Science

Intent

At Hyde Park Schools, we know that science holds a prominent place in every child's education, and in their everyday life. Science underpins our understanding of the world and is an integral part of our lives, which makes it vital that children at our school develop a lifelong love for the subject. While broadening children's understanding in science, we will promote collaboration, exploration, curiosity, discovery, and investigation. Science at Hyde Park Junior School encourages children to be critical and reflective learners and inspires them to take risks and ask questions. We want our pupils to develop an innate sense of curiosity around the world them and how things happen, this curiosity links closely with our school values.

The Science curriculum is coherently planned and sequenced to engage our learners and provide them with the knowledge and skills needed for future learning and the next phase in their education. We know that a child's ability to learn is rooted in securely gaining knowledge and then being able to apply and extend that knowledge, as well as the ability to use and apply any associated skills with fluency and accuracy.

Our science curriculum will develop both children's knowledge in scientific concepts alongside key investigative skills. It is our intention that scientific knowledge is delivered through practical lessons which give children the opportunity to develop their investigative skills. 'Working scientifically' is described separately in the science programme of study but must always be taught through and clearly related to the teaching of substantive science content. This allows children to develop a deeper understanding and fluency which can lead to mastery of the subject. Our science curriculum is tailored to our school and, although aligned with, goes beyond the National Curriculum.

We are determined to provide the best Science educational opportunities for all children at Hyde Park Schools.

Implementation

High quality CPD and a commitment to learning from research and best practice lies at the heart of our curriculum implementation and allows teachers and teaching assistants to deliver an interesting and ambitious science curriculum. All teaching and teaching assistants are provided with opportunities to develop their own subject knowledge and pedagogy to ensure the curriculum can be delivered effectively with maximum impact.

Vocabulary is often a barrier to learning in science, and hence is taught explicitly in science lessons and reviewed regularly. Key vocabularies are displayed in the classroom. We ensure that all children can access the learning, by clear coverage of prior knowledge, skills and learning and, within each lesson, consistent scaffolding, chunking of new learning, opportunities for talk and feedback. Opportunities for depth are provided through questioning, reasoning, going deeper tasks and reading beyond the curriculum. This can be during whole class teaching or as an additional task in a Science lessons.

Formative assessment is used routinely within science lessons, in order to quickly address children's misconceptions and extend their understanding. Summative assessments are used termly to track how pupils are progressing against the curriculum, with regard to scientific enquiry skills and scientific

knowledge. Lessons allow pupils to practise our core values within their learning being brave, curious, optimistic, kind, inclusive, enterprising, and confident learners.

The curriculum provides children with deep learning experiences that are successively built on across the years, providing children with a sequential understanding of how Science ideas develop and increase knowledge. Repetition also plays an important role in securing knowledge and fluency. Therefore, subject areas are often revisited in successive years to allow knowledge and skills to become sticky. The curriculum provides diverse and rich opportunities from which children can learn and develop a range of transferable skills, such as data handling and Maths or basic micro-biology and baking. Examples include an expert, enrichment or experience all used to gain further knowledge to what has already been taught within the classroom.

We feel it is important to use the children's own communities, heritage, and traditions as a starting point for engaging interest. Our curriculum incorporates strong links to our rich geographical and historical areas. As evidenced by the visits we have with Plymouth University to support our science. We want our children to enjoy science and realise how scientific knowledge can improve their understanding of the world, create opportunities for employment and increase the choices that they will have in life.

Impact

Pupils leave Hyde Park Schools with a secure mastery of scientific concepts and a fluency of enquiry skills. They enjoy science and are ready to engage with the curriculum for the next phase of their learning. Through their scientific knowledge they are beginning to have a deeper understanding of naturally occurring phenomena and the world in which they live.

We aim for all our children to leave Hyde Park Schools; brave, curious, optimistic, kind, enterprising, inclusive and confident Scientists, with the motivation and passion to continue to learn and empowered and enabled to make the most of their lives.

Year 1 Progression

	AUTUMN 1	AUTUMN 1	AUTUMN 2	SPRING	SUMMER 1	SUMMER 2
Unit of Work	**Materials Linked to Geography Unit on weather and linked to seasons unit**	**Seasons (Project completed throughout the year)**	**Animals including humans (Linked to geography unit)**	**Animals –Pets**	**Plants Seeds to be planted in Spring Two) Linked to Geography Unit)**	**Completing the Unit on seasons and creating the book**
Key Concept	**Use of materials are linked to their properties.**	**How weather patterns are related to seasonal changes**	**Living things grow and change**	**Understanding what a pet is**	**Plants are living things that grow and change.** Children will have already made some observations about plants when tracking seasonal changes over the year.	**To compare weather patterns based on seasonal changes**
Key Question 	***How do we know when to use different materials for?***	***What's through our window?***	***How do living things grow and change?***	***Why do people have pets and what makes a good pet?***	***Why do we need to grow plants?***	***What's through our window?***
Key Vocabulary 	material, properties, stretchy, waterproof, absorbent, rough, smooth, fabrics, natural, man-made	season, autumn, winter, spring, summer, daylight, day length weather, sunlight, cloudy, frosty, thunder, storms,	bird, mammal, amphibian fish, reptile, **omnivore, herbivore, carnivore**, human, body parts, senses	pets, house trained, pet owner, diet, exercise	plant, flower, seeds, roots, stem, branch, leaves, petals, fruit,	season, autumn, winter, spring, summer, daylight, day length weather, sunlight, cloudy, frosty, thunder, storms

 **Key Skills**	• Raise a range of simple scientific questions. • Respond to prompts by making some simple suggestions about how to find an answer. • Use simple scientific • vocabulary to describe their ideas and observations • Recognise how simple scientific ideas can help us in real life. • Present evidence collected in simple ways.	• Ask simple scientific questions. • Use their senses and simple equipment to make simple observations. • Present evidence collected in simple ways: talking, drawing, simple charts • Use simple scientific vocabulary to communicate changes in the seasons. • Explain what they have learnt at the end of a unit in simple terms.	• Ask simple scientific questions. • Respond to prompts by making some simple suggestions about how to find an answer or make an observation. • Recognise basic features of living things. • Sort and group living things. • Use simple scientific vocabulary to describe their ideas and observations • Present evidence collected in simple ways: talking, drawing, simple charts, diagrams	• Raise simple scientific questions. • Draw on their everyday experiences to help answer questions raised. • Classify pets according to their characteristics. • Use simple scientific vocabulary to describe their ideas and observations • Explain what they have learnt at the end of a unit in simple terms.	• Raise a range of simple scientific questions. • Draw on their everyday experiences to help answer questions. • Say what changed when they made their observations. • Use simple scientific vocabulary to describe their ideas and observations • Present evidence collected in simple ways.	• Ask simple scientific questions. • Use their senses and simple equipment to make simple observations. • Present evidence collected in simple ways: talking, drawing, simple charts • Use simple scientific vocabulary to communicate changes in the seasons. • Explain what they have learnt at the end of a unit in simple terms.

Year 2 Progression

	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1 and 2
Unit of Work	**Materials (Linked to History Unit)**	**Sound (Linked to geography project)**	**Living Things and their Habitats. (Linked to Geography Unit)**	**Animals including humans**	**Plants**
Key Concept	Use of materials are linked to their properties.	Sounds can be made in lots of different ways and travels from its source in all directions.	All living things have certain characteristics that are essential for keeping them alive.	Growth and survival	Plants need certain things to help them grow and plants thrive in different habitats. Changes in the environment can affect plants.
 **Enquiry Question**	***How do the properties of materials determine what they are used for?***	***How does sound affect our lives?***	***How do living things depend on each other?***	***Why do we need to be careful about what we eat and why do we need to exercise?***	***Why are plants important for humans to survive and thrive?***
Vocabulary 	**Recap on vocabulary from Year 1** **hard, soft, rigid, flexible, fireproof, transparent, opaque translucent, non- reflective suitable, unsuitable**	**sound, high, low, loud, soft quiet, silence, direction, vibrate**	**living, dead, not alive, habitat, microhabitat, offspring, pond, woodland, forest, food chain, basic needs**	**offspring, adult, growth, survival, diet, food types, exercise, hygiene, healthy, medicine**	Recap on vocabulary from Year 1: **plant, flower, seeds, roots, stem, branch, leaves, petals, fruit, and** introduce: **bulb, shoot, seedling, soil, earth, growth, fully grown, wither, survive**

Key Skills 	• Raise a range of simple scientific questions. • Make some suggestions about how to find things out or how to collect data to answer a question they are investigating. • Identify things to observe that are relevant to the questions they are investigating. • Use simple scientific vocabulary to describe their ideas and observations. • Identify how knowledge gathered about materials is helpful in everyday life • Present their ideas and evidence in different ways.	• Raise a range of simple scientific questions. • Make some suggestions about how to find things out or how to collect data to answer a question they are investigating. • Identify things to measure or observe that are relevant to the question they are investigating. • Perform simple tests to explore and answer questions raised. • Use simple scientific vocabulary to describe their ideas and observations. • Present their ideas and evidence in different ways. •	• Raise a range of simple scientific questions. • Make some suggestions about how to find things out or how to collect data to answer a question they are investigating. • Sort and group living things based on their features. • Draw on their observations, evidence and ideas to offer answers to questions. • Use simple scientific vocabulary to describe their ideas and observations. • Present their ideas and evidence in different ways.	• Raise a range of simple scientific questions. • Make some suggestions about how to find things out or how to collect data to answer a question they are investigating. • Use simple scientific vocabulary to describe their ideas and observations. • Compare and contrast foods and sort by a given and own criteria. • Present their ideas and evidence in different ways.	• Raise a range of simple scientific questions. • Be able to measure and observe growth of plants over time using equipment provided • Draw on their observations, evidence and ideas to offer answers to questions. • Present their ideas and evidence in appropriate ways, including diagrams, charts, photos which are annotated.

Year 3 Progression

	AUTUMN 1	AUTUMN 2	SPRING 1 and 2	SUMMER 1	SUMMER 2

Unit of Work	Animals Including Humans	Rocks and Soils- What Lies beneath our feet	Forces and Magnets	Plants (will need to return to this in Summer 2 to look at outcomes of their experiments	Light and Shadows
Key Concept	All living things have certain characteristics that are essential for keeping them alive and healthy. .	Rock is the naturally occurring solid material that makes up the surface of the Earth The characteristics of soil depend on the nature of the rock from which it was formed, and the processes involved in its formation.	Magnets can attract or repel each other. Magnets exert non-contact forces which work through some materials unlike most forces. Magnetic forces are affected by: Magnet strength, Object mass, Distance from object, Object material.	Understand the relationship between the structure and function of different plants.	Light comes from a variety of sources: primary sources, which give out light directly; secondary sources, which reflect light.
 **Key Question**	***"We are what we eat." Is there any truth in this statement?***	***How do we make use of what lies beneath our feet?***	***Are magnets useful in our lives?***	***What happens if one part breaks down in the life cycle of a plant?***	***What if there was no natural light in our world?***
 **Key Vocabulary**	**Recap previous vocabulary taught nutrients, carnivore, herbivore, omnivore nutrition, diet, protein, carbohydrate, minerals, vitamins, fats, sugars, balanced diet, skeleton, protection, movement, spine, vertebrate, invertebrate, muscle,**	**rock, stone, fossils, crystals, marble, chalk, granite, sandstone, soil, appearance, texture, absorb,**	**force, magnetic, non-magnetic, attract, repel, surface, friction, push, pull, poles, north pole, and south pole**	**function, seed, stem, root, life cycle, nutrients, fertiliser, pollination, fertilisation, seed dispersal,**	**Recap on transparent, opaque, translucent (Year 2) light source, dark/darkness reflect, reflective, shadow, block, artificial, direction, fair test,**

Key Skills	• Raise a range of simple scientific questions & can some suggestions about how to answer a question they are investigating. • Gather, record, classify and present data in a variety of ways to help in answering questions. • Make connections and links between the characteristics of humans and animals identifying differences and similarities • Present their ideas and evidence in appropriate ways, such as drawings, simple sentences and charts. • Use simple scientific vocabulary to describe their ideas and observations. •	• Raise a range of simple scientific questions. • Make some suggestions about how to find things out or how to collect data to answer a question they are investigating. • Draw on their observations, evidence and ideas to offer answers to questions. • Compare basic features of different rocks and soils • Use simple scientific vocabulary to describe their ideas and observations • Present their ideas and evidence in appropriate ways, such as drawings, simple sentences and charts. • Identify situations when science is helpful and say why in relation to this unit.	• Ask relevant questions and use different types of scientific enquiries to answer them. • Set up simple fair tests to test predictions. • Gather, record and present data in a variety of ways to help in answering questions. • Be able to make comparisons in their tests undertaken. • Give scientific reasons using correct vocabulary to answer questions and communicate findings from experiments carried out.	• Ask relevant questions and use different types of scientific enquiries to answer them. • Set up simple practical enquiries, comparative and fair tests to test predictions. • Record findings using simple scientific language, drawings, labelled diagrams. • Give scientific reasons to answer questions and support • claims, using correct vocabulary.	• Ask relevant questions and use different types of scientific enquiries to answer them. • Make systematic and careful observations. • Take accurate measurements using standard units and to measure shadows as the light source moves or the distance between the light source and object changes. • Make connections and links between properties and characteristics of natural and artificial light. • Record findings and answers to questions using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables. • Be able to identify when science is useful and why? • EVALUATE

					• Draw simple conclusions about their learning at the end of the unit.

Year 4 Progression

	AUTUMN 1	AUTUMN 2	SPRING 1 and 2	SUMMER 1	SUMMER 2
Unit of Work	**States Of Matter**	**Sound-using the idea of vibration to explain sound**	**Animals Including Humans**	**Living things and their habitats**	**Electricity**

Key Concept	Materials can exist as solids, liquids or gases. Heating can change solids to liquid and liquid to gas and that these changes can be reversed by cooling.	Sound is caused by vibration in a material Changing the shape, size and material of an object will change the sound it produces. The size of the vibrations determines the loudness of sounds. The frequency –that is the number of vibrations each second determines the pitch of the sound; how high or low it is.	Understanding what the digestive system is made up of and understanding the different functions. Understanding of the food chain	Living thing live in a variety of places called habitats. They interact with each other and respond to the physical conditions of their environment and are suited to the place they live in.	For an electrical current to flow there must be a complete circuit. Some materials allow electricity to flow easily, and these are called conductors. Materials that don't allow electricity to flow easily are called insulators
 **Key Question**	***Why is it important to be able to separate some liquids and solids?***	***Do we all hear the same sounds?***	***Why is it vital our digestive system functions properly?***	***Animals can live anywhere. Is this statement true? Explain your reasoning***	***The more energy, the brighter the bulb. Is this statement true? Explain your reasoning***
 **Key Vocabulary**	**states of matter, solid/solidify liquid, gas, oxygen, temperature, melting, boiling point, freezing, particle evaporation, condensation, water cycle,**	**sound, sound waves, vibration, pitch, tuned, volume, fainter muffle, insulation,**	**Recap on vocabulary from Year 3: nutrients, carnivore, herbivore, omnivore digestive, oesophagus, intestine, rectum, anus, waste, saliva, molar, incisor, canine, incisor, food chain, producer, predator, prey, consumer**	**classification keys, environment, habitats vertebrates, invertebrates, mammals, reptiles, amphibians, human impact**	**electricity, mains, plug, switch, circuit, components, cell, battery, buzzer, connection, conductor, insulator, appliance**

Year 5 Progression

	AUTUMN 1	AUTUMN 2	SPRING 1 and 2	SUMMER 1	SUMMER 2
Unit of Work	**Earth and Space**	**Forces**	**Properties and Changes to Materials**	**Animals including Humans**	**Living Things and their Habitats**
Key Concepts	Understand what is meant by solar system and understand the movements of the earth and the moon. Understand that objects like planets, moons and stars spin. Understand that our measurement of time is related to the relative movements and positions of the Earth, Sun and Moon. (Linked to work on forces)	**Force** is needed to change the movement of an object. **Gravity** is the force that pulls all things towards the Earth and makes them fall. **Friction** is a force that opposes the movement of one surface across another	Materials can be grouped according to their properties and the uses of materials are related to their properties. Understand that the properties of materials is not only useful in helping us select the right material in order to make things, it also provides us with a means of separating materials	**Reproduction-** All living things grow but this takes place gradually. Living things reproduce individuals of the same kind. Growth and reproduction is less flexible in animals than in plants	Living things interact with each other and respond to the physical conditions of their environment and that they are suited to the places in which they live. (Recap from Year 4 Life processes for different types of animals and plants can be different.
 **Key Question**	***What if the Earth stopped spinning?***	***All objects move at the same speed whether in the air, on the ground or in water. Is this statement correct?***	***How do chemical changes impact on our lives?***	***What do we mean by human development?***	***What do you think of when you hear the word environment? How is it different from and similar to a habitat?***
 **Key Vocabulary**	**Earth, planets, solar system, celestial body, spherical, rotation, orbit, revolve, geocentric model, heliocentric model, sundials, shadow clocks, astronomical clocks**	**force, gravity, friction, air resistance, water resistance, pressure, mass, pulley, lever, mechanisms**	**Recap on Year 4 vocabulary Introduce: solubility, electrical conductivity, thermal conductivity, dissolve, solution, insoluble, filtering, sieving, residue, reversible, irreversible**	**gestation, foetus, embryo, infant, adolescents, adulthood, puberty, reproduction, growth development**	**Recap on Year 4 vocabulary Introduce: life cycle, reproduction, sexual, asexual, germination, pollination seed dispersal, pollen, stamen, stigma**

 **Key Skills**	• Ask a range of relevant higher order questions and use different types of scientific enquiries to answer **them.** • Use simple models to describe/explain scientific ideas. • Recognise that scientific ideas are based on evidence. • Use scientific diagrams to explain a scientific idea and correct scientific vocabulary in oral and written explanations. • Be able to use scientific evidence to explain the understanding we have about earth and space. • Draw overall conclusions at	• Ask a range of relevant questions and use different types of scientific enquiries to answer them. • Carry out a fair test and be able to describe how to vary one factor while keeping the others the same. • Make sets of observations or measurements, identifying the ranges and intervals used. • Gather, record, classify, interpret, and present data in a variety of ways to help in answering questions. Identify and explain patterns from data gathered and analysed	• Ask a range of relevant questions and use different types of scientific enquiries to answer them. • Make and test informed predictions. • Decide when it is appropriate to carry out fair tests in investigations. • Describe how to vary one factor while keeping the others the same. • Gather, record, classify, interpret, and present data in a variety of ways to help in answering questions. • Identify and explain patterns from	• Ask a range of relevant questions and use different types of scientific enquiries to answer them. • Gather, record, classify, interpret, and present data in a variety of ways to help in answering questions. • Make a range of comparisons and draw conclusions. • Identify and explain patterns from data gathered and draw conclusions.	• Ask a range of relevant questions and use different types of scientific enquiries to answer them. • Gather, record, classify, interpret, and present data in a variety of ways to help in answering questions. • Make a range of comparisons and draw conclusions. • Identify and explain patterns from data gathered and draw conclusions. • Give clear scientific evidence to support

	the end of the unit from knowledge collected and analysed.	and draw conclusions. • Use test results to make predictions to set up further comparative and fair tests. • Suggest ways to improve a practical experiment/fair test. • Record data and results using scientific diagrams and labels, bar, and line graphs. • Give clear scientific evidence to support conclusions made. • Draw overall conclusions at end of the unit from all evidence collected and analysed	data gathered and draw conclusions using scientific vocabulary. • Recognise and explain the uses of different scientific ideas in everyday life and working life. • Draw overall conclusions at the end of a unit of work from all evidence collected and analysed	• Give clear scientific evidence to support conclusions made using the correct scientific vocabulary. • Draw overall conclusions at the end of a unit of work from all evidence collected and analysed.	conclusions made using the correct scientific vocabulary. • Draw overall conclusions at the end of a unit of work from all evidence collected and analysed

 **Knowledge**	**Children will be able to:** • Understand that the Sun, Earth, and Moon are approximately spherical and recognise which is largest and which is the smallest, making a reasonable match to relative size. • Know what is meant by the term 'solar system' and know that the sun is a star at the centre of the solar system. • Understand be able to describe how the apparent position of the Sun changes over the course of a day and clarify that this does not mean that the Sun is moving. • Be able to illustrate using models or drawings that different parts of the Earth face the Sun during the	**Children will be able to** • Explain that the earth and objects are pulled towards each other, and that this gravitational attraction causes objects to have weight. • Know that weight is a force and is measured in newtons. • Explain why people seem lighter when walking on the moon. • Describe the forces acting on a stationary object *e.g., an object resting on spring scales, a paper clip placed between two magnets.* • Produce annotated drawings showing the direction in which forces are acting. • Understand and explain that when an object is submerged in	**Children will be able to:** • Compare and group • together a broad range of everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. • Know that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution. • Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. • Give reasons, based on evidence from comparative and fair tests, for the particular uses of	**Children will be able to:** • Recognise and explain the stages in the growth and development of humans. • Understand and explain the changes experienced in puberty. • Compare and contrast • the gestation periods of different animals compared to humans. • Describe differences in capabilities of newly born humans and other animals. • Recognise difference in the length of time humans and other animals are dependent upon parents. • Understand that if living things did not reproduce, they would eventually die out.	**Children will be able to:** • Explain the life cycle of plants, including flowers. • Describe the life process of reproductio n in some animals. • Understand and explain the different types of reproductio n in plants and animals. • Describe the differences in the life cycle of a mammal, an amphibian and insect and a bird. • Compare the life cycle of plants and animals in the local area and near the

	course of the day and where it is day and night. • Know the earth spins on its axis once every 24 hours. • Explain that the apparent movement of the Sun is a result of the Earth rotating or spinning. • Know that the Sun rises in the general direction of the East and sets in the general direction of the west and be able to draw simple graphs and identify patterns *e.g., sunrise gets earlier and earlier up to June and then it starts getting later; when sunrise gets earlier, sunset gets later so daylight gets longer* • Know state that a year is the time taken for the Earth to make one	water, the water provides an upward force (up thrust) on it which makes it appear to weigh less. • Understand and explain that air resistance slows moving objects and that when an object falls, air resistance acts in the opposite direction to the weight. • Recognise that some mechanisms including levers, pulleys and gears allow the smallest force to have greater effect. • Explain who Isaac • Newton was and why he is so famous	everyday materials, including metals, wood and plastic. • Demonstrate that dissolving, mixing and changes of state are reversible changes. • Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible including changes associated with burning and the action of vinegar on bicarbonate of soda. • Carry out a scientific investigation to investigate a specific question e.g., which material would be best suited to stopping ice cream from melting?		river with plants and animals found in contrasting climates • Explain the work of naturalists to help protect endangered species

	complete orbit of the Sun. • Be able to explain that the pattern and timescale of the changes in the Moon's appearance over 28 days is evidence that the Moon orbits the Earth once every 28 days.				

Year 6 Progression

	AUTUM 1	AUTUMN 2	SPRING 1 and 2	SUMMER 1	SUMMER 2
Unit of Work	**Light**	**Electricity**	**Evolution and Inheritance**	**Living Things and Their Habitats**	**Animals Including Humans**
Key Concepts	Objects can be seen because they either give out or reflect light. Light is scattered off objects and travels in straight lines. Light reflects off shiny surfaces in an orderly way, producing 'reflections' and reflected beams. White light can be split into different colours.	associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches use recognised symbols when representing a simple circuit in a diagram. Apply knowledge of circuitry to predict whether an electrical circuit will function and suggest ways of improving it. Design and accurately draw circuits to fulfil a brief	Plants and animals, or parts of them can be preserved as fossils. Variation between individuals of the same kind results from differences in their genes and the influence of the environment. Life forms have changed over very long periods of time.	Living things can be placed in groups according to their characteristics. Micro-organisms can grow and reproduce very rapidly in the right conditions Micro-organisms feed on nutrients and can make useful products or be a nuisance or occasionally dangerous	The human body is made up of organs and organ systems that have specific functions and interact with each other. Many factors, such as diet and exercise, affect the health of our bodies.
 **Key Question**	***How could you light up a dark room with just one light beam?***	***What are the requirements of designing and improving circuits?***	***What is the difference between adaptation and evolution?***	***Why is the classification of living things by biologists important?***	***What are the consequences of living an unhealthy lifestyle and how can we influence people to take better care of their health?***

Key Vocabulary 	Recap on vocabulary in Year 3 and introduce new words. light source, dark/darkness reflect/reflective, shadow, block, transparent, opaque, translucent, artificial, **refraction, spectrum**	**Recap on vocabulary introduced in Year 4 and introduce new words in bold** electricity, mains, plug, switch, circuit, components, cell, battery, buzzer, connection, conductor, insulator, appliance **terminal, voltage**	**evolution, inheritance, inherit, adaptation variation, characteristics, offspring, breeding, crossbreed, fossils**	**Recap on vocabulary introduced in Year 4 and introduce new words in bold** classification keys, environment, habitats, vertebrates, invertebrates, mammals, reptiles, amphibians, **organisms, micro-organisms, fungus, virus, arachnid, mollusc, crustacean**	**circulatory system, blood vessels, pumps, oxygen, carbon dioxide, lungs, heart, nutrients, drugs, exercise, lifestyle**

 **Key Skills**	• Ask a range of relevant and more complex questions and use different types of scientific enquiries to answer them. • Make a range of predictions based on sound scientific knowledge and understanding. Identify the key factors to be considered in a fair test. • Take measurements, using a range of scientific equipment, with increasing accuracy and precision. • Identify patterns in data collected. • Evaluate methods and results and suggest ways to improve them. • Communicate findings in oral and written form using correct scientific vocabulary. • Draw conclusions using more than one piece of evidence.	• Ask a range of relevant and more complex questions and use different types of scientific enquiries to answer them. • Identify the key factors to be considered in a fair test. • Gather, record, classify, analyse, and present data in a variety of ways to help in answering questions. • Record findings from fair tests using scientific diagrams and labels and scientific symbols to communicate ideas. • Draw conclusions based on evidence gathered from investigations undertaken. • Comment on ethical issues concerning electricity.	• Ask a range of relevant and more complex questions and use different types of scientific enquiries to answer them. • Recognise scientific questions that may not have an ultimate answer. • Distinguish between opinion and evidence related to science and understand that scientists must back up scientific ideas with evidence. • Gather, record, classify, analyse and present data in a variety of ways to help in answering questions. • Recognise more than one piece of evidence and recognise evidence can be interpreted in different ways by different people.	• Ask a range of relevant and more complex questions and use different types of scientific enquiries to answer them. Recognise scientific questions that may not have an ultimate answer. Gather, record, classify, analyse, and present data in a variety of ways to help in answering questions. • Understand scientists must back up scientific ideas with evidence. • Record data and results using scientific diagrams and labels, classification keys & tables. Report and present findings from enquiries, including conclusions and explanations, in oral and written forms using correct scientific vocabulary • Draw conclusions using more than one piece of evidence.	

	Reception			
	Development Matters	**ELG**	**How this achieved in EYFS**	**Sticky Knowledge: By the end of EYFS the children will know…**
Understanding the World **The Natural World**	**Reception:** • Learn new vocabulary • Ask questions to find out more and to check wat has been said to them • Articulate their ideas and thoughts in well-formed sentences. • Describe events in some detail. • Use talk to work out problems and organise thinking and activities. Explain how things work and why they might happen • Use new vocabulary in different contexts • Know and talk about different factors that support overall health and	**The Natural World** • Explore the natural world around them, making observations and drawing pictures of animals and plants. • Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. • Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. **Managing Self** • Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices.	**<u>Autumn Term:</u>** *All about me:* • Discussions around snack time and lunch time - healthy eating choices. • Discussions around healthy living choices including: washing hands, brushing teeth, eating and exercise. • Story time and circle time to explore books focusing on staying healthy and the human body: Funnybones, Germs, What makes me, me and The Little Book of Manners. • Naming body parts through songs: if you're happy and you know it and head, shoulders, knees and toes… • Explore looking after our community environment and recycling. • Discuss how we can help look after our local and world environments. • Observe and record what we see happening to trees in the autumn. • Talk about how food is harvested and explore planting and growing vegetables. *Celebrations and Seasonal changes – Autumn:* • Exploring school's grounds and observing seasonal changes in the Autumn. • Exploring natural autumnal resources in a Tuff Tray, asking questions and making/drawing observations. • Explore hibernation and migration, looking at contrasting environments/animals around the world in the autumn. • Explore harvest time in the UK and farming at harvest time.	**<u>Knowledge:</u>** • I know some foods that are healthy and not healthy. • I know why we need to wash our hands and brush our teeth. • I know some body parts and can say what they do. • I know the difference between animals and plants. • I know the names of different animals: from our country and far away. • I know the names of the four seasons. • I know what the weather is like in each of the seasons. • I know the main changes that happen in Autumn, Winter, Spring and Summer. • I know that ice melts when it gets hot. • I know that water turns into ice when it freezes. • I know that some animals sleep during the winter. • I know that the weather is different in different parts of the world. • I know that a plant needs light, soil and water to grow. • I know that plants die if they don't have enough water. • I know that some food grows on trees and some comes from plants on and under the ground. • I know that a tadpole becomes a frog and a caterpillar becomes a butterfly.

	wellbeing such as: regular physical activity, healthy eating, toothbrushing, sensible amounts of screen time, having a good sleep routine • Being a safe pedestrian. • Explore the natural world around them • Describe what they see, hear and feel whilst outside. • Recognise some environments that are different to the one in which they live. • Understand the effect of changing seasons on the natural world around them.	**Listening, Attention and Understanding** • Listen attentively and respond to what they hear with relevant questions, comments and actions when being read to and during whole class discussions and small group interactions. • Make comments about what they have heard and ask questions to clarify their understanding. • Hold conversation when engaged in back-and-forth exchanges with their teacher and peers. **Speaking** • Participate in small group, class, and one-to-one discussions, offering their own ideas, using recently introduced vocabulary. • Offer explanations for why things might happen, making use of recently introduced vocabulary from stories, non-fiction, rhymes and poems when appropriate. • Express their ideas and feelings about their experiences using full sentences, including use of past, present, and	• Observe seasonal weather changes and longer nights in the autumn compared to the summer. • Explore Winter through immersive theatre, guest speakers to share a winter themed show to discuss what we see and feel during the winter season. • Observe and explain decomposition of pumpkins. • Plant flowers and vegetables in the planters. **<u>Spring Term:</u>** *Seasonal Changes – Winter & Spring:* • To continue to explore schools' grounds and observing seasonal changes in the winter and how these changes to the spring. • Explore compare/contrast our environment with polar regions. • Discuss global warming and the impact on polar regions • Observe seasonal weather changes in the winter/spring (ice exploration) • Observe, question and draw spring plants/spring growth. • Explore natural spring resources in Tuff Tray, asking questions and making/drawing observations. • Spring walk around School grounds describing and discussing what is found. *Let's make a dinosaur* • Talk about palaeontologists, dig in sand for 'fossils' and dinosaur bones. • Explore dinosaurs from the past through non-fiction texts. Different characteristics of the dinosaurs such as herbivore, omnivore, carnivore. • Recounting the extinction of the dinosaurs using non-fiction texts. • Discuss what is a fossil. *Growing and changing* • Explore the life cycle of frogs and butterflies – make close observations of butterflies in the butterfly gardens, tadpoles in tanks, chick eggs in the incubator.	• I know that some materials float and some sink. • I know that some materials are more suited to jobs than others. • I know that my actions affect the world. **<u>Scientific skills: (See ELG)</u>** • Identifying sources of natural world (trees, and plants, food and fruit) and what they need to grow. • Identifying different animals and talking about their natural habitats and attributes • To identify some everyday materials and discuss how they have different purposes. • To understand there are 4 seasons in a year and our world changes during each season. **<u>Vocabulary:</u>** *All about me* • Healthy, unhealthy, germs, head, legs, arms, hands, feet, shoulders, face, eyes, ears, mouth, tongue, teeth heart, brain, bones, skin. *Let's make a dinosaur* • Carnivore, herbivore, omnivore, meat eater, plant eater, prey, predator, defend, attack, environment, extinct, endangered. *Growing and changing* • Life cycle, grow, change, tadpole, froglet, frog, larva, caterpillar, chrysalis, cocoon, butterfly, egg, incubate, warm, hatch, shell, feathers. • Dog, cat, fish, hamster, rabbit, cow, horse, sheep, goat, elephant, tiger, lion, crocodile, giraffe, chicks, kangaroo. • Plants, grow, soil, sunlight, fruit, vegetable, tree, flower, bush, water.

		future tenses and making use of conjunctions, with modelling and support from their teacher.	• Explore the life cycle of plants. • Still life observations and drawings of spring flowers. • Identify what a seed needs to grow. Experiment with growing cress. **<u>Summer Term:</u>** *Seasonal Changes – Summer:* • Exploring schools' grounds, observing and making drawings of seasonal changes in the summer. • Observe and record seasonal weather changes in the summer. Traditional Tales • Identifying what waterproof means and materials that are waterproof as we explore Little Red Riding Hood's cape. • Identifying materials that are strong for building home, what materials are best suited for different purposes and why. Transport – On the move • Explore how different materials can affect how vehicles travel, investigating which materials mean a train can travel further and the materials that stop the train from moving. • Identifying materials that are strong for building, that will carry heavy loads and last a long time and can be used to construct bridges. Compare different structures of bridges. • Explore how ice is formed and changes, freezing and melting. • Investigate light, talk about what light is and identify different sources of light. • Investigate animals that lay eggs, who give birth to young and those carrying animals in their pouch. • Talk about animals who live on land and those is the sea. Explore how some animals can breathe under water. • Explore rockpools and the sea life we can find in a rockpool. • Explore how rubbish and recycling impacts on our natural world and living things.	*Celebrations and Seasonal changes/Changes to our natural world* • Autumn, winter, spring, summer, weather, hot, cold, snowing, freezing, warm, wet, cloudy, rainy, fog, rainbow, harvest, farming, leaves, light, dark, desert, polar, weather diary, habitat, hibernate, migration, *Traditional Tales* • Material, float, sink, plastic, fabric, wood, strong, waterproof, bendy, light, rough, soft, *Transport – on the move* • Material, float, sink, plastic, fabric, wood, strong, waterproof, bendy, light. • Pollution, recycle, rubbish, environment, community.

	Year 1					
	AUTUMN 1	**AUTUMN 1**	**AUTUMN 2**	**SPRING**	**SUMMER 1**	**SUMMER 2**
Unit of Work	**Materials Linked to Geography Unit on weather and linked to seasons unit**	**Seasons (Project completed throughout the year)**	**Animals including humans (Linked to geography unit)**	**Animals –Pets**	**Plants**	**Completing the Unit on seasons and creating the book**
 **Key Question**	***How do we know when to use different materials for?***	***What's through our window?***	***How do living things grow and change?***	***Why do people have pets and what makes a good pet?***	***Why do we need to grow plants?***	***What's through our window?***
 **Key Vocabulary**	material, properties, stretchy, waterproof, absorbent, rough, smooth, fabrics, natural, man-made	season, autumn, winter, spring, summer, daylight, day length weather, sunlight, cloudy, frosty, thunder, storms,	bird, mammal, amphibian, fish, reptile, omnivore **herbivore, carnivore**, human, body parts, senses	pets, house trained, pet owner, diet, exercise	plant, flower, seeds, roots, stem, branch, leaves, petals, fruit,	season, autumn, winter, spring, summer, daylight, day length weather, sunlight, cloudy, frosty, thunder, storms,
 **Skills**	• Raise a range of simple scientific questions. • Respond to prompts by making some simple suggestions about how to find an answer.	• Ask simple scientific questions. • Use their senses and simple equipment to make simple observations. • Present evidence collected in simple ways: talking,	• Ask simple scientific questions. • Respond to prompts by making some simple suggestions about how to find an answer or make an observation.	• Raise simple scientific questions. • Draw on their everyday experiences to help answer questions raised. • Classify pets according to their characteristics.	• Raise a range of simple scientific questions. • Draw on their everyday experiences to help answer questions. • Say what changed when they made their observations. • Use simple scientific vocabulary to describe	• Ask simple scientific questions. • Use their senses and simple equipment to make simple observations. • Present evidence collected in simple ways:

	• Use simple scientific • vocabulary to describe their ideas and observations • Recognise how simple scientific ideas can help us in real life. • Present evidence collected in simple ways.	drawing, simple charts • Use simple scientific vocabulary to communicate changes in the seasons. • Explain what they have learnt at the end of a unit in simple terms.	• Recognise basic features of living things. • Sort and group living things. • Use simple scientific vocabulary to describe their ideas and observations • Present evidence collected in simple ways: talking, drawing, simple charts, diagrams	• Use simple scientific vocabulary to describe their ideas and observations • Explain what they have learnt at the end of a unit in simple terms.	• their ideas and observations • Present evidence collected in simple ways.	talking, drawing, simple charts • Use simple scientific vocabulary to communicate changes in the seasons. • Explain what they have learnt at the end of a unit in simple terms.
Knowledge	• Begin to explore the world around them and raise some of their own simple questions. • Begin to experience different types of science enquiries, including practical activities.	• Begin to explore the world around them and raise some of their own simple questions. • Begin to experience different types of science enquiries, including practical activities.	• Begin to explore the world around them and raise some of their own simple questions. • Begin to experience different types of science enquiries, including practical activities.	• Begin to explore the world around them and raise some of their own simple questions. • Begin to experience different types of science enquiries, including practical activities. • With support, begin to recognise	• Begin to explore the world around them and raise some of their own simple questions. • Begin to experience different types of science enquiries, including practical activities. • With support, begin to recognise different ways in which they might answer scientific questions.	• Begin to explore the world around them and raise some of their own simple questions. • Begin to experience different types of science enquiries, including practical activities.

	• With support, begin to recognise different ways in which they might answer scientific questions. • Carry out simple tests with guidance of an adult. • Use simple features to compare objects, materials and living things and, with help, begin to decide how to sort and group them (identifying and classifying). • Use simple features to compare objects, materials and living things and, with help, decide how to sort and group	• With support, begin to recognise different ways in which they might answer scientific questions. • Carry out simple tests with guidance of an adult. • Use simple features to compare objects, materials and living things and, with help, begin to decide how to sort and group them (identifying and classifying). • Use simple features to compare objects, materials and living things and, with help, decide how to sort and group them (identifying and classifying).	• With support, begin to recognise different ways in which they might answer scientific questions. • Carry out simple tests with guidance of an adult. • Use simple features to compare objects, materials and living things and, with help, begin to decide how to sort and group them (identifying and classifying). • Use simple features to compare objects, materials and living things and, with help, decide how to sort and group them	different ways in which they might answer scientific questions. • Carry out simple tests with guidance of an adult. • Use simple features to compare objects, materials and living things and, with help, begin to decide how to sort and group them (identifying and classifying). • Use simple features to compare objects, materials and living things and, with help, decide how to sort and group them (identifying and classifying). • Observe closely using simple equipment (hand lenses) with help, observe changes over time. • With guidance they should begin	• Carry out simple tests with guidance of an adult. • Use simple features to compare objects, materials and living things and, with help, begin to decide how to sort and group them (identifying and classifying). • Use simple features to compare objects, materials and living things and, with help, decide how to sort and group them (identifying and classifying). • Observe closely using simple equipment (hand lenses) with help, observe changes over time. • With guidance they should begin to recognise simple relationships. • Use simple measurements and equipment (e.g. egg timer) to gather data. • Record simple data in a table provided.	• With support, begin to recognise different ways in which they might answer scientific questions. • Carry out simple tests with guidance of an adult. • Use simple features to compare objects, materials and living things and, with help, begin to decide how to sort and group them (identifying and classifying). • Use simple features to compare objects, materials and living things and, with help, decide how to sort and group them

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	Year 2					
	AUTUMN 1	**AUTUMN 2**	**SPRING 1**	**SPRING 2**	**SUMMER 1 and 2**	
Unit of Work	**Materials (Linked to History Unit)**	**Sound (Linked to geography project)**	**Living Things and their Habitats. (Linked to Geography Unit)**	**Animals including humans**	**Plants (Seeds planted in Spring 2)**	**Unit of Work**
Enquiry Question	***How do the properties of materials determine what they are used for?***	***How does sound affect our lives?***	***How do living things depend on each other?***	***Why do we need to be careful about what we eat and why do we need to exercise?***	***Why are plants important for humans to survive and thrive?***	
Key Vocabulary	**Recap on vocabulary from Year 1** Introduce **hard, soft, rigid, flexible, fireproof, transparent, opaque translucent, non-**	**sound, high, low, loud, soft quiet, silence, direction, vibrate**	**living, dead, not alive, habitat, micro –habitat, offspring, pond, woodland, forest, food chain, basic needs**	**offspring, adult, growth, survival, diet, food types, exercise, hygiene, healthy, medicine**	Recap on vocabulary from Year 1: **plant, flower, seeds, roots, stem, branch, leaves, petals, fruit,** and introduce: **bulb, shoot, seedling, soil,**	

	reflective suitable, unsuitable				**earth, growth, fully grown, wither, survive**
 **Skills**	• Raise a range of simple scientific questions. • Make some suggestions about how to find things out or how to collect data to answer a question they are investigating. • Identify things to observe that are relevant to the questions they are investigating. • Use simple scientific vocabulary to describe their ideas and observations. • Identify how knowledge gathered about materials is helpful in everyday life • Present their ideas and evidence in different ways.	• Raise a range of simple scientific questions. • Make some suggestions about how to find things out or how to collect data to answer a question they are investigating. • Identify things to measure or observe that are relevant to the question they are investigating. • Perform simple tests to explore and answer questions raised. • Use simple scientific vocabulary to describe their ideas and observations. • Present their ideas and evidence in different ways.	• Raise a range of simple scientific questions. • Make some suggestions about how to find things out or how to collect data to answer a question they are investigating. • Sort and group living things based on their features. • Draw on their observations, evidence and ideas to offer answers to questions. • Use simple scientific vocabulary to describe their ideas and observations. • Present their ideas and evidence in different ways.	• Raise a range of simple scientific questions. • Make some suggestions about how to find things out or how to collect data to answer a question they are investigating. • Use simple scientific vocabulary to describe their ideas and observations. • Compare and contrast foods and sort by a given and own criteria. • Present their ideas and evidence in different ways.	• Raise a range of simple scientific questions. • Be able to measure and observe growth of plants over time using equipment provided • Draw on their observations, evidence, and ideas to offer answers to questions. • Present their ideas and evidence in appropriate ways, including diagrams, charts, photos which are annotated.
knowledge	• Explore the world around them and raise their own simple questions. • Experience different types of science	• Explore the world around them and raise their own simple questions. • Experience different types of science	• Explore the world around them and raise their own simple questions. • Experience different types of science	• Explore the world around them and raise their own simple questions. • Experience different types of science	• Explore the world around them and raise their own simple questions. • Experience different types of science

	enquiries, including practical activities. • Begin to recognise different ways in which they might answer scientific questions. • Carry out simple tests. • Use simple features to compare objects, materials and living things and, with help, decide how to sort and group them (identifying and classifying). • Use simple features to compare objects, materials and living things and independently decide how to sort and group them (identifying and classifying). • Observe closely using simple equipment (hand lenses and easiscopes) with help, observe changes over time. • With increasing independence, they should begin to recognise simple relationships.	enquiries, including practical activities. • Begin to recognise different ways in which they might answer scientific questions. • Carry out simple tests. • Use simple features to compare objects, materials and living things and, with help, decide how to sort and group them (identifying and classifying). • Use simple features to compare objects, materials and living things and independently decide how to sort and group them (identifying and classifying). • Observe closely using simple equipment (hand lenses and easiscopes) with help, observe changes over time. • With increasing independence, they should begin to recognise simple relationships.	enquiries, including practical activities. • Begin to recognise different ways in which they might answer scientific questions. • Carry out simple tests. • Use simple features to compare objects, materials and living things and, with help, decide how to sort and group them (identifying and classifying). • Use simple features to compare objects, materials and living things and independently decide how to sort and group them (identifying and classifying). • Observe closely using simple equipment (hand lenses and easiscopes) with help, observe changes over time. • With increasing independence, they should begin to recognise simple relationships.	enquiries, including practical activities. • Begin to recognise different ways in which they might answer scientific questions. • Carry out simple tests. • Use simple features to compare objects, materials and living things and, with help, decide how to sort and group them (identifying and classifying). • Use simple features to compare objects, materials and living things and independently decide how to sort and group them (identifying and classifying). • Observe closely using simple equipment (hand lenses and easiscopes) with help, observe changes over time. • With increasing independence, they should begin to recognise simple relationships • Use simple measurements and	enquiries, including practical activities. • Begin to recognise different ways in which they might answer scientific questions. • Carry out simple tests. • Use simple features to compare objects, materials and living things and, with help, decide how to sort and group them (identifying and classifying). • Use simple features to compare objects, materials and living things and independently decide how to sort and group them (identifying and classifying). • Observe closely using simple equipment (hand lenses and easiscopes) with help, observe changes over time. • With increasing independence, they should begin to

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