Holywell Primary School

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we are a learning community with the spirit to succeed

Subject coverage- Science

Year group	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Nursery		Communication and Language	• Understand 'why' questions, like: "Why do you think the caterpillar got so fat?"			
		Physical Development	• Make healthy choices about food, drink, activity and toothbrushing.			
		Understanding the World	• Use all their senses in hands-on exploration of natural materials. • Explore collections of materials with similar and/or different properties. • Talk about what they see, using a wide vocabulary. • Begin to make sense of their own life-story and family's history. • Explore how things work. • Plant seeds and care for growing plants. • Understand the key features of the life cycle of a plant and an animal. • Begin to understand the need to respect and care for the natural environment and all living things. • Explore and talk about different forces they can feel. • Talk about the differences between materials and changes they notice.			

Reception

Communication and Language	• Learn new vocabulary. • Ask questions to find out more and to check what 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.
Physical Development	• Know and talk about the different factors that support their overall health and wellbeing: - regular physical activity - healthy eating - toothbrushing - sensible amounts of 'screen time' - having a good sleep routine - being a safe pedestrian
Understanding the World	• Explore the natural world around them. • Describe what they see, hear and feel while they are 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.

ELG

Communication and Language	Listening, Attention and Understanding	• Make comments about what they have heard and ask questions to clarify their understanding.
Personal, Social and Emotional Development	Managing Self	• Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices.
Understanding the World	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.

<table>
<tr><td>Scientific Enquiry Skills Coverage and examples</td><td colspan="5"><u>EYFS Enquiry Skills</u>
These skills should be taught throughout Nursery and Reception dependent on the learning being carried out:

• Sorting and Matching Things
• Finding Things that are similar or different
• Being curious and starting to ask questions
• Performing simple tests and using equipment
• Using senses to observe and look closely
• Looking closely at things and noticing changes
• Making simple records of what I notice or how things change
• Talking about what I have done and noticed</td></tr>
<tr><td>Year 1</td><td><u>Animals including Humans</u>
Identify and name a variety of common animals including fish, amphibians, reptiles, birds and</td><td><u>Seasonal Changes</u>
Autumn to Winter
Observe changes across the four seasons.
Observe and describe weather associated with</td><td><u>Materials and their Properties (Everyday Materials)</u>
Distinguish between an object and the material from which it is</td><td><u>Animals including Humans</u>
Identify, name, draw and label the basic parts of the human body and say which part of the body is</td><td><u>Plants</u>
Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.
Identify and describe the basic structure of a variety of common flowering plants, including trees.</td></tr>
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	mammals. Identify and name a variety of common animals that are carnivores, herbivores and omnivores. Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets).	the seasons and how day length varies. ***NS**- 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.*	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. ***NS**- 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;*	associated with each sense.	***NS**- Pupils should use the local environment throughout the year to explore and answer questions about plants growing in their habitat. Where possible, they should observe the growth of flowers and vegetables that they have planted.* *They should become familiar with common names of flowers, examples of deciduous and evergreen trees, and plant structures (including leaves, flowers (blossom), petals, fruit, roots, bulb, seed, trunk, branches, stem).* *Pupils might work scientifically by: observing closely, perhaps using magnifying glasses, and comparing and contrasting familiar plants; describing how they were able to identify and group them, and drawing diagrams showing the parts of different plants including trees.* *Pupils might keep records of how plants have changed over time, for example the leaves falling off trees and buds opening; and compare and contrast what they have found out about different plants.*

			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 might work scientifically by: performing simple tests to explore questions, 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?'*		
Scientific Enquiry Skills Coverage and examples	Looking for patterns- sorting and grouping Using books, videos, the Internet, people and photos to find answers	Asking questions Looking for patterns- sorting and grouping Using books, videos, the Internet, people and photos to find answers	Asking questions Looking for patterns- sorting and grouping Recording information Observing and measuring (with support)	Looking for patterns- sorting and grouping Using books, videos, the Internet, people and photos to find answers	Asking questions Looking for patterns- sorting and grouping Recording information Using books, videos, the Internet, people and photos to find answers

			Saying why a test is unfair (adult let/ class discussion) Performing simple tests and use equipment (with support)			
Year 2	**<u>Living things and their Habitats</u>** Explore and compare the differences between things that are living, dead, and things that have never been alive. Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of	**<u>Materials (Use of Everyday Materials)</u>** 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	**<u>Animals including Humans</u>** Notice that animals, including humans, have offspring which grow into adults Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. ***NS**- Pupils should be introduced to the basic needs of animals for survival, as well as the importance of exercise and nutrition for humans. They should also be introduced to the processes of reproduction and growth in animals. The focus at this stage should be on questions that help pupils to recognise growth; they should not be expected to understand how reproduction occurs.*		**<u>Plants</u>** Observe and describe how seeds and bulbs grow into mature plants. Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. ***NS**- Pupils should use the local environment throughout the year to observe how*	**<u>Mammals, Growth and Health (an extension of Animals including Humans)</u>** Find out about and describe the basic needs of animals, including humans, for survival (water, food and air).

	different kinds of animals and plants, and how they depend on each other. Identify and name a variety of plants and animals in their habitats, including microhabitats. 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. ***NS**- Pupils should be introduced to the idea that all living things have certain characteristics that are essential for keeping them alive and healthy. They should raise and answer questions that help them to become familiar with the life*	from some materials can be changed by squashing, bending, twisting and stretching. ***NS**- 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*		*different plants grow. Pupils should be introduced to the requirements of plants for germination, growth and survival, as well as to the processes of reproduction and growth in plants.*	

	processes that are common to all living things. Pupils should be introduced to the terms 'habitat' (a natural environment or home of a variety of plants and animals) and 'micro-habitat' (a very small habitat, for example for woodlice under stones, logs or leaf litter). They should raise and answer questions about the local environment that help them to identify and study a variety of plants and animals within their habitat and observe how living things depend on each other, for example, plants serving as a source of food and shelter for animals. Pupils should compare animals in familiar habitats with animals found in less familiar habitats, for example, on the seashore, in woodland, in the ocean, in the rainforest.	*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.*			
Scientific Enquiry Skills Coverage and examples	Asking questions Looking for patterns- sorting and grouping	Asking questions Looking for patterns- sorting and grouping	Asking questions Looking for patterns- sorting and grouping	Asking questions Recording information	Asking questions Using books, videos, the Internet, people

		Recording information Observing and measuring (with support) Saying why a test is unfair Performing simple tests and use equipment (with support)	Using books, videos, the Internet, people and photos to find answers Observing and measuring Saying why a test is unfair Performing simple tests and use equipment (exercise)	Using books, videos, the Internet, people and photos to find answers Observing and measuring Performing simple tests and use equipment	and photos to find answers
Year 3	**<u>Animals including Humans</u>** 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.	**<u>Forces and Magnets</u>** Compare how things move on different surfaces. Notice that some forces need contact between two objects, but magnetic forces can act at a distance. Observe how magnets	**<u>Rocks</u>** Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. Describe in simple terms how fossils are formed when things that have lived are trapped within rock. Recognise that soils are made from rocks and organic matter. .	**<u>Light</u>** Recognise that they need light in order to see things and that dark is the absence of light. Notice that light is reflected from surfaces. Recognise that light from the sun can be dangerous and that there	**<u>Plants</u>** 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,

	Identify that humans and some other animals have skeletons and muscles for support, protection and movement. ***NS**- 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.*	attract or repel each other and attract some materials and not others. Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials. Describe magnets as having two poles. Predict whether two magnets will attract or repel each other, depending on which poles are facing.		are ways to protect their eyes. Recognise that shadows are formed when the light from a light source is blocked by an opaque object. Find patterns in the way that the size of shadows change. ***NS**- Pupils should explore what happens when light reflects off a mirror or other reflective surfaces, including playing mirror games to help them to answer questions about how light behaves. They should think about why it is important to protect their eyes from bright lights. They should look for, and measure, shadows, and find out*	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. ***Scientist: George Washington Carver***

				how they are formed and what might cause the shadows to change	
Scientific Enquiry Skills Coverage and examples	Asking relevant questions Looking for patterns- identifying and classifying	Setting up enquiries and choosing equipment Setting up fair tests (with help) Carefully observing and accurately measuring **With support, be able to explain results- drawing conclusions** and using results	Asking relevant questions Recognising when to use other sources of information to find answers Looking for patterns- identifying and classifying	Setting up enquiries and choosing equipment Setting up fair tests (with help) Carefully observing and accurately measuring **Choosing** how to record information- tables, tally charts, Venn and Carroll diagrams and bar charts	Asking relevant questions Setting up enquiries and choosing equipment Setting up fair tests (with help) Carefully observing and accurately measuring **Choosing** how to record information- tables, tally charts, Venn and Carroll diagrams and bar charts

						Explaining results- drawing conclusions and using results
Year 4	**Living things and their Habitats** Recognise that living things can be grouped in a variety of ways. Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. Recognise that environments can change and that this can sometimes pose dangers to living things.	**Animals including Humans** Describe the simple functions of the basic parts of the digestive system in humans. Identify the different types of teeth in humans and their simple functions. Construct and interpret a variety of food chains, identifying producers, predators and prey.	**Electricity** Identify common appliances that run on electricity. Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery.	**Sound** Identify how sounds are made, associating some of them with something vibrating. Recognise that vibrations from sounds travel through a medium to the ear. Find patterns between the pitch of a sound and features of the object that produced it. Find patterns between the volume of a sound and the strength of the vibrations that produced it. Recognise that sounds get fainter as the distance from the sound source increases. ***NS-*** *Pupils should explore and identify the way sound is made through vibration in a range of different*	**States of Matter** Compare and group materials together, according to whether they are solids, liquids or gases Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. **NS**- Pupils should explore a variety of everyday materials and develop simple descriptions of the states of matter (solids hold their shape; liquids form a pool not a pile; gases escape

			Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. Recognise some common conductors and insulators, and associate metals with being good conductors *NS- Pupils should construct simple series circuits, trying different components, for example, bulbs, buzzers and motors, and including switches, and use their circuits to create simple devices. Pupils should draw the circuit as a pictorial representation, not necessarily using conventional circuit symbols at this stage; these will be introduced in year 6.*	*musical instruments from around the world; and find out how the pitch and volume of sounds can be changed in a variety of ways* **Scientist**: Alexander Graham Bell	from an unsealed container). Pupils should observe water as a solid, a liquid and a gas and should note the changes to water when it is heated or cooled.

Scientific Enquiry Skills Coverage and examples	Asking relevant questions Looking for patterns- identifying and classifying	Setting up enquiries and choosing equipment Setting up fair tests (with help) Carefully observing and accurately measuring **Choosing** how to record information- tables, tally charts, Venn and Carroll diagrams and bar charts **With support, be able to explain results- drawing conclusions** and using results	Asking relevant questions Setting up enquiries and choosing equipment Setting up fair tests (with help) Carefully observing and accurately measuring **Choosing** how to record information- tables, tally charts, Venn and Carroll diagrams and bar charts **Explaining results- drawing conclusions** and using results	Asking relevant questions Recognising when to use other sources of information to find answers Looking for patterns- identifying and classifying	Asking relevant questions Setting up enquiries and choosing equipment Setting up fair tests (with help) Carefully observing and accurately measuring **Explaining results- drawing conclusions** and using results

Year 5	**Properties and changes of Materials** Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. Demonstrate that dissolving, mixing and changes of state are reversible changes. Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.	**Earth and Space** 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. **Scientist**: Dr Maggie Aderin-Pocock	**Living Things ad the Habitats (Plants Focus)** Describe the life process of reproduction in some plants. Pupils should find out about different types of reproduction, including sexual and asexual reproduction in plants, and sexual reproduction in animals. **Non-Statutory:** Pupils might work scientifically by: observing and comparing the life cycles of plants and animals in their local environment with other plants and animals around the world (in the rainforest, in the	**Forces and Magnets** Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. Identify the effects of air resistance, water resistance and friction that act between moving surfaces. Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. **Scientist**: Sir Isaac Newton	**Animals including Humans** Describe the changes as humans develop to old age. Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird Describe the life process of reproduction in some plants and animals

			oceans, in desert areas and in prehistoric times), asking pertinent questions and suggesting reasons for similarities and differences. They might try to grow new plants from different parts of the parent plant, for example, seeds, stem and root cuttings, tubers, bulbs. They might observe changes in an animal over a period of time (for example, by hatching and rearing chicks), comparing how different animals reproduce and grow.		

Scientific Enquiry Skills Coverage and examples	Accurately taking measurements using Scientific Equipment Using and developing keys to identify and classify living things and materials Using Scientific language to draw conclusions Evaluating plans and results and suggesting improvements		Using Scientific Knowledge to ask questions Recognising when to use other sources to answer questions and separating opinion from fact	Using Scientific Knowledge to ask questions Recognising when to use other sources to answer questions and separating opinion from fact	Accurately taking measurements using Scientific Equipment Using Scientific language to draw conclusions Evaluating plans and results and suggesting improvements	Using Scientific Knowledge to ask questions Recognising when to use other sources to answer questions and separating opinion from fact
Year 6	**<u>Animals including Humans</u>** Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. Recognise the impact of diet, exercise, drugs and lifestyle on	**<u>Inheritance and Evolution</u>** Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. Recognise that living things produce offspring	**<u>Electricity</u>** 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. Electricity		**<u>Light</u>** Recognise that light appears to travel in straight lines. Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye. Explain that we see things	**<u>Living Things and their Habitats (Classification)</u>** Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including

	the way their bodies function. Describe the ways in which nutrients and water are transported within animals, including humans.	of the same kind, but normally offspring vary and are not identical to their parents. Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. Scientist: Charles Darwin		because light travels from light sources to our eyes or from light sources to objects and then to our eyes. Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.	microorganisms, plants and animals. Give reasons for classifying plants and animals based on specific characteristics.
Scientific Enquiry Skills Coverage and examples	Recording data, taking repeat measurements where necessary and calculating a mean Planning different types of enquiry controlling	Using Scientific language to draw conclusions Recognising when to use other sources to answer questions and separating opinion from fact	Planning different types of enquiry controlling variables where necessary Evaluating plans and results and suggesting improvements	Using Scientific language to draw conclusions Evaluating plans and results and suggesting improvements	Using Scientific language to draw conclusions Using and developing keys to identify and classify living things and materials

	variables where necessary				Using and developing keys to identify and classify living things and materials