Hurst Hill Primary School – Science Overview

At Hurst Hill, we nurture young scientists by fostering curiosity and developing strong scientific knowledge and enquiry skills. Children learn to investigate, observe and evaluate confidently, understanding how science shapes the past, present and future while building firm foundations for lifelong scientific learning.

Year Group	Plants	Animals including humans	Living things and their habitats		Materials	Seasonal change		Rocks	Light	Electricity	Sound	Forces	Earth and space	Evolution and inheritance
EYFS			Spring 1&2	Summer 1&2		Autumn 1&2								
1	Summer 1	Spring 1&2			Autumn 1 *	Autumn 2	Summer 2							
2	Spring 2 *	Spring 1	Summer 1&2		Autumn 1 & 2 *									
3	Autumn 2 *	Autumn 1						Summer 1	Summer 2 *			Spring 1&2 *		
4		Autumn 2 *	Autumn 1		Summer 2 *					Spring 1&2 *	Summer 1 *			
5		Summer 1&2 *			Autumn 2 *							Spring 1&2 *	Autumn 1	
6		Summer 1&2 *	Autumn 1 *						Spring 1&2 *					Autumn 2

- Indicates a fair test will be done during that unit of work.

EYFS

	Seasonal changes	Living things and their habitats
Term to be taught	Autumn term	Spring and summer term
National Curriculum	ELG: The Natural World. Children at the expected level of development will: • Explore the natural world around them, making observations and drawing pictures of animals and plants. • Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. • Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter	ELG: The Natural World. Children at the expected level of development will: • Explore the natural world around them, making observations and drawing pictures of animals and plants. • Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. • Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter
Vocabulary	Winter, summer, spring, autumn, hot, cold, sunny, raining, frosty.	Winter, summer, spring, autumn, hot, cold, sunny, raining, frosty.

Year 1

	Everyday Materials	Seasonal Changes		

Term to be taught	Autumn	Autumn & Summer		
Prior knowledge	*See EYFS*	*See EYFS*		
National Curriculum	-Distinguish between an object and the material from which it is made. -Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. -Describe the simple physical properties of a variety of everyday materials. -Compare and group together a variety of everyday materials on the basis of their simple physical properties.	-Observe changes across the four seasons. -Observe and describe weather associated with the seasons and how day length varies.		
Vocabulary	Absorbent, bendy, dull, elastic, man-made, metal, natural, opaque, plastic, rough, shiny, smooth, soft, stiff, stretchy, transparent, waterproof.	Autumn, chilly, cold, day length, day light, deciduous, freeze, frost, ice, months, rain, season, snow, spring, summer, sunny, temperature, warm, weather, windy, winter.		
Texts	-Everyday materials -I see science materials	-A Stroll Through the Seasons -What Do You See When You Look At A Tree? -Seasons		
Experiments	Can I identify which materials stretch the most when mass is added to them? Can I identify which materials are the most absorbent?	**seasonal observations**		
Non-statutory guidance	Pupils should explore, name, discuss and raise and answer questions about everyday materials so that they become familiar with the names of materials and properties such as: hard/soft; stretchy/stiff; shiny/dull; rough/smooth; bendy/not bendy; waterproof/not waterproof; absorbent/not absorbent; opaque/transparent. Pupils should explore and experiment with a wide variety of materials, not only those listed in the programme of study, but including for example: brick, paper, fabrics, elastic, foil.	Pupils should observe and talk about changes in the weather and the seasons. Note: Pupils should be warned that it is not safe to look directly at the Sun, even when wearing dark glasses.		
Working scientifically	Pupils might work scientifically by: -performing simple tests to explore questions,	Pupils might work scientifically by: -making tables and charts about the weather.		

	for example: ‘What is the best material for an umbrella? ...for lining a dog basket? ...for curtains? ...for a bookshelf? ...for a gymnast’s leotard?’	-making displays of what happens in the world around them, including day length, as the seasons change.		

Year 2

	Everyday Materials			
Term to be taught	Autumn 1 & 2			
Prior knowledge	*See Year 1*			
National Curriculum	-Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. -Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.			
Vocabulary	Absorbent, bendy, elastic, fabrics, man-made, natural, opaque, properties, recyclable, rough, shiny, smooth, soft, squash, stiff, stretchy, transparent, twist, waterproof.	.		
Texts	STEM Hansel and Gretel KS1 Science Year 2 Workout – Use of Materials STEM Three Little Pigs			
Experiments	Can I compare which materials? (little pig’s roof, bounciest ball, making bridges,			
Non-statutory guidance	Pupils should identify and discuss the uses of different everyday materials so that they become familiar with how some materials are used for more than one thing (metal can be used for coins, cans, cars and table legs; wood can be used for matches, floors, and telegraph poles) or different materials are used for the same thing (spoons can be made			

	from plastic, wood, metal, but not normally from glass). They should think about the properties of materials that make them suitable or unsuitable for particular purposes and they should be encouraged to think about unusual and creative uses for everyday materials. Pupils might find out about people who have developed useful new materials for example John Dunlop, Charles Macintosh or John McAdam.			
Working scientifically	Pupils might work scientifically by: comparing the uses of everyday materials in and around the school with materials found in other places (at home, the journey to school, on visits, and in stories, rhymes and songs); observing closely, identifying and classifying the uses of different materials, and recording their observations.			

Year 3

	Plants	Animals Including Humans		
Term to be taught	Autumn 2	Autumn 1		
Prior knowledge	*See year 1 / 2*	*See year 1 / 2*		
National Curriculum	-identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers -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 -investigate the way in which water is transported within plants -explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	-identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat -identify that humans and some other animals have skeletons and muscles for support, protection and movement.		
Vocabulary	Absorb, anther, carbon dioxide, climate zone, deciduous, dispersed, dissect, ever green, fertilisation, flower, fruit, germination, healthy, lifecycle, nutrients,	Back bone, bones, contract, elbow, endoskeleton, exoskeleton, joints, muscles, organs, skeleton, tendons, vertebrate.		

	ovule, pollen, pollination, roots, stigma, vegetation, wild.			
Texts	Eddie's Garden and How to Make Things Grow A Seed Is Sleepy The Boy Who Grew Dragons	Skin, Muscles and Bones Muscles & Bones The Skeleton Inside You		
Experiments	Can I explain what plants need to grow?			
Non-statutory guidance	Pupils should be introduced to the relationship between structure and function: -the idea that every part has a job to do. -They should explore questions that focus on the role of the roots and stem in nutrition and support, leaves for nutrition and flowers for reproduction. Note: Pupils can be introduced to the idea that plants can make their own food, but at this stage they do not need to understand how this happens.	Pupils should continue to learn about the importance of nutrition and should be introduced to the main body parts associated with the skeleton and muscles, finding out how different parts of the body have special functions.		
Working scientifically	Pupils might work scientifically by: comparing the effect of different factors on plant growth, for example, the amount of light, the amount of fertiliser; discovering how seeds are formed by observing the different stages of plant life cycles over a period of time; looking for patterns in the structure of fruits that relate to how the seeds are dispersed. They might observe how water is transported in plants, for example, by putting cut, white carnations into coloured water and observing how water travels up the stem to the flowers.	Pupils might work scientifically by: identifying and grouping animals with and without skeletons and observing and comparing their movement; exploring ideas about what would happen if humans did not have skeletons. They might compare and contrast the diets of different animals (including their pets) and decide ways of grouping them according to what they eat. They might research different food groups and how they keep us healthy and design meals based on what they find out.		

Year 4

	Animals Including Humans	Living Things and Their Habitats		
Term to be taught	Autumn 2	Autumn 1		
Prior knowledge	*See year 3*	*See year 2* (not covered in NC year 3)		
National Curriculum	-describe the simple functions of the basic parts of the digestive system in humans -identify the different types of teeth in humans and their simple functions -construct and interpret a variety of food chains, identifying producers, predators and prey.	-recognise that living things can be grouped in a variety of ways -explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment -recognise that environments can change and that this can sometimes pose dangers to living things.		
Vocabulary	Absorb, canine, carnivore, decay, digestion, enamel, excretion, faeces, herbivore, incisor, ingested, intestines, molar, muscles, nutrition, oesophagus, omnivore, organ, plaque, premolar, saliva.	Biomes, carnivore, classification key, deciduous, evergreen, food chain, habitat, herbivore, invertebrate, micro habitat, mini beast, omnivore, organism, urban, vegetation, vertebrate.		
Texts	Your Growing Guts Dental Anatomy Colouring book Brilliant Human Body	Animal Classification Vertebrates vs Invertebrates Who Might You Be?		
Experiments	Can I observe how a egg shell/tooth/chicken bone changes when it is left in cola?			
Non-statutory guidance	Pupils should be introduced to the main body parts associated with the digestive system, for example, mouth, tongue, teeth, oesophagus, stomach and small and large intestine and explore questions that help them to understand their special functions.	Pupils should use the local environment throughout the year to raise and answer questions that help them to identify and study plants and animals in their habitat. They should identify how the habitat changes throughout the year. Pupils should explore possible ways of grouping a wide selection of living things that include animals and flowering plants and non-flowering plants. Pupils could begin to put vertebrate animals into groups such as		

		fish, amphibians, reptiles, birds, and mammals; and invertebrates into snails and slugs, worms, spiders, and insects. Note: Plants can be grouped into categories such as flowering plants (including grasses) and non-flowering plants, such as ferns and mosses. Pupils should explore examples of human impact (both positive and negative) on environments, for example, the positive effects of nature reserves, ecologically planned parks, or garden ponds, and the negative effects of population and development, litter or deforestation.		
Working scientifically	Pupils might work scientifically by: comparing the teeth of carnivores and herbivores, and suggesting reasons for differences; finding out what damages teeth and how to look after them. They might draw and discuss their ideas about the digestive system and compare them with models or images.	Pupils might work scientifically by: using and making simple guides or keys to explore and identify local plants and animals; making a guide to local living things; raising and answering questions based on their observations of animals and what they have found out about other animals that they have researched.		

Year 5

	Properties and Changes of Materials	Earth and Space		
Term to be taught	Autumn 2	Autumn 1		
Prior knowledge	*See year 4*	*See seasonal changes – Year 1*		
National Curriculum	-compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets -know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.-use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and	-describe the movement of the Earth, and other planets, relative to the Sun in the solar system - describe the movement of the Moon relative to the Earth -describe the Sun, Earth and Moon as approximately spherical bodies -use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.		

	evaporating give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. - demonstrate that dissolving, mixing and changes of state are reversible changes -explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, - including changes associated with burning and the action of acid on bicarbonate of soda.			
Vocabulary	Circuit, condensation, conductor, dissolves, electricity, evaporation, filtering, flexible, gas, insoluble, insulator, irreversible, liquid, melting, particles, permeable, process, properties, rate, resistance, reversible, solid, soluble, solution, state, temperature, thermal, transparent, variable.	.Asteroid, axis, comet, galaxy, gravity, leap year, meteorite, orbit, planet, shadow, solar system, sphere, spin, star, time zones, universe.		
Texts	States of Matter Changing Materials	100 things to know about space Learn about space Science in a flash		
Experiments	Can I identify which materials would be most effective for making a warm jacket? Can I conduct a fair test to explore which type of sugar dissolves the fastest?	*observing over time*		
Non-statutory guidance	Pupils should build a more systematic understanding of materials by exploring and comparing the properties of a broad range of materials, including relating these to what they learnt about magnetism in year 3 and about electricity in year 4. They should explore reversible changes, including, evaporating, filtering, sieving, melting and dissolving, recognising that melting and dissolving are different processes. Pupils should explore changes that are difficult to reverse, for example, burning, rusting and other reactions, for example, vinegar with bicarbonate of soda. They should find out about how chemists create new materials, for example, Spencer Silver, who invented the	Pupils should be introduced to a model of the Sun and Earth that enables them to explain day and night. Pupils should learn that the Sun is a star at the centre of our solar system and that it has eight planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune (Pluto was reclassified as a 'dwarf planet' in 2006). They should understand that a moon is a celestial body that orbits a planet (Earth has one moon; Jupiter has four large moons and numerous smaller ones). Note: Pupils should be warned that it is not safe to look directly at the Sun, even when wearing dark glasses. Pupils should find out about the way that ideas about the solar system have developed,		

	glue for sticky notes or Ruth Benerito, who invented wrinkle-free cotton. Pupils are not required to make quantitative measurements about conductivity and insulation at this stage. It is sufficient for them to observe that some conductors will produce a brighter bulb in a circuit than others and that some materials will feel hotter than others when a heat source is placed against them. Safety guidelines should be followed when burning materials.	understanding how the geocentric model of the solar system gave way to the heliocentric model by considering the work of scientists such as Ptolemy, Alhazen and Copernicus.		
Working scientifically	Pupils might work scientifically by: carrying out tests to answer questions, for example, 'Which materials would be the most effective for making a warm jacket, for wrapping ice cream to stop it melting, or for making blackout curtains?' They might compare materials in order to make a switch in a circuit. They could observe and compare the changes that take place, for example, when burning different materials or baking bread or cakes. They might research and discuss how chemical changes have an impact on our lives, for example, cooking, and discuss the creative use of new materials such as polymers, super-sticky and super-thin materials.	Pupils might work scientifically by: comparing the time of day at different places on the Earth through internet links and direct communication; creating simple models of the solar system; constructing simple shadow clocks and sundials, calibrated to show midday and the start and end of the school day; finding out why some people think that structures such as Stonehenge might have been used as astronomical clocks.		

Year 6

Term to be taught				
Prior knowledge				
National Curriculum				
Vocabulary		.		

Texts				
Experiments				
Non-statutory guidance				
Working scientifically				