SCIENCE PROGRESSION DOCUMENT

By the end of year 6 children at St Peter's School should demonstrate the following essential characteristics of SCIENTISTS:

- By the end of year 6 children at St Peter's should demonstrate the following essential characteristics of scientists:
- A love of science
- A sound knowledge of scientific facts
- A clear understanding of scientific vocabulary
- The ability to plan and evaluate experiments
- The ability to investigate using a range of skills
- An understanding of how to stay healthy and keep safe
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	EYFS	KS1		LOWER KS2		UPPER KS2	
	UW	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Chemistry	**Materials and their properties** -Use sense to explore and investigate objects and their materials -Begin to recognise and name basic material types and to look closely at similarities and differences between them (sort in various ways) -Learn to use vocabulary related to materials and their properties -Understand important processes including changing states of matter (freezing and melting water, heating bread to become toast) -Begin to investigate materials through free and focused exploration eg) in terms of waterproof, hard, soft, magnetic	**Everyday materials** -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.	**Uses of Everyday Materials** 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		**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 **Rocks** compare and group together different kinds of rocks on the basis of their appearance and simple physical properties describe in simple terms	**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	

					how fossils are formed when things that have lived are trapped within rock recognise that soils are made from rocks and organic matter	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	
Physics	**EYFS**	**KS1**		**LOWER KS2**		**UPPER KS2**	
	UW	**YEAR 1**	**YEAR 2**	**YEAR 3**	**YEAR 4**	**YEAR 5**	**YEAR 6**
	Physical processes -Learn about everyday appliances that use electricity -Begin to observe and describe the movement of familiar things eg) a toy car -Begin to understand pushes and pulls as forces through free/ focused investigation -Compare night and day -Begin to investigate sources of light and sound/ explore shadows -Explore magnetism and the properties of water/ floating and sinking -Understand some important processes in the natural world around them, including the seasons	**Seasonal Change** -observe changes across the four seasons -observe and describe weather associated with the seasons and how day length varies.		**Forces and Magnets** 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 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. **Electricity** identify common appliances that run on electricity construct a simple series	**Light** -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 an opaque object -find patterns in the way that the size of shadows change	**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. **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	**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. **Electricity** 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

				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 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. **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.		and night and the apparent movement of the sun across the sky.	buzzers and the on/off position of switches use recognised symbols when representing a simple circuit in a diagram.
Biology	**EYFS**	**KS1**		**LOWER KS2**		**UPPER KS2**	
	UW	**YEAR 1**	**YEAR 2**	**YEAR 3**	**YEAR 4**	**YEAR 5**	**YEAR 6**
	Life processes and living things -Name the main parts of the body and a plant	**Plants** -identify and name a variety of common wild and garden plants,	**Plants** observe and describe how seeds and bulbs grow into mature plants	**Animals, including Humans** -identify that animals, including humans, need	**Animals, including Humans** describe the simple functions of the basic	**Living Things and Their Habitats** describe the differences in the life cycles of a	**Living Things and Their Habitats** describe how living things are classified into broad

	-Begin to investigate the world around them using their senses -Find out about and name a range of common animals -Begin to look at similarities and differences between themselves and others -Make simple observations and drawings in relation to plants/ animals -Begin to understand the importance of treating living things, and the environment, with care and sensitivity.	including deciduous and evergreen trees -identify and describe the basic structure of a variety of common flowering plants, including trees **Animals, including humans** 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) identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense	find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. 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. **Living Things and Their Habitats** 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. **Animals, including Humans** 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)	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. **Plants** -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.	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. **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**.**	mammal, an amphibian, an insect and a bird describe the life process of reproduction in some plants and animals **Animals, including Humans** Describe the changes as humans develop to old age.	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 **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 identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution **Animals, including Humans** 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.

			describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.				
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Working scientifically		**Pupils can ask simple questions that can be tested with prompts** **Pupils can offer ways of gathering evidence to answer a key questions** **Pupils can observe and recognise key changes or features** **Pupils can begin to conduct simple experiments independently** **Pupils can identify what is to be recorded in the experiment and suggest ways of doing this (e.g. drawing)**	**Pupils can ask simple questions that can be tested with prompts** **Pupils can offer ways of gathering evidence to answer a key questions** **Pupils can observe and recognise key changes or features** **Pupils can begin to conduct simple experiments independently** **Pupils can identify what is to be recorded in the experiment and suggest ways of doing this (e.g. drawing)** **Pupils can identify the main findings from the experiment and answer questions using the data they have collected (year 2 questions may be more enquiry based)**	**Pupils can, with support, develop relevant & testable questions** **Pupils can plan enquiry such as a fair test or a comparative test (Year 4 – Pupils can plan investigations using different types of scientific enquiry)** **Pupils can use various equipment as instructed** **Pupils can use standard measurements and recognise the importance of being accurate** **Pupils can, with some support, use words and diagrams to record findings** **Pupils can answer various questions based on the data collected** **Pupils can use evidence to write a conclusion referring to the evidence specifically and data more accurately** **Pupils can suggest how an experiment could be extended**	**Pupils can, with support, develop relevant & testable questions** **Pupils can plan enquiry such as a fair test or a comparative test (Year 4 – Pupils can plan investigations using different types of scientific enquiry)** **Pupils can use various equipment as instructed** **Pupils can use standard measurements and recognise the importance of being accurate** **Pupils can, with some support, use words and diagrams to record findings** **Pupils can use tables to record evidence (year 4 – can be various ways to record evidence) and recognise patterns that relate to scientific ideas** **Pupils can answer various questions based on the data collected** **Pupils can use evidence to write a conclusion referring to the evidence specifically and data more accurately** **Pupils can suggest how an experiment could be**	**Pupils can, with support, answer questions using evidence gathered from different types of scientific enquiry.** **Pupils can identify and manage variables (Year 5 may need some prompting)** **Pupils can select appropriate equipment** **Pupils can take precise and accurate measurements and recognise the importance of these. (Year 6 – pupils may consider how modifying the instrument or technique, measurements can be improved)** **Pupils know how to process repeat readings (Year 6 - ..and identify situations where this will improve the quality of evidence** **Pupils can (year 5 …start to) use labelled diagrams to show more complex outcomes** **Pupils can use various ways to record complex evidence (Year 5 may need some prompting)** **Pupils can use line graphs**	**Pupils can, with support, answer questions using evidence gathered from different types of scientific enquiry.** **Pupils can identify and manage variables (Year 5 may need some prompting)** **Pupils can select appropriate equipment** **Pupils can take precise and accurate measurements and recognise the importance of these. (Year 6 – pupils may consider how modifying the instrument or technique, measurements can be improved)** **Pupils know how to process repeat readings (Year 6 - ..and identify situations where this will improve the quality of evidence** **Pupils can (year 5 …start to) use labelled diagrams to show more complex outcomes** **Pupils can use various ways to record complex evidence (Year 5 may need some prompting)** **Pupils can use line graphs**

					extended	**to display data** **Pupils can write a conclusion using evidence and identifying causal links (Year 5 may need some prompting)** **Pupils can display and present key findings from enquiries orally and in writing** **Pupil, with support, can indicate how trustworthy their findings are.** **Pupils can suggest further relevant comparative or fair tests that would develop the investigation**	**to display data** **Pupils can write a conclusion using evidence and identifying causal links (Year 5 may need some prompting)** **Pupils can display and present key findings from enquiries orally and in writing** **Pupil, with support, can indicate how trustworthy their findings are.** **Pupils can suggest further relevant comparative or fair tests that would develop the investigation**