 1- materials	Summer 2- earth and space
<p>To locate my head, hands, eyes,nose, mouth, shoulders, legs, tummies.</p> <p>To know my hands have a thumb and fingers.</p> <p>To know what our body parts are used for. E.g eyes for seeing.</p> <p>To know when we exercise we get hot.</p> <p>To know that exercise is good for us</p> <p>To know we can move our bodies slowly and quickly.</p> <p>To know we have similarities and differences.</p> <p>To know I have to wash my hands after I have been to the toilet.</p>	<p>To know the names of birds that visit our school grounds- magpie, starling, wagtails.</p> <p>To know a blackbird eats a worm.</p> <p>To know birds eat berries</p> <p>To know squirrels climb trees</p> <p>To know that spiders live on a web</p> <p>To know a woodlouse lives under a log.</p> <p>To know spiders eat flies.</p> <p>To know woodlouse eat dead leaves.</p>	<p>To know a caterpillar begins as an egg.</p> <p>To know that a caterpillar builds a cocoon around itself.</p> <p>To know that when it leaves the cocoon the caterpillar becomes a butterfly.</p> <p>To know a cocoon hangs upside down.</p> <p>To know that the caterpillar changes inside the cocoon.</p>	<p>To know that a plant starts of as a seed.</p> <p>To know a seed is planted in the soil.</p> <p>To know that a plant needs water and sunshine to grow.</p> <p>To know that e need to water them and look after seeds so that they can grow.</p>	<p>To know that some materials are hard.</p> <p>To know that some materials are soft</p> <p>To know that some materials are bendy, flexible.</p> <p>To know some materials are transparent.</p> <p>To know that transparent means something is see through.</p>	<p>To know that if we push an object it moves.</p> <p>To know if we pull an object it moves.</p> <p>To know the difference between a push and a pull</p> <p>To know how to get different objects to move.</p> <p>To know the sun is out in the daytime.</p> <p>To know the moon appears at night time.</p> <p>To know we can make shadows with the sun.</p> <p>To know the sun and the moon are part of the solar system.</p>

Science – Disciplinary Knowledge – Nursery

Subject		Science
Working scientifically		<p>Nursery</p> <p>Talk about what they see, using a wide vocabulary. Explore how things work. Shows care and respect for natural environment. Use all their senses in hands-on exploration of natural materials.</p>
		<p>Reception</p> <p>Explore the natural world around them. Describe what they can see and hear whilst outside. Comment on and observe what we see, hear and feel. Observe the seasonal changes. Begin to ask simple questions.</p>
		<p>Nursery</p>
Biology	Understanding humans & animals	<p>Begin to understand the need to respect and care for the natural environment and all living things. Use all their senses in hands-on exploration of natural materials. Identifies some animals that live in the local environment. Names parts of the humans body.</p>
Biology	Understanding plants	<p>Plant seeds and care for growing plants. Shows care and respect for natural environment.</p>
Biology	Understanding life cycles	<p>Understand the key features of the life cycle of a plant and an animal.</p>
Chemistry	To investigate materials	<p>Explore collections of materials with similar and/or different properties. Talk about the differences between materials and changes they notice.</p>
Physics	Understanding Earth & Space	<p>Identifies sun and moon.</p>

Reception Substantive Knowledge

Autumn 1- Animals	Autumn 2- Humans	Spring 1- Animals	Spring 2- Plants	Summer 1- Earth and Space	Summer 2- Materials
<p>To know that woodland animals may live in a burrow, nest, a den a tree.</p> <p>To know that an animals home is called an habitat.</p> <p>To know a nocturnal animal sleeps in the day and is awake during the night.</p> <p>To know that a diurnal animal is awake during the day and sleeps at night.</p> <p>To know a nocturnal animal hunts at night.</p> <p>To know that animals use their senses to hunt.</p> <p>To know how different animals use their senses.</p>	<p>To know the 5 senses.</p> <p>To know different parts of the human body.</p> <p>To know that humans are diurnal.</p> <p>Seasonal change continuous.</p>	<p>To know weather in the rainforest is different t the UK.</p> <p>To know different types of weather.</p> <p>To know some animals that live in the rainforest. E.G snake, Tiger, Tree frog, spiders etc....</p> <p>To know that animals can be grouped into categories.</p> <p>To know that a mammal is warm blooded</p> <p>To know that a bird is warm blooded and has wings and a beak.</p> <p>To know that a fish is cold blooded and has fins.</p> <p>To know that insects is cold blooded and hatch from eggs.</p> <p>To know that a spider is not an insect.</p> <p>To know the Life cycle of a chicken- Egg, Hatch, Hen, Egg.</p>	<p>To know that a forest floor is the lower part of the Rainforest.</p> <p>To know that that the canopy is in the upper part of the Rainforest.</p> <p>To know that lower down in the Rainforest is very dark</p> <p>To know that leaves and trees block the sun.</p> <p>To know that the Amazon River flows through the Rainforest.</p> <p>To know that plants light, water and soil to grow.</p> <p>To know the parts of a plant- E.G Flower, Leaf, Stem and Root.</p>	<p>To know that we live on Planet Earth.</p> <p>To know the names of the planets of the Solar System.</p> <p>To know the Moon is made Rock.</p> <p>To know that Earth has a Moon.</p> <p>To know that other planets have moons.</p> <p>To know the Sun to gives us light and heat.</p>	<p>To know that ice is frozen water.</p> <p>To know that water freezes when it gets very cold.</p> <p>To know that ice melts when it gets warmer.</p> <p>To know different ways to melt Ice.</p> <p>To know that floating stays on the water.</p> <p>To know that sinking is when an object goes under the water.</p> <p>To know some materials float and sink.</p>

Science – Disciplinary Knowledge – Reception

Subject		Science	
Working scientifically		Reception	Year 1
		<p>Explore the natural world around them.</p> <p>Describe what they can see and hear whilst outside.</p> <p>Comment on and observe what we see, hear and feel.</p> <p>Observe the seasonal changes.</p> <p>Begin to ask simple questions.</p>	<p>With the support of a teacher, simple questions can be asked, using: How? What will happen if? Why?</p> <p>With the support of a teacher, questions can be sorted into those that can be answered by trying them out and those that cannot.</p> <p>With the support of a teacher, close observations are made and instructions are followed for using simple equipment correctly and safely.</p> <p>Generally, close observations are made, equipment is chosen from a limited range and simple equipment is used correctly.</p> <p>With the support of a teacher, simple tests are performed.</p> <p>With the support of a teacher, there is an ability to classify. Generally, there is an ability to classify.</p> <p>With the support of a teacher, observations and ideas are used to suggest ‘why’ something has happened and to answer questions.</p> <p>With guidance, some measurements of what is observed occur. These observations are nonstandard, e.g. loud, quiet, short, long.</p> <p>With support, data is gathered and recorded to help in answering questions; drawings and tables are used to show evidence</p>
Biology	Understanding humans & animals	<p>Name parts of the body including joints and bones eg. ankle, elbow, wrist, spine, skull, ribs, hips.</p> <p>Name five senses.</p> <p>Comment on how they have changed over time.</p> <p>Take care of and respect our outdoor school environment.</p> <p>Show care and concern for living things.</p> <p>Comment on and observe what we see, hear and feel in a woodland area.</p> <p>Name and categorise some nocturnal and diurnal animals.</p> <p>Name some animals that hibernate.</p> <p>Explore the natural world around them.</p> <p>Describe what they can see and hear whilst outside</p>	<p>With support, some common animals that are birds, fish, amphibians, reptiles, mammals and invertebrates are identified and named.</p> <p>Generally, a variety of common animals that are carnivores, herbivores and omnivores are identified and, with the support of a teacher, these animals are named.</p> <p>With the support of a teacher, the structure of a variety of common animals is described.</p> <p>With the support of a teacher, the basic parts of the human body are recognised and named.</p> <p>With support, the part of the body associated with each sense can be identified.</p> <p>With prompts, there is an awareness that animals have offspring which grow into adults.</p> <p>With support, the basic needs of animals, including humans, for survival are described.</p> <p>With the support of a teacher, the importance for humans of exercise, hygiene and diet is described.</p> <p>With the support of a teacher, basic descriptions of the structure of common animals are given.</p>

Science – Disciplinary Knowledge – Reception

Subject		Science	
		Reception	Year 1
Biology	Understanding plants	<p>Describe some key physical features of the rainforest.</p> <p>Identify parts of a plant.</p> <p>Explore the natural world around them.</p> <p>Describe what they can see and hear whilst outside.</p>	<p>With the support of a teacher, a variety of common plants and trees are identified and named.</p> <p>With the support of a teacher, plants and trees can be classified as deciduous and evergreen.</p> <p>With support, the basic structure of a variety of common flowering plants, including roots, stem/trunk, leaves and flowers, is identified and described.</p> <p>Observations are made of how seeds and bulbs grow into mature plants and, with support, this process can be described.</p> <p>With support, the basic conditions required for plants to survive (food, water, air, warmth and light) are described.</p>
Biology	Understanding life cycles	<p>Categorise some familiar animals – birds, fish and mammals.</p> <p>Describe and order the life cycle of a bird (chick or duck)</p> <p>Explore the natural world around them.</p>	

Science – Disciplinary Knowledge – Reception

Subject		Science	
		Reception	Year 1
Chemistry	To investigate materials	Investigate and describe freezing and melting.	<p>With the support of a teacher, there is the ability to distinguish between an object and the material from which it is made, e.g. a window is made from glass, a bottle is made from plastic.</p> <p>With support, a variety of everyday materials are identified and named.</p> <p>With support, the simplest physical properties, e.g. strength, flexibility and transparency, of a variety of everyday materials can be described.</p> <p>With the support of a teacher, a variety of everyday materials can be grouped on the basis of their simple physical properties.</p> <p>With the support of a teacher, there is an ability to find out how the shapes of solid objects made from some materials can be changed.</p> <p>With support, the uses of a variety of everyday materials, including wood, metal, plastic, glass, brick/rock and paper/cardboard, can be identified.</p>
Physics	Understanding Earth & space	<p>Know some features of the solar system – Earth, moon & sun.</p> <p>Observe the seasonal changes in weather and local environment.</p>	<p>With the support of a teacher, the apparent movement of the Sun during the day is observed.</p> <p>With the support of a teacher, simple changes across the four seasons are observed.</p> <p>With the support of a teacher, the weather associated with the seasons and the variation in day length are observed and described.</p>
Physics	Understanding movement and forces	<p>Select and test some items that float and sink.</p> <p>Describe what floating is and what sinking is.</p>	<p>With the support of a teacher, there is an awareness of how things move, using simple comparisons such as faster and slower.</p> <p>The way in which different things move is beginning to be compared.</p>

Year 1 Substantive Knowledge

Autumn 1- Everyday materials	Autumn 2- Living Things	Spring 1- Seasonal Changes	Spring 2- Plants	Summer 1- Animals including humans	Summer 2- Forces and motions
<p>To know object and the material from which it is made</p> <p>To know a variety of everyday materials, including wood, plastic, glass, metal, water, and rock</p> <p>To know the simple physical properties of a variety of everyday materials</p> <p>Compare and group together a variety of everyday materials on the basis of their simple physical properties.</p>	<p>A plant needs water, light and oxygen to grow.</p> <p>To know that a habitat is where an animal lives</p>	<p>I know the name of the name of the seasons.</p> <p>I know the features of each season.</p> <p>I know the weather changes in the season.</p> <p>I know the length of the day changes depending on the season.</p>	<p>Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees</p> <p>Identify and describe the basic structure of a variety of common flowering plants, including trees.</p>	<p>To know a variety of common animals including fish, amphibians, reptiles, birds and mammals</p> <p>To know a variety of common animals that are carnivores, herbivores and omnivores</p> <p>To know 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>To know things move on different surfaces</p> <p>To know that some forces need contact between two objects</p> <p>To know magnets attract or repel each other</p>

Science – Disciplinary Knowledge – Year 1

Subject		Science	
Working Scientifically		Year 1	Year 2
		<p>With the support of a teacher, simple questions can be asked, using: How? What will happen if? Why?</p> <p>With the support of a teacher, questions can be sorted into those that can be answered by trying them out and those that cannot.</p> <p>With the support of a teacher, close observations are made and instructions are followed for using simple equipment correctly and safely.</p> <p>Generally, close observations are made, equipment is chosen from a limited range and simple equipment is used correctly.</p> <p>With the support of a teacher, simple tests are performed.</p> <p>With the support of a teacher, there is an ability to classify. Generally, there is an ability to classify.</p> <p>With the support of a teacher, observations and ideas are used to suggest ‘why’ something has happened and to answer questions.</p> <p>With guidance, some measurements of what is observed occur. These observations are nonstandard, e.g. loud, quiet, short, long.</p> <p>With support, data is gathered and recorded to help in answering questions; drawings and tables are used to show evidence.</p>	<p>Generally, simple questions are asked.</p> <p>Generally, questions that can be tested can be asked.</p> <p>Generally, questions can be sorted into those that can be answered by trying it out and those that cannot.</p> <p>Close observations are made, using simple equipment.</p> <p>Generally, simple tests are performed.</p> <p>Generally, there is an ability to classify.</p> <p>Observations and ideas are used to suggest answers to questions.</p> <p>Generally, systematic observations and measurements of what is observed are made.</p> <p>Generally, observations are recorded using ICT and on paper, using text, drawings and labelled diagrams.</p> <p>Generally, data is gathered and recorded to help in answering questions.</p> <p>Prepared tables and block graphs are generally used to help record data.</p>
Biology	To understand Plants	<p>With the support of a teacher, a variety of common plants and trees are identified and named.</p> <p>With the support of a teacher, plants and trees can be classified as deciduous and evergreen.</p> <p>With support, the basic structure of a variety of common flowering plants, including roots, stem/trunk, leaves and flowers, is identified and described.</p> <p>Observations are made of how seeds and bulbs grow into mature plants and, with support, this process can be described.</p> <p>With support, the basic conditions required for plants to survive (food, water, air, warmth and light) are described.</p>	<p>Generally, a variety of common plants and trees, and those classified as deciduous and evergreen, are identified and named.</p> <p>The basic structure of a variety of common flowering plants, including roots, stem/trunk, leaves and flowers, is identified and described.</p> <p>Generally, observations are made and descriptions are given of how seeds and bulbs grow into mature plants.</p> <p>The conditions required for plants to grow and stay healthy (food, water, air, warmth and light) are identified and described.</p>

Science – Disciplinary Knowledge – Year 1

Subject		Science	
		Year 1	Year 2
Biology	To understand animals and humans	<p>With support, some common animals that are birds, fish, amphibians, reptiles, mammals and invertebrates are identified and named.</p> <p>Generally, a variety of common animals that are carnivores, herbivores and omnivores are identified and, with the support of a teacher, these animals are named.</p> <p>With the support of a teacher, the structure of a variety of common animals is described.</p> <p>With the support of a teacher, the basic parts of the human body are recognised and named.</p> <p>With support, the part of the body associated with each sense can be identified.</p> <p>With prompts, there is an awareness that animals have offspring which grow into adults.</p> <p>With support, the basic needs of animals, including humans, for survival are described.</p> <p>With the support of a teacher, the importance for humans of exercise, hygiene and diet is described.</p> <p>With the support of a teacher, basic descriptions of the structure of common animals are given.</p>	<p>Generally, some common animals that are birds, fish, amphibians, reptiles, mammals and invertebrates are identified and named.</p> <p>Generally, living things can be sorted into groups with justification as to why they have been placed into these groups.</p> <p>A variety of common animals that are carnivores, herbivores and omnivores are identified and named.</p> <p>Generally, the structure of a variety of common animals, e.g. spine, tail, fur, wings, is described. These structures can then be compared.</p> <p>The basic parts of the human body are identified, named, drawn and labelled.</p> <p>The part of the body associated with each sense is identified.</p> <p>There is an awareness that animals, including humans, have offspring which grow into adults.</p> <p>The basic needs of animals, including humans, for survival are investigated and described.</p> <p>Generally, the importance for humans of exercise, eating the right amounts of different types of food and hygiene is described.</p> <p>The structure and variety of common animals are described. Some details are left out.</p>
Biology	To investigate living things	<p>With the support of a teacher, the differences between things that are living, that are dead and that have never been alive are described.</p> <p>With the support of a teacher, the fact that living things live in habitats is identified.</p> <p>There are the beginnings of an understanding of how different habitats provide for the basic needs of different kinds of animals and plants, e.g. the desert is the habitat for cacti and camels (living things that can store water for an amount of time).</p> <p>With the support of a teacher, plants and animals are named. There is some awareness of animal habitats.</p> <p>With the support of a teacher, simple food chains are described.</p>	<p>Generally, the differences between things that are living, that are dead and that have never been alive are explored and compared.</p> <p>Generally, the fact that most living things live in habitats to which they are suited is identified.</p> <p>Generally, the way in which different habitats provide for the basic needs of different kinds of animals and plants is described, e.g. rainforest, coral reefs and the tundra are all habitats where particular kinds of plants and animals might be found.</p> <p>Generally, plants and animals are identified and named. Animals habitats are identified and described.</p> <p>Generally, simple food chains are described.</p>

Science – Disciplinary Knowledge – Year 1

Subject		Science	
		Year 1	Year 2
Chemistry	To investigate materials	<p>With the support of a teacher, there is the ability to distinguish between an object and the material from which it is made, e.g. a window is made from glass, a bottle is made from plastic.</p> <p>With support, a variety of everyday materials are identified and named.</p> <p>With support, the simplest physical properties, e.g. strength, flexibility and transparency, of a variety of everyday materials can be described.</p> <p>With the support of a teacher, a variety of everyday materials can be grouped on the basis of their simple physical properties.</p> <p>With the support of a teacher, there is an ability to find out how the shapes of solid objects made from some materials can be changed.</p> <p>With support, the uses of a variety of everyday materials, including wood, metal, plastic, glass, brick/rock and paper/cardboard, can be identified.</p>	<p>Generally, there is an ability to distinguish between an object and the material from which it is made, with some corrections if needed.</p> <p>Generally, a variety of everyday materials are identified and named.</p> <p>The simple physical properties, e.g. strength, flexibility and transparency, of a variety of everyday materials are described.</p> <p>Generally, a variety of everyday materials are grouped and compared on the basis of their simple physical properties.</p> <p>Generally, there is an ability to find out how the shapes of solid objects made from some materials can be changed.</p> <p>The uses of a variety of everyday materials, including wood, metal, plastic, glass, brick/rock and paper/cardboard, are identified and compared.</p>
Physics	To understand movement, forces and magnets.	<p>With the support of a teacher, there is an awareness of how things move, using simple comparisons such as faster and slower.</p> <p>The way in which different things move is beginning to be compared.</p> <p>Magnets – introduce magnets, north and south pole – year 3 prep.</p>	<p>Generally, there is an awareness of the way in which things move, using simple comparisons such as faster and slower.</p> <p>The way in which different things move is beginning to be compared.</p>

Year 2 Substantive Knowledge

Autumn 1- Living Things in their habitat	Autumn 2- Animals including humans	Spring 1- Plants	Spring 2- Electricity	Summer 1 and 2 Uses of everyday materials
<p>Explore and compare the differences between things that are living, dead, and things that have never been alive</p> <p>Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other</p> <p>Identify and name a variety of plants and animals in their habitats, including micro-habitats</p> <p>Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.</p>	<p>To know that animals, including humans, have offspring which grow into adults</p> <p>To know and describe the basic needs of animals, including humans, for survival (water, food and air)</p> <p>To know the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</p>	<p>Observe and describe how seeds and bulbs grow into mature plants</p> <p>Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy</p>	<p>To know different electrical items</p> <p>To be able to categorise Electrical items</p> <p>To understand how to be safe around electricity.</p>	<p>Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses</p> <p>Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</p>

Science – Disciplinary Knowledge – Year 2

Subject		Science	
Working Scientifically		Year 2	Year 3
		<p>Generally, simple questions are asked.</p> <p>Generally, questions that can be tested can be asked.</p> <p>Generally, questions can be sorted into those that can be answered by trying it out and those that cannot.</p> <p>Close observations are made, using simple equipment.</p> <p>Generally, simple tests are performed.</p> <p>Generally, there is an ability to classify.</p> <p>Observations and ideas are used to suggest answers to questions.</p> <p>Generally, systematic observations and measurements of what is observed are made.</p> <p>Generally, observations are recorded using ICT and on paper, using text, drawings and labelled diagrams.</p> <p>Generally, data is gathered and recorded to help in answering questions.</p> <p>Prepared tables and block graphs are generally used to help record data.</p>	<p>Without support, simple questions are asked.</p> <p>Questions that lead to scientific enquiry are asked independently.</p> <p>Without support, an explanation can be given as to why something has happened, using appropriate scientific vocabulary.</p> <p>Close observations are made independently, using simple equipment.</p> <p>More complex tests, such as fair tests, are beginning to be performed.</p> <p>There is an ability independently to classify using more complicated taxonomies, etc.</p> <p>Independently, observations and ideas are used to suggest answers to questions.</p> <p>Without support, systematic observations and measurements of what is observed are made.</p> <p>Observations are recorded independently using ICT and on paper, using text, drawings and labelled diagrams.</p> <p>Prepared tables and block graphs are used to present information without support.</p> <p>Independently, data is gathered and recorded to help in answering questions.</p>
Biology	To understand plants	<p>Generally, a variety of common plants and trees, and those classified as deciduous and evergreen, are identified and named.</p> <p>The basic structure of a variety of common flowering plants, including roots, stem/trunk, leaves and flowers, is identified and described.</p> <p>Generally, observations are made and descriptions are given of how seeds and bulbs grow into mature plants.</p> <p>The conditions required for plants to grow and stay healthy (food, water, air, warmth and light) are identified and described.</p>	<p>Without support, a variety of common plants and trees, and those classified as deciduous and evergreen, are identified and named.</p> <p>The basic structure of a variety of common flowering plants, including roots, stem/trunk, leaves and flowers, is identified and described independently.</p> <p>Without support, observations are made and descriptions are given of how seeds and bulbs grow into mature plants.</p> <p>Without support, the conditions required for plants to grow and stay healthy (food, water, air, warmth and light) are identified and described.</p> <p>Explanations are beginning to be offered for changes in living things, e.g. light or water altering plant growth.</p>
Biology	To understand animals and humans	<p>Generally, some common animals that are birds, fish, amphibians, reptiles, mammals and invertebrates are identified and named.</p> <p>Generally, living things can be sorted into groups with justification as to why they have been placed into these groups.</p> <p>A variety of common animals that are carnivores, herbivores and omnivores are identified and named.</p> <p>Generally, the structure of a variety of common animals, e.g. spine, tail, fur, wings, is described. These structures can then be compared.</p> <p>The basic parts of the human body are identified, named, drawn and labelled. The part of the body associated with each sense is identified.</p> <p>There is an awareness that animals, including humans, have offspring which grow into adults.</p> <p>The basic needs of animals, including humans, for survival are investigated and described.</p> <p>Generally, the importance for humans of exercise, eating the right amounts of different types of food and hygiene is described.</p> <p>The structure and variety of common animals are described. Some details are left out.</p>	<p>Common animals are classified as birds, fish, amphibians, reptiles, mammals and invertebrates independently.</p> <p>A variety of common animals that are carnivores, herbivores and omnivores are independently and confidently identified and named.</p> <p>The structure of a variety of common animals is described independently. These structures are then compared and reasons for their differences are suggested.</p> <p>Parts of the human body are identified, named, drawn and labelled independently. The part of the body associated with each sense is identified.</p> <p>It is understood that animals, including humans, have offspring which grow into adults.</p> <p>The basic needs of animals, including humans, for survival are investigated and described independently.</p> <p>Without support, the importance for humans of exercise, eating the right amounts of different types of food and hygiene is described.</p> <p>Without prompts or reminders common animals are described.</p> <p>The terms 'birds', 'fish', 'amphibians', 'reptiles', 'mammals' and 'invertebrates' are used accurately.</p>

Science – Disciplinary Knowledge – Year 2

Subject		Science	
		Year 2	Year 3
Biology	To investigate living things	<p>Generally, the differences between things that are living, that are dead and that have never been alive are explored and compared.</p> <p>Generally, the fact that most living things live in habitats to which they are suited is identified.</p> <p>Generally, the way in which different habitats provide for the basic needs of different kinds of animals and plants is described, e.g. rainforest, coral reefs and the tundra are all habitats where particular kinds of plants and animals might be found.</p> <p>Generally, plants and animals are identified and named. Animals habitats are identified and described.</p> <p>Generally, simple food chains are described.</p>	<p>The differences between things that are living, that are dead and that have never been alive are explored and compared.</p> <p>The fact that most living things live in habitats to which they are suited is independently identified.</p> <p>Without support, the way in which different habitats provide for the basic needs of different kinds of animals and plants is described, e.g. rainforest, coral reefs and the tundra are all habitats where particular kinds of plants and animals might be found.</p> <p>Without prompts, a variety of plants and animals are named and described.</p> <p>Animals' habitats are identified and described, there is an awareness of why habitats are suitable for an animal.</p> <p>Simple food chains are described and explained.</p>
Chemistry	To investigate materials	<p>Generally, there is an ability to distinguish between an object and the material from which it is made, with some corrections if needed.</p> <p>Generally, a variety of everyday materials are identified and named. The simple physical properties, e.g. strength, flexibility and transparency, of a variety of everyday materials are described.</p> <p>Generally, a variety of everyday materials are grouped and compared on the basis of their simple physical properties.</p> <p>Generally, there is an ability to find out how the shapes of solid objects made from some materials can be changed.</p> <p>The uses of a variety of everyday materials, including wood, metal, plastic, glass, brick/rock and paper/cardboard, are identified and compared.</p>	<p>There is an ability independently to distinguish between an object and the material from which it is made.</p> <p>A variety of materials are independently identified, named and compared.</p> <p>The simple physical properties of a variety of everyday materials are described.</p> <p>More complex physical properties of a variety of materials, e.g. waterproof, rigid, magnetic, hard, conductor, insulator, absorbent, are beginning to be described.</p> <p>Without support, a variety of everyday materials are grouped and compared on the basis of their simple physical properties.</p> <p>There is an ability independently to find out how the shapes of solid objects made from some materials can be changed.</p> <p>Without support, the uses of a variety of everyday materials including wood, metal, plastic, glass, brick/rock and paper/cardboard are identified and compared.</p>
Physics	To explore electrical appliances	<p>Generally, common appliances that run on electricity are identified. A simple series electrical circuit is constructed.</p>	<p>Common appliances that run on electricity are identified independently.</p> <p>Without support, a more complex series electrical circuit is constructed.</p>

Year 3 Substantive Knowledge

Autumn Light	Spring 1- Animal Including Humans	Spring 2- Plants	Summer 1- Rocks and Fossils	Summer 2- Forces and magnets
<p>To know that they need light in order to see things and that dark is the absence of light</p> <p>To know that light is reflected from surfaces</p> <p>To know that light from the sun can be dangerous and that there are ways to protect their eyes</p> <p>To know that shadows are formed when the light from a light source is blocked by a solid object</p> <p>To know patterns in the way that the size of shadows change.</p>	<p>To 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</p> <p>To know that humans and some other animals have skeletons and muscles for support, protection and movement.</p>	<p>Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers</p> <p>Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant</p> <p>Investigate the way in which water is transported within plants</p> <p>Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</p>	<p>To know that some rocks are sedimentary- formed from sediment grains deposited by water, wind or ice.</p> <p>To know that some rocks are metamorphic. Changed through heat and pressure</p> <p>To know that some rocks are igneous. Example- crystals- fine grained or glassy texture.</p> <p>To know how fossils are formed</p> <p>To know what soil is.</p>	<p>To know how things move on different surfaces</p> <p>To know that some forces need contact between two objects, but magnetic forces can act at a distance</p> <p>To know how magnets attract or repel each other and attract some materials and not others</p> <p>To group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials</p> <p>To know magnets have two poles</p> <p>To know magnets will attract or repel each other, depending on which poles are facing.</p>

Science – Disciplinary Knowledge – Year 3

Subject		Science	
Working Scientifically		Year 3	Year 4
		<p>With support, questions that are relevant begin to be asked.</p> <p>With the support of a teacher, questions can be sorted into those that can be answered by trying it out and those that cannot.</p> <p>With support, very simple practical enquiries and comparative and fair tests are set up.</p> <p>With support, accurate measurements using standard units and simple equipment begin to be made.</p> <p>With support, data begins to be gathered, recorded, classified and presented in a variety of ways to help in answering questions.</p> <p>Generally, the most appropriate way to present data once collected is selected.</p> <p>Very basic/simple scientific language, drawings or tables are used to record findings.</p> <p>With support, line graphs are used to record observations.</p> <p>With support, reports on findings from enquiries are given, including oral and written explanations, displays or presentations of results and conclusions.</p> <p>With prompts, results are used to draw simple conclusions and suggest improvements.</p> <p>With prompts, predictions about what will happen are made.</p> <p>With support, differences or similarities related to simple, scientific ideas are identified.</p> <p>With prompts, very basic/simple scientific evidence is used to support findings and answer questions.</p>	<p>Questions that lead to scientific investigation and are relevant are generally asked. Generally, there is an awareness that there are different ways of asking scientific questions.</p> <p>Simple practical enquiries and comparative and fair tests are set up, with prompts if necessary.</p> <p>Generally, accurate measurements are made using standard units and a range of equipment.</p> <p>Generally, simple scientific language, drawings, labelled diagrams, bar charts and tables are used to record findings.</p> <p>Generally, observations are recorded, and data is classified and presented, using tables, charts, text and labelled diagrams.</p> <p>A series of observations are made using standard measuring equipment for measuring most quantities.</p> <p>Generally, it is recognised why it is important to collect data in order to answer a question, and data is gathered, recorded, classified and presented in a variety of ways to help in answering questions.</p> <p>Reports on findings from enquiries are given, including oral and written explanations, displays or presentations of results and conclusions.</p> <p>Results are used to draw simple conclusions and suggest improvements.</p> <p>Generally, predictions are made as to what may happen before any tests are carried out.</p> <p>Reasons are suggested for predictions and further predictions are made about new, simple contexts.</p> <p>Differences, similarities or changes related to simple, scientific ideas and processes are identified.</p> <p>Generally, appropriate scientific language and straightforward scientific evidence is used to answer questions or to support findings.</p>
Biology	To understand plants	<p>With the support of a teacher, the main parts of a plant are described and the functions of different parts of flowering plants begin to be described.</p> <p>With the support of a teacher, the requirements of plants for life and growth are identified. With guidance, these requirements are explored.</p> <p>With support, the way in which water is transported within plants is investigated.</p> <p>There are the beginnings of an awareness of the role of flowers in the life cycle of flowering plants.</p>	<p>Generally, the functions of different parts of flowering plants are identified and described, e.g. the roots absorbs water from the soil to feed the plant, the stem helps to support the plants, the leaves use sunlight to provide the plant with energy and the flower helps the plant to reproduce.</p> <p>Generally, the requirements of plants for life and growth, and how these vary from plant to plant, are identified and explored.</p> <p>Generally, the way in which water is transported within plants is investigated.</p> <p>The role of flowers in the life cycle of flowering plants, including pollination, seed formation and seed dispersal, is explored</p>

Science – Disciplinary Knowledge – Year 3

Subject		Science	
		Year 3	Year 4
Biology	To understand animals and humans	<p>There are the beginnings of an understanding of what 'nutrition' means.</p> <p>With the support of a teacher, the fact that animals, including humans, need the right types and amounts of nutrition is identified.</p> <p>With support, the fact that humans and some animals have skeletons and muscles for support, protection and movement is identified.</p>	<p>Generally, the terms 'nutrition' and a 'balanced diet' are understood.</p> <p>Generally, the fact that animals, including humans, need the right types and amounts of nutrition is identified.</p> <p>A range of food chains are constructed or interpreted.</p> <p>With some support, the terms 'predator' and 'prey' are used correctly.</p> <p>Generally, the fact that humans and some animals have skeletons and muscles for support, protection and movement is identified.</p> <p>The simple functions of the parts of the digestive system in humans, e.g. mouth, oesophagus, liver, stomach, small intestine, large intestine and rectum, are described and identified.</p> <p>Generally, the different types of teeth in humans, e.g. molars, incisors and canines, and their simple functions, are identified.</p> <p>Generally, it is recognised that: canines are used for tearing and ripping food, incisors are to help bite off and chew pieces of food and molars are to help crush and grind food.</p>
Chemistry Rocks & Soils	Investigate Materials	<p>With support, different kinds of rocks are grouped together on the basis of their simple physical properties, e.g. soft, hard, permeable, impermeable.</p> <p>With the support of a teacher, the simple physical properties of some rocks begin to be related to their formation.</p> <p>With support, what a fossil is and how fossils are formed begin to be described. There is some awareness that soil is created from rocks and organic matter.</p>	<p>Generally, different kinds of rocks are grouped together and compared on the basis of their simple physical properties, e.g. soft, hard, permeable, impermeable.</p> <p>The simple physical properties of some rocks are related to their formation.</p> <p>Generally, there is an ability to describe in simple terms how fossils are formed when things that have lived are trapped within sedimentary rock.</p> <p>Soils are generally described accurately as being made of rocks and organic matter.</p>
Physics	Understand movement, forces and magnets	<p>With the support of a teacher, objects are moved on different textures of surface and their movement compared.</p> <p>With the support of a teacher, it begins to be noticed that some forces need contact between two objects and some forces act at a distance, e.g. it may be observed that magnetic forces can act without direct contact unlike most forces, where direct contact is necessary, e.g. opening a door or pushing a swing.</p> <p>The way in which magnets attract or repel each other and attract some materials and not others begins to be observed.</p> <p>With the support of a teacher, a variety of everyday materials are grouped together on the basis of whether or not they are attracted to a magnet.</p> <p>Some magnetic materials begin to be identified.</p> <p>With the support of a teacher, magnets are experienced and described as having two poles.</p> <p>With the support of a teacher, predictions are made as to whether two magnets will attract or repel each other.</p>	<p>The term 'friction' is used to describe how things move on different surfaces.</p> <p>Generally, it is noticed that some forces need contact between two objects and some forces act at a distance, e.g. it is observed that magnetic forces can act without direct contact, unlike most forces, where direct contact is necessary, e.g. opening a door or pushing a swing.</p> <p>The way in which magnets attract or repel each other and attract some materials and not others is observed.</p> <p>Generally, a variety of everyday materials are compared and grouped together on the basis of whether they are attracted to a magnet.</p> <p>Some magnetic materials are identified.</p> <p>The term 'poles' is generally used to describe magnets.</p> <p>Generally, the term poles is used to help explain predictions as to whether magnets will attract or repel each other.</p>

Science – Disciplinary Knowledge – Year 3

Subject		Science	
		Year 3	Year 4
Understand light and seeing	Understand light and seeing	<p>With prompts, it is noticed that light is reflected from surfaces.</p> <p>With the support of a teacher, it is understood that shadows are formed when a light source is being blocked by something.</p> <p>With the support of a teacher, experiments are conducted to explore light and seeing. There is an awareness that dark is the absence of light.</p> <p>With the guidance of a teacher and carefully controlled situations, there is an awareness of the danger to the eyes from the sun.</p> <p>With the support of a teacher, experiments to find patterns in the way that the size of shadows change are undertaken.</p>	<p>Generally, it is noticed that light is reflected from surfaces.</p> <p>Shadows are associated with a light source being blocked by something and, patterns are found that determine the size of shadows.</p> <p>Generally, accurate descriptions of how light is required in order to see are given. It is understood that dark is the absence of light.</p> <p>Generally, it is understood that the light from the sun can be dangerous and some basic ways of protecting the eyes are understood.</p> <p>There is a general awareness that the intensity, distance of light source, angle and object causing the shadow are factors in the size and shape of shadows.</p>

Year 4 Substantive Knowledge

Autumn 1-Electricity	Spring 1- Animals including Humans	Spring 2- Living things and habitats	Summer 1- States of Matter	Summer 2- Sound
<p>To know common appliances that run on electricity</p> <p>To know the basic parts of an electrical circuit, including cells, wires, bulbs, switches and buzzers</p> <p>To know 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. To know a complete loop will light a bulb.</p> <p>To know 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>To know some common conductors and insulators, and associate metals with being good conductors.</p>	<p>To know the simple functions of the basic parts of the digestive system in humans</p> <p>To know the different types of teeth in humans and their simple functions</p> <p>To know and interpret a variety of food chains, identifying producers, predators and prey</p>	<p>To know that living things can be grouped in a variety of ways</p> <p>To know classification keys help group, identify and name a variety of living things in their local and wider environment</p> <p>To know that environments can change and that this can sometimes pose dangers to living things.</p> <p>To know how to construct and interpret a variety of food chains”</p>	<p>To know examples of solids.</p> <p>To know examples of liquids</p> <p>To know examples of gases.</p> <p>To understand changes of state.</p> <p>To understand the water cycle.</p>	<p>To know how sounds are made, associating some of them with something vibrating -recognise that vibrations from sounds travel through a medium to the ear</p> <p>To know patterns exist 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>Recognise that sounds get fainter as the distance from the sound source increases.</p>

Science – Disciplinary Knowledge – Year 4

Subject	Science	
Working Scientifically	Year 4	Year 5
	<p>Questions that lead to scientific investigation and are relevant are generally asked. Generally, there is an awareness that there are different ways of asking scientific questions. Simple practical enquiries and comparative and fair tests are set up, with prompts if necessary.</p> <p>Generally, accurate measurements are made using standard units and a range of equipment. Generally, simple scientific language, drawings, labelled diagrams, bar charts and tables are used to record findings.</p> <p>Generally, observations are recorded, and data is classified and presented, using tables, charts, text and labelled diagrams.</p> <p>A series of observations are made using standard measuring equipment for measuring most quantities.</p> <p>Generally, it is recognised why it is important to collect data in order to answer a question, and data is gathered, recorded, classified and presented in a variety of ways to help in answering questions.</p> <p>Reports on findings from enquiries are given, including oral and written explanations, displays or presentations of results and conclusions.</p> <p>Results are used to draw simple conclusions and suggest improvements.</p> <p>Generally, predictions are made as to what may happen before any tests are carried out.</p> <p>Reasons are suggested for predictions and further predictions are made about new, simple contexts.</p> <p>Differences, similarities or changes related to simple, scientific ideas and processes are identified.</p> <p>Generally, appropriate scientific language and straightforward scientific evidence is used to answer questions or to support findings.</p>	<p>Questions for scientific investigations are asked and personal ideas are offered without support.</p> <p>Questions are beginning to be improved in order to clarify exactly what is being investigated.</p> <p>Without support, practical enquires and comparative and fair tests are set up and the most appropriate approach to an investigation is chosen.</p> <p>Without support, accurate measurements using standard units are made and accurate readings are taken.</p> <p>Data is gathered, recorded, classified and presented in a variety of ways to help in answering questions without support.</p> <p>Without support, the most appropriate way to present data once collected is selected. Points are plotted to make simple line graphs.</p> <p>Without support, observations, including those for repeat readings, are recorded using tables and bar charts.</p> <p>Without support, reports on findings from enquiries are given, including oral and written explanations, displays or presentations of results and conclusions.</p> <p>Sometimes, patterns found in results are related to previous scientific knowledge, where possible.</p> <p>Independently, results are used to draw simple conclusions and suggest improvements, and conclusions are related to the patterns found in the results.</p> <p>Predictions are made without support and reasons for these predictions are offered.</p> <p>Without support, differences, similarities or changes related to more complex scientific ideas and processes are identified.</p> <p>Scientific evidence is used to answer questions or to support findings.</p>

Science – Disciplinary Knowledge – Year 4

Subject		Science	
		Year 4	Year 5
Biology	To understand animals and humans	<p>Generally, the terms 'nutrition' and a 'balanced diet' are understood.</p> <p>Generally, the fact that animals, including humans, need the right types and amounts of nutrition is identified.</p> <p>A range of food chains are constructed or interpreted.</p> <p>With some support, the terms 'predator' and 'prey' are used correctly.</p> <p>Generally, the fact that humans and some animals have skeletons and muscles for support, protection and movement is identified.</p> <p>The simple functions of the parts of the digestive system in humans, e.g. mouth, oesophagus, liver, stomach, small intestine, large intestine and rectum, are described and identified.</p> <p>Generally, the different types of teeth in humans, e.g. molars, incisors and canines, and their simple functions, are identified.</p> <p>Generally, it is recognised that: canines are used for tearing and ripping food, incisors are to help bite off and chew pieces of food and molars are to help crush and grind food</p>	<p>Without support, the terms nutrition' and a 'balanced diet' are understood.</p> <p>The reasons why humans need the right types and amounts of nutrition are articulated.</p> <p>A wide range of food chains are constructed and interpreted. The terms 'predator' and 'prey' are fully understood and used accurately.</p> <p>Without support, the fact that humans and some animals have skeletons and muscles for support, protection and movement is identified. It is understood that invertebrates do not have a skeleton.</p> <p>The functions of the parts of the digestive system in humans, e.g. mouth, oesophagus, liver, stomach, small intestine, large intestine and rectum, are described and identified accurately and without support.</p> <p>The different types of teeth in humans, e.g. molars, incisors and canines, and their simple functions, are identified independently.</p> <p>Without support, it is recognised that: canines are used for tearing and ripping food, incisors are to help bite off and chew pieces of food and molars are to help crush and grind food.</p>
Biology	To investigate living things	<p>Generally, a variety of living things in the local and wider environment are identified and named, using classification keys (e.g. taxonomic titles, features, habitats) to assign them to groups.</p> <p>Generally, vertebrate animals begin to be put into groups, e.g. fish, amphibians, reptiles, birds and mammals; invertebrates into e.g. snails and slugs, worms, spiders and insects; and plants into e.g. flowering plants, including grasses, and non-flowering plants, e.g. ferns and mosses.</p> <p>Reasons are given for classifying plants and animals based on specific characteristics.</p> <p>Animals are classified as predator and prey.</p> <p>Generally, it is recognised that environments are constantly changing and that this can sometimes pose dangers to specific habitats.</p>	<p>A variety of living things in the local and wider environment is identified and named, without support, using classification keys (e.g. taxonomic titles, features, habitats) to assign them to groups.</p> <p>Keys based on observable features are used to help identify and group living things systematically.</p> <p>Without support, reasons are given for classifying plants and animals based on specific characteristics.</p> <p>There is an awareness that the feeding relationships exists between plants and animals in a habitat, and this relationship is described using food chains and terms such as 'predator' and 'prey'.</p> <p>It is recognised independently that environments are constantly changing and that this can sometimes pose dangers to specific habitats.</p>
Chemistry States of Matter	Investigate Materials	<p>Materials are compared and grouped together according to whether they are solids, liquids or gases.</p> <p>Generally, it is observed that some materials change when they are heated or cooled and the temperature at which this happens is measured in degrees Celsius. This builds on the teaching in mathematics.</p> <p>Generally, the four main stages of the water cycle are understood and the parts played by evaporation, condensation and precipitation in the water cycle are identified.</p> <p>Generally, the rate of evaporation is associated with temperature.</p>	<p>Materials are independently and accurately grouped and compared according to their state of matter.</p> <p>It is observed that some materials change when they are heated or cooled and the temperature at which this happens is measured in degrees Celsius. This builds on the teaching in mathematics.</p> <p>The four main stages of the water cycle are understood independently and this process can be articulated and explained clearly and accurately.</p> <p>Without support, the part played by evaporation and condensation in the water cycle is identified and the rate of evaporation is associated with temperature.</p>

Science – Disciplinary Knowledge – Year 4

Subject		Science	
		Year 4	Year 5
Physics	Investigate sound and hearing	<p>Generally, the way in which sounds are made is identified and some of them are associated with something vibrating.</p> <p>Generally, the word 'vibrations' is used to describe how sounds travel through various media to the ear.</p>	<p>Without support, the way in which sounds are made is identified and some of them are associated with something vibrating.</p> <p>Fluent and clear explanations about how vibrations from sounds travel through various media to the ear are given.</p>
Physics	Understanding electric circuits	<p>Generally, it is identified whether or not a lamp will light in a simple series circuit and this is based on whether or not the lamp is part of a complete loop with a battery. It is recognised that a switch opens and closes a circuit and this is associated with whether or not a lamp lights in a simple series circuit.</p> <p>Generally, some common conductors and insulators are recognised, and metals are associated with being good conductors.</p> <p>Generally, all common electrical appliances are named and described as battery, solar or mains powered.</p> <p>Generally, the terms 'cells', 'wires', 'bulbs', 'switches' and 'buzzers' are used to describe simple circuits that have been constructed independently.</p>	<p>Independently, it is identified whether or not a lamp will light in a simple series circuit and this is based on whether or not the lamp is part of a complete loop with a battery.</p> <p>Without support, it is recognised that a switch opens and closes a circuit and this is associated with whether or not a lamp lights in a simple series circuit. A simple circuit is represented in a diagram using recognised symbols.</p> <p>A wide variety of conductors and insulators are independently recognised and metals are associated with being good conductors.</p> <p>The terms 'battery', 'solar' and 'mains powered' are fully understood and used to describe a range of common appliances.</p> <p>The terms 'cells', 'wires', 'bulbs', 'switches' and 'buzzers' are used fluently and without prompts to plan, construct and diagnose problems with simple circuits.</p>

Year 5 Substantive Knowledge

Autumn 1- Earth and Space	Autumn 2- Forces	Spring 1- Animal and humans	Spring 2- Living things and their environments	Summer- Materials
<p>To know the movement of the Earth and other planets relative to the sun in the solar system</p> <p>To know the movement of the moon relative to the Earth</p> <p>To know the sun, Earth and moon as approximately spherical bodies</p> <p>To know the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</p>	<p>Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</p> <p>Identify the effects of air resistance, water resistance and friction, that act between moving surfaces</p> <p>Recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect</p>	<p>To know the changes as humans develop to old age</p>	<p>To know the differences in the life cycles of a mammal, an amphibian, an insect and a bird</p> <p>To know the life process of reproduction in some plants and animals.</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>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> <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>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, including changes associated with burning and the action of acid on bicarbonate of soda</p>

Science – Disciplinary Knowledge – Year 5

Subject		Science	
Working Scientifically		<p>Year 5</p> <p>Generally, simple enquiries are planned. With support, variables are recognised and controlled where necessary. Questions to clarify what is being investigated are encouraged by a teacher. Generally, equipment is selected and appropriate techniques, apparatus, and materials are beginning to be used during fieldwork and laboratory work. With support, measurements are taken using a range of scientific equipment. With support, decisions are made as to what to measure or observe in order to answer a question. With support, data is recorded using scientific diagrams and labels. With support, a line graph is used to record data and results. Observations, comparisons and measurements are recorded using tables, charts, text and labelled diagrams. With support, findings from enquiries are reported, including oral and written explanations of results and explanations. Scientific vocabulary is used to describe observations. With support, findings are presented in written form and displays. With prompts, test results are used to make predictions to set up further comparative and fair tests. Predictions of what might happen are made before tests are carried out. With prompts, reasons for predictions are suggested. With support, simple models are used to describe scientific ideas. With support, information is found from a variety of sources. With prompts or support, limitations of evidence are talked about.</p>	<p>Year 6</p> <p>Enquiries are planned, including recognising and controlling variables where necessary. Questions to clarify exactly what is being investigated are improved. Generally, appropriate techniques, apparatus and materials are used during fieldwork and laboratory work. Generally, measurements are taken, using a range of scientific equipment, with increasing accuracy and precision. Generally, decisions are made as to what to measure or observe in order to answer a question. Generally, data and results of increasing complexity are recorded using scientific diagrams and labels, classification keys, tables, bar and line graphs, and models. Generally, the most appropriate ways to present evidence and findings are selected. Observations, including those for repeat readings, are recorded using tables and bar charts. Points are plotted to make simple line graphs. Findings from enquiries are reported, including oral and written explanations of results and explanations involving causal relationships, and conclusions. Generally, findings are presented in written form and displays. Generally, test results are used to make predictions and set up further comparative tests, reasons are suggested for these and previous knowledge is used where appropriate. Generally, simple models are used to describe scientific ideas, identifying scientific evidence that has been used to support or refute ideas or arguments.</p>
Biology	To understand animals and humans	<p>With support, the changes as humans develop from birth to old age are described. Investigate gestation periods Learn about puberty and changes in human</p>	<p>Generally, the main parts of the human circulatory system are identified and named, and the functions of the heart, blood vessels and blood, including the pulse and clotting, are explained. Scientific names are used for some major organs of body systems and the position of these in the human body can be located. Generally, the changes as humans develop from birth to old age are explained, using appropriate terminology. Generally, there is a good understanding on the impact of diet, exercise, drugs and lifestyle on the body's major organs. Generally, there is a good understanding of water absorption, the circulatory system, sweating and urination.</p>

Science – Disciplinary Knowledge – Year 5

Subject		Science	
		Year 5	Year 6
Biology	To investigate living things	<p>With the support of a teacher, the life cycles common to a variety of animals, including humans (birth, growth, development, reproduction and death), are described.</p> <p>With support, the life processes of reproduction in some plants and animals are described.</p>	<p>Generally, the life cycles common to a variety of animals, including humans (birth, growth, development, reproduction and death), are described.</p> <p>Generally, the life processes of reproduction in some plants and animals are described.</p> <p>Generally, broad groups are identified and used to classify living things.</p> <p>The terminology of similarities, differences, micro-organisms and animals is generally used when describing groups.</p> <p>Generally, suggestions are given as to how to classify plants and animals, with reasons given for the classification.</p>
Chemistry	Investigate Materials	<p>With the support of a teacher, everyday materials are grouped together based on evidence from comparative and fair tests.</p> <p>There are the beginnings of an understanding of how some materials dissolve in liquid to form a solution and, with the support of a teacher, the method for recovering a substance from a solution is described.</p> <p>With the support of a teacher, knowledge of solids, liquids and gases is used to decide how mixtures might be separated. The processes of filtering, sieving and evaporating are beginning to be used and understood.</p> <p>With prompts, reasons are given, based on evidence from tests, for particular uses of everyday materials including metals, wood and plastic.</p> <p>It is beginning to be understood that some changes of state are reversible and, with the support of a teacher, this can be demonstrated through dissolving and mixing.</p> <p>It is beginning to be understood that some changes result in the formation of new materials and that this kind of change is not usually reversible.</p> <p>Changes are beginning to be classified using the terms 'reversible' and 'non-reversible'.</p>	<p>Generally, everyday materials are grouped together and compared based on evidence from comparative and fair tests.</p> <p>Generally, it is understood how some materials dissolve in liquid to form a solution, and how to recover a substance from a solution can be described. With reminders, the terms 'soluble' and 'insoluble' are used accurately.</p> <p>Knowledge of solids, liquids and gases is used to decide how mixtures might be separated, including through filtering, sieving and evaporating.</p> <p>Generally, reasons are given, based on evidence from tests, for particular uses of everyday materials including metals, wood and plastic.</p> <p>It is demonstrated that dissolving, mixing and changes of state are reversible changes.</p> <p>Knowledge of reversible and non-reversible changes is used to make predictions about whether changes are reversible or not.</p> <p>Generally, it is understood 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, oxidation and the action of acid on bicarbonate of soda.</p>
Physics	Understand movement and forces	<p>Explanations are beginning to be given that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. With the support of a teacher, the effect of drag forces is identified.</p> <p>The reason why objects that are not driven tend to slow down is beginning to be described.</p> <p>There are the beginnings of an understanding that forces and motion can be transferred through mechanical devices such as gears, pulleys, levers and springs. Through structured activities and experiments, the effect of mechanisms is observed</p>	<p>It is explained that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</p> <p>Generally, the effect of drag forces, such as air resistance, water resistance and friction, that acts between moving surfaces, is identified.</p> <p>Falling objects begin to be explored and questions are raised about the effects of air resistance.</p> <p>Generally, the effects of air resistance are explored by observing how different objects such as parachutes and sycamore seeds fall.</p> <p>The reason why objects that are not driven tend to slow down is described.</p> <p>It is understood that forces and motion can be transferred through mechanical devices such as gears, pulleys, levers and springs.</p> <p>Generally, good explanations of the effects of mechanisms in terms of force and effort are given.</p>
Physics	Understand the Earth's movement in space	<p>With prompts, the Sun, Earth and Moon are described as approximately spherical bodies.</p> <p>There are the beginnings of an understanding of how day and night are formed.</p> <p>Describe the movement of the Moon relative to the Earth</p>	<p>Generally, the Sun, Earth and Moon are described as approximately spherical bodies.</p> <p>The idea of the Earth's rotation is used to explain day and night.</p>

Year 6 Substantive Knowledge

Autumn 1- Animal and Humans	Autumn 2- All living Things	Spring 1- Light	Spring 2- Electricity	Summer 1- Evolution and Inheritance
<p>To know and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood</p> <p>To know the impact of diet, exercise, drugs and lifestyle on the way their bodies function</p> <p>To know the ways in which nutrients and water are transported within animals, including humans.</p>	<p>To know 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</p> <p>To know reasons for classifying plants and animals based on specific characteristics.</p>	<p>To know that light appears to travel in straight lines</p> <p>To know that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye</p> <p>To know that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes</p> <p>To know that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</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>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>	<p>To know that that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago</p> <p>To know that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</p> <p>To know how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p>

Science – Disciplinary Knowledge – Year 6

Subject	Science	
Working Scientifically	Year 6	Year 7
	<p>Enquiries are planned, including recognising and controlling variables where necessary. Questions to clarify exactly what is being investigated are improved. Generally, appropriate techniques, apparatus and materials are used during fieldwork and laboratory work. Generally, measurements are taken, using a range of scientific equipment, with increasing accuracy and precision. Generally, decisions are made as to what to measure or observe in order to answer a question. Generally, data and results of increasing complexity are recorded using scientific diagrams and labels, classification keys, tables, bar and line graphs, and models. Generally, the most appropriate ways to present evidence and findings are selected. Observations, including those for repeat readings, are recorded using tables and bar charts. Points are plotted to make simple line graphs. Findings from enquiries are reported, including oral and written explanations of results and explanations involving causal relationships, and conclusions. Generally, findings are presented in written form and displays. Generally, test results are used to make predictions and set up further comparative tests, reasons are suggested for these and previous knowledge is used where appropriate. Generally, simple models are used to describe scientific ideas, identifying scientific evidence that has been used to support or refute ideas or arguments.</p>	<p>Enquiries are planned independently, including recognising and controlling variables where necessary. Questions to clarify what is being investigated are asked independently. Appropriate techniques, apparatus and materials are used independently during fieldwork and laboratory work. Without support, measurements are taken, using a range of scientific equipment, with increasing accuracy and precision. Independently, decisions are made as to what to measure or observe in order to answer a question. Without support, data and results of increasing complexity are recorded using scientific diagrams and labels, classification keys, tables, bar and line graphs, and models. Findings from enquiries are reported independently, including oral and written explanations of results and explanations involving causal relationships, and conclusions. Without support, the appropriate way to record and present evidence, including line graphs, is selected. Without support, findings are presented in written form, displays and other presentations. Predictions are made and justified by scientific knowledge and understanding. Predictions are presented in appropriate ways, e.g. a line graph can be sketched to show the expected patterns in results. Further predictions are made from results and these are used to test out the patterns found in relationships. Without support, models are used to describe scientific ideas, identifying scientific evidence that has been used to support or refute ideas or arguments. It is recognised that scientific ideas are based on evidence and that this comes from observations or data gathered. Selections from a range of sources of information are made without support. Appropriate scientific language and conventions are used independently to communicate quantitative (numbers and frequencies) and qualitative (observations and surveys) information.</p>

Science – Disciplinary Knowledge – Year 6

Subject		Science	
		Year 6	Year 7
Biology	To understand animals and humans	<p>Generally, the main parts of the human circulatory system are identified and named, and the functions of the heart, blood vessels and blood, including the pulse and clotting, are explained.</p> <p>Scientific names are used for some major organs of body systems and the position of these in the human body can be located.</p> <p>Generally, there is a good understanding on the impact of diet, exercise, drugs and lifestyle on the body's major organs.</p> <p>Generally, there is a good understanding of water absorption, the circulatory system, sweating and urination.</p>	<p>Independently, the main parts of the human circulatory system are identified and named, and the functions of the heart (including the chambers and the valves) and the blood vessels (veins, arteries) and blood (including the pulse and clotting) are explained.</p> <p>The main functions of the organs of the human body are described without support.</p> <p>The changes that take place as humans develop from birth to old age are explained in depth with appropriate terminology and examples given.</p> <p>There is a fluent and full understanding that diet, exercise, drugs and lifestyle affects many aspects of how the human body functions.</p> <p>Examples are given related to a number of different scenarios.</p> <p>With some fluency, comparisons of plant, animal, and human water and nutrient transportation are made.</p>
Biology	To investigate living things	<p>The terminology of similarities, differences, micro-organisms and animals is generally used when describing groups.</p> <p>Generally, suggestions are given as to how to classify plants and animals, with reasons given for the classification</p>	<p>There is a sound understanding and good knowledge of all basic life processes. Without support, the life cycles common to a variety of animals, including humans (birth, growth, development, reproduction and death), are described.</p> <p>Independently, the life processes of reproduction in some plants and animals are described.</p> <p>Broad groups to identify and classify living things are fully understood and used appropriately.</p> <p>Reasons for classifying plants and animals are explained and justified</p>

Science – Disciplinary Knowledge – Year 6

Subject		Science	
		Year 6	Year 7
Biology	To understand evolution and inheritance	<p>It is recognised that living things produce offspring of the same kind, but that normally offspring vary and are not identical to their parents.</p> <p>Generally, there is an understanding that living things have changed over time. Examples are given and fossil evidence used to describe living things that inhabited the Earth millions of years ago.</p> <p>Generally, good examples of how different animals and plants are suited to different environments are given.</p> <p>There is an awareness of how adaptation may lead to evolution.</p>	<p>It is recognised independently that living things produce offspring of the same kind and explanations are beginning to be given as to why offspring vary and are not identical to their parents.</p> <p>A wide range of examples are given to describe how living things have changed over time.</p> <p>Clear, well-structured examples show how fossil evidence can tell us about life on Earth millions of years ago.</p> <p>Demonstrate many examples that explain how different environments suit different animals and plants.</p> <p>The theory of evolution is explained in basic terms.</p>
Physics	Understand light and seeing	<p>Generally, it is recognised that light appears to travel in straight lines.</p> <p>The idea that light travels in straight lines is used to explain that objects are seen because they give out or reflect light into the eyes.</p> <p>Generally, the idea that light travels in straight lines is used to explain why shadows have the same shape as the objects that cast them.</p> <p>The size of shadows is predicted when the position of the light source changes.</p> <p>Generally, there is a good understanding of how we see.</p> <p>Explanations and diagrams are used to describe the process.</p>	<p>Without support, it is recognised that light appears to travel in straight lines.</p> <p>Independently, the idea that light travels in straight lines is used to explain that objects are seen because they give out or reflect light into the eyes.</p> <p>The idea that light travels in straight lines is used to explain why shadows have the same shape as the objects that cast them.</p> <p>Without support, the size of shadows is predicted when the position of the light source changes.</p> <p>The experience of light is beginning to be extended by looking at a range of phenomena, including rainbows, colours on soap bubbles, objects looking bent in water, and coloured filters.</p> <p>Fluent, clear and concise explanations and diagrams describe the process of seeing.</p>
Physics	Understand electrical circuits	<p>Generally, most recognised symbols are used appropriately.</p> <p>Generally, the brightness of a lamp or the volume of a buzzer is associated with the number and voltage of cells used in the circuit.</p> <p>Comparisons are made and reasons are given for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches.</p>	<p>Recognised symbols are known and used appropriately.</p> <p>Independently, the brightness of a lamp or the volume of a buzzer is associated with the number and voltage of cells used in the circuit.</p> <p>Without support, comparisons are made and reasons are given for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches</p>

Subject Vocabulary:

	Biology	Chemistry	Physics
Year N	<p>Animals including Humans: Baby, child, adult Sight, smell, touch, taste, hear Shoulders, neck, chin, eyebrows, nostril Plants: Seed, soil, alive, grow</p>	<p>materials - hard, soft, bendy, flexible., see through</p>	<p>Movement: push, pull, move Earth and space - sun, daytime, moon, night time Shadows, space, solar system.</p>
Year R	<p>Humans & Animals Ankle, wrist, elbow, spine, skull, ribs, hips, senses Badger, fox, mole, owl, woodland Nocturnal, diurnal, hibernate Plants: Roots, stem, flower, leaf, Rainforest, canopy, forest floor Life Cycles: Incubator, hatch, mammals, amphibians, reptiles</p>	<p>Materials - freeze, ice, solid, melt, liquid, heat, warmth</p>	<p>Earth and space - Names of the planets of the Solar System. float, sink,</p>
Year 1	<p>Animals Including Humans: Names of animal groups: fish, amphibians, reptiles, birds, mammals. Animal diets: carnivore, herbivore, omnivore. Human and animal body parts: e.g. body, head, neck, arms, elbows, legs, knees, face, ears, eyes, nose, hair, mouth, teeth, hands, feet, tail, wings, feathers, fur, beak, fins, gills. Human senses: sight, hearing, touch, smell, taste. Exploring senses: loud, quiet, soft, rough. Other: human, animal, pet. Living things and their habitats: Living or dead: living, dead, healthy. Names of habitats and microhabitats: woodland, rainforest, sea shore, ocean, urban, local habitat. Plants Names of common plants: wild plant, garden plant, evergreen tree, deciduous tree, common flowering plant, weed, grass. Name some features of plants: e.g. flower, vegetable, fruit, berry, leaf/leaves, blossom, petal, stem, trunk, branch, root, seed, bulb, soil. Name some common types of plant e.g. sunflower, daffodil.</p>	<p>Materials: Names of materials: wood, plastic, glass, metal, water, rock, paper, cardboard, rubber, fabric. Properties of materials: hard, soft, shiny, dull, stretchy, rough, smooth, bendy, not bendy, transparent, opaque, waterproof, not waterproof, absorbent, not absorbent, sharp, stiff. Other: object.</p>	<p>Forces How things move: movement, surface, distance, strength. Types of forces: push, pull, contact force, non-contact force, friction.</p>
Year 2	<p>Animals including Humans: Young and adult names: e.g. lamb and sheep, kitten and cat, duckling and duck. Life cycle stages: e.g. baby, toddler, child, teenager, adult; frogspawn, tadpole, froglet, frog. Survival and staying healthy: survive, food, air, exercise, diet, nutrition, healthy, balanced diet, hygiene, germs. Food groups: fruit and vegetables, proteins, dairy and alternatives, carbohydrates, oil and spreads, fat, salt, sugar. Living things and their habitats Habitats including microhabitats: depend, shelter, safety, survive, suited, space, minibeast, air. Life processes: movement, sensitivity, growth, reproduction, nutrition, excretion, respiration. Food chains: food sources, food, producer, consumer, predator, prey. Plants Growth of plants: germination, shoot, seed dispersal, grow, food store, life cycle, die, wilt, seedling, sapling. Needs of plants: sunlight, nutrition, light, healthy, space, air. Name different types of plant: e.g. bean plant, cactus. Names of different habitats: e.g. rainforest, desert</p>	<p>Materials: Changing shape: squash, bend, twist, stretch. Properties of materials: e.g. strong, flexible, light, hard-wearing, elastic. Other: suitability, recycle, pollution.</p>	<p>Electricity: mains-powered, battery-powered, mains electricity, plug, appliances, devices.</p>

Subject Vocabulary:

<p>Year 3</p>	<p>Animals including Humans- Food groups and nutrients: fibre, fats (saturated and unsaturated), vitamins, minerals. Skeletons and muscles: skeleton, muscles, tendons, joints, protection, support, organs, voluntary muscles, involuntary muscles, biceps, triceps, contract, relax, bone, cartilage, shell, vertebrate, invertebrate, endoskeleton, exoskeleton, hydrostatic skeleton. Names of human bones: e.g. skull, spine, backbone, vertebral column, ribcage, pelvis, clavicle, scapula, humerus, ulna, pelvis, radius, femur, tibia, fibula. Other: energy</p> <p>Plants: Water transportation: transport, evaporation, evaporate, nutrients, absorb, anchor. Life cycle of flowering plants: pollination (insect/wind), pollen, nectar, pollinator, seed formation, seed dispersal (animal/wind/water), reproduce, fertilisation, fertilise, stamen, anther, filament, carpel (pistil), stigma, style, ovary, ovule, sepal, carbon dioxide.</p> <p>Previously introduced vocabulary: life cycle.</p>	<p>Rocks: Types of rock: sedimentary rock, igneous rock, metamorphic rock. Properties of rocks: permeable, semi-permeable, impermeable, durable. Names of rocks: e.g. marble, chalk, granite, sandstone, slate. Formation of rocks and fossils: natural, human-made, magma, lava, molten rock, sediment, erosion, fossilisation, layers, bone, fossil. Soil: sandy, chalky, clay, peaty, loamy, topsoil, subsoil, bedrock, mineral, organic matter, compost. Other: palaeontology. Previously introduced vocabulary: soil, water, air.</p>	<p>Forces and Magnets: How things move: move, movement, surface, distance, strength. Types of forces: push, pull, contact force, non-contact force, friction. Magnets: magnetic, magnetic field, magnetic force, bar magnet, horseshoe magnet, ring magnet, magnetic poles (north pole, south pole), attract, repel, compass. Magnetic and non-magnetic materials: e.g. iron, nickel, cobalt. Previously introduced vocabulary: metal, names of materials.</p> <p>Light Light and seeing: dark, absence of light, light source, illuminate, visible, shadow, translucent, energy Reflective light: reflect, reflection, surface, ray, scatter, reverse, beam, angle, mirror, moon. Sun safety: glare, damage, UV light, UV rating</p>
<p>Year 4</p>	<p>Animals including Humans- Digestive system: digest, digestion, tongue, teeth, saliva, salivary glands, oesophagus, stomach, liver, pancreas, gall bladder, small intestine, duodenum, large intestine, rectum, anus, faeces, organ. Types of teeth and dental care: molar, premolar, incisor, canine, wisdom teeth, tooth decay, plaque, enamel, baby (milk) teeth. Food chains and animal diets: decomposer, food web.</p> <p>Living things and their Habitats- Living things: organisms, specimen, species. Grouping living things: classification, classification keys, classify, characteristics. Invertebrate body parts: e.g. wing case, abdomen, thorax, antenna, segments, mandible, proboscis, prolegs. Environmental changes: environment, environmental dangers, adapt, natural changes, climate change, deforestation, pollution, urbanisation, invasive species, endangered species, extinct.</p>	<p>States of matter: solids, liquids, gases, particles. State change: evaporate, condense, melt, freeze, heat, cool, melting point, freezing point, boiling point, water vapour. Water cycle: precipitation, evaporation, condensation, ground run-off, collection, underground water, bodies of water (sea, river, stream), water droplets, hail. Other: atmosphere.</p> <p>Previously introduced vocabulary: temperature, rain, cloud, snow, wind, sun, hot, cold, absorb, carbon dioxide.</p> <p>Sound: Parts of the ear: eardrum. Making sound: vibration, vocal cords, particles. Measuring sound: pitch, volume, amplitude, sound wave, quiet, loud, high, low, travel, distance. Other: soundproof, absorb sound.</p>	<p>Electricity Electricity: mains-powered, battery-powered, mains electricity, plug, appliances, devices. Circuits: circuit, simple series circuit, complete circuit, incomplete circuit. Circuit parts: bulb, cell, wire, buzzer, switch, motor, battery. Materials: electrical conductor, electrical insulator. Other: safety.</p>

Subject Vocabulary:

<p>Year 5</p>	<p>Animals including Humans- Process of reproduction: gestation, asexual reproduction, sexual reproduction, sperm, egg, cells, clone. Changes and life cycle: embryo, foetus, uterus, prenatal, adolescence, puberty, menstruation, adulthood, menopause, life expectancy, old age, hormones, sweat. Changing body parts: e.g. breasts, penis, larynx, ovaries, genitalia, pubic hair.</p> <p>Living things and their Habitats- Reproduction: asexual reproduction, sexual reproduction, gestation, metamorphosis, gametes, tuber, runners/side branches, plantlet, cuttings, embryo, adolescent, penis, vagina, egg, pregnancy, gestation.</p> <p>Previously introduced vocabulary: life cycle, pollination, offspring, fertilise, fertilisation, sepal, filament, anther, stamen, pollen, petal, stigma, style, ovary, carpel, ovule, stem, bulb, roots, mammal, adult, baby, sperm, cells, live young</p>	<p>Properties and changes of materials: Properties of materials: thermal conductor/insulator, magnetism, electrical resistance, transparency. Mixtures and solutions: dissolving, substance, soluble, insoluble. Changes of materials: reversible change, physical change, irreversible change, chemical change, burning, new material, product. Separating: sieving, filtering, magnetic attraction.</p> <p>Earth and Space Solar system: star, planet. Names of planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Neptune, Uranus. Shape: spherical bodies, sphere. Movement: rotate, axis, orbit, satellite. Theories: geocentric model, heliocentric model, astronomer.</p> <p>Previously introduced vocabulary: Sun, moon, shadow, day, night, heat, light, reflect.</p>	<p>Forces: Types of forces: push, pull, contact force, non-contact force, friction. Magnets: magnetic, magnetic field, magnetic force, bar magnet, horseshoe magnet, ring magnet, magnetic poles (north pole, south pole), attract, repel, compass. Magnetic and non-magnetic materials: e.g. iron, nickel, cobalt. Previously introduced vocabulary: metal, names of materials.</p>
<p>Year 6</p>	<p>Animals including Humans- Circulatory system: circulation, heart, pulse, heartbeat, heart rate, lungs, breathing, blood vessels, blood, pump, transported, oxygenated blood, deoxygenated blood, oxygen, arteries, veins, capillaries, chambers, plasma, platelets, white blood cells, red blood cells. Lifestyle: drug, alcohol, smoking, disease, calorie, energy input, energy output.</p> <p>Living things and their Habitats- Classifying: Carl Linnaeus, Linnaean system, flowering and non-flowering plants, variation. Microorganisms: bacteria, single-celled, microbes, microscopic, virus, fungi, fungus, mould, antibiotic, yeast, ferment, microscope, decompose.</p> <p>Evolution and inheritance Evolution and inheritance: evolve, adaptation, inherit, natural selection, adaptive traits, inherited traits, mutations, theory of evolution, ancestors, biological parent, chromosomes, genes, Charles Darwin. Other: selective breeding, artificial selection, breed, cross breeding, genetically modified food, cloning, DNA.</p> <p>Previously introduced vocabulary: classification, offspring, characteristics, habitat, environment, adapt, variations, human, fossil, suited, cells, names of different habitats, names of animals and their body parts, species, sedimentary rock, lava, igneous rock, metamorphic rock, magma, heat, fossilisation.</p>		<p>Light: Reflection: periscope. Seeing light: visible spectrum, prism. How light travels: light waves, wavelength, straight line, refraction.</p> <p>Electricity: Flow and measure of electricity: voltage, amps, resistance, electrons, volts (V), current. Circuits: symbol, circuit diagram, component, function, filament. Other: positive, negative.</p>

Subject Vocabulary:

Working Scientifically

KS1	LKS2	UKS2
<p>aim changes classify conclusion describe difference different enquiry equipment experiment explore findings identify investigate measure notice observe patterns predict record results same similarity sort test</p>	<p>accurate classify comparative test conclusion criteria data diagram evaluate evidence explanation fair test key method observations plan enquiry prediction reasoning relationships</p>	<p>precision causal relationship dependent variable independent variable justify variables</p>