Barnes Primary School

BARNES PRIMARY SCHOOL SCIENCE SUBJECT MAP

	Autumn		Spring		Summer	
Early Years is all about a rich play experience with quality interactions by skilled adults who support the children as they develop concepts, acquire vocabulary and have first-hand experiences of the world. This is crucial for all scientific knowledge thereafter. Children have access to the forest school all year round and learning is often child initiated.						
YN	**All About Me** What your body needs and how to keep healthy	**Fairy Tales** Testing materials to make bridges. Understanding of the physical world.	**People Who Help Us** First aid – animals, including humans	**Planting and Growing** Parts of a plant – basic life cycle	**Transport** Machines and how things work – forces and energy	**Different Animals** Identifying and naming animals
YR	**All About Me** How to look after yourself Talking about the body – bones etc. Hospital role play	**Celebrations** Materials – puppets Cooking well and cleanliness Fireworks and light	**Colours and Patterns** Natural world and camouflage Science lab: inventor laboratory – STEM Elephant toothpaste experiment	**Lifecycles** Animals and plants Woodland camping role play Natural history museum role play The world and how things work	**Local Environment** Vet role play – animals and how things work Children explore the world around them and know some similarities and differences in contrasting environments **Visit to the Wetlands Centre**	**All Around the World** Barnes bear goes around the world Beach role play Small World: The children learn about different places which change each week. **Visit to Battersea Zoo**
1	**Topic: Materials Knowledge** 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.	**Topic: Light and Dark and Seasonal Change knowledge** Identify different light sources, including the Sun Understand that darkness is the absence of light **Visit from Animal Man**	**Topic: Animals Knowledge** Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals Identify and name a variety of common animals that are carnivores, herbivores and omnivores Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) **Visit to London Zoo**	**Topic: Ourselves Knowledge** Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	**Topic: plants knowledge** 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. **Visit to Kew Gardens**	**Topic: Sound and Hearing Knowledge** Understand that there are many kinds of sound and sources of sound Understand that sounds travel away from sources, getting fainter as they do so Describe that sounds are heard when they enter the ear
	Skills: Develop understanding of scientific ideas by using different types of scientific enquiry to answer questions; observe closely, using simple equipment; perform simple tests; gather data to help in answering questions; record data to help in answering questions; use observations and ideas to suggest answers to questions.					

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2	**Topic Materials** **Knowledge** 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. **Topic Electricity - Focus day** 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	**Topic: Animals and humans** **Knowledge** notice that animals, including humans, have offspring which grow into adults find out about and describe the basic needs of animals, including humans, for survival (water, food and air) describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. **Topic: forces – focus day** find out about and describe the movement of familiar things understand that both pushes and pulls are examples of forces recognise that when things speed up, slow down or change direction, there is a cause	**Topic: Plants** **Knowledge** 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	**Topic: Living things and their habitats** **Knowledge** 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 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 micro-habitats 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. **Trip:** **Kew Gardens to look at habitats**
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3	**Topic: Living Things and their habitats** **Knowledge** 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. construct and interpret a variety of food chains, identifying producers, predators and prey	**Topic: Plants** **Knowledge** 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	**Topic: Rocks and Soils** **Knowledge** 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.	**Topic: Forces** **Knowledge** notice that magnetic forces can act at a distance observe how magnets attract or repel each other and attract some materials and not others compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials describe magnets as having two poles predict whether two magnets will attract or repel each other, depending on which poles are facing.	**Topic: Light** **Knowledge** recognise that they need light in order to see things and that dark is the absence of light notice that light is reflected from surfaces recognise that light from the sun can be dangerous and that there are ways to protect their eyes recognise that shadows are formed when the light from a light source is blocked by a solid object find patterns in the way that the size of shadows change.
	Skills: Set up simple practical enquiries, comparative and fair tests; make systematic and careful observations and take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers; gather, record, classify and present data in a variety of ways to help in answering questions; record findings using simple scientific language, drawings, diagrams, keys, bar charts & tables; report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions; use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions; identify differences, similarities or changes related to simple scientific ideas and processes; use straightforward scientific evidence to answer questions or to support their findings.				

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4	**Topic: electricity** 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. 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	**Topic: 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) 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	**Topic: forces** explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object identify the effects of air resistance, water resistance and friction, that act between moving surfaces recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	**Topic: animals including humans** 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 the different types of teeth in humans and their simple functions	**Topic: animals including humans** describe the simple functions of the basic parts of the digestive system in humans identify that humans and some other animals have skeletons and muscles for support, protection and movement.
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5	**Topic: 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. use the idea of the earth's orbit of the sun to explain seasons visit from Royal Observatory Trip to CLC: space and green screen	**Topic 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	**Topic: materials** Understand the properties of solids, liquids and gases; demonstrate that dissolving, mixing and changes of state are reversible changes; identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	**Topic: life cycles** 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; explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. **Trip: Kew Gardens**	**Topic: Heart and health** describe the changes as humans develop to old age; identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood; recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function; describe the ways in which nutrients and water are transported within animals, including humans.
	Skills: Children should select the most appropriate ways to answer science questions using different types of scientific enquiry (including observing changes over different periods of time; noticing patterns; grouping and classifying things; carrying out fair tests; finding things out using a wide range of secondary sources of information); use results to raise further questions; use test results to make predictions to set up further comparative and fair tests; recognise and control variables where necessary; take measurements, using a range of scientific equipment with increasing accuracy and precision; record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables and bar and line graphs and models; report and present findings from enquiries, including conclusions, causal relationships and explanations of results in written forms; identify scientific evidence that has been used to support or refute ideas or arguments.				

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6	**Topic: living things and their habitats** describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals; give reasons for classifying plants and animals based on specific characteristics.	**Topic: evolution and inheritance** recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago; recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.	**Topic: light** recognise that light appears to travel in straight lines; use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye; explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes; use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.	**Topic: irreversible changes** recognise 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; investigate the different factors which contribute to the rate of dissolving.
	Skills: Children should select the most appropriate ways to answer science questions using different types of scientific enquiry (including observing changes over different periods of time; noticing patterns; grouping and classifying things; carrying out fair tests; finding things out using a wide range of secondary sources of information); use results to raise further questions; use test results to make predictions to set up further comparative and fair tests; recognise and control variables where necessary; take measurements, using a range of scientific equipment with increasing accuracy and precision; record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables and bar and line graphs and models; report and present findings from enquiries, including conclusions, causal relationships and explanations of results in written forms; identify scientific evidence that has been used to support or refute ideas or arguments.			