

SMSC within Science at William Reynolds Primary School and Nursery

<p>Pupils' spiritual development is shown by their</p> <ul style="list-style-type: none"> • Ability to be reflective about their own beliefs, religious or otherwise, that inform their perspective on life and their interest in and respect for different people's faiths, feelings and values • Sense of enjoyment and fascination in learning about themselves, others and the world around them • Use of imagination and creativity in their learning • Willingness to reflect on their experiences 	
Foundation Stage	<p>Throughout the year the children are given the opportunity to explore the world around them in the foundation stage environment, Forest School and educational trips. During in child led the children are encouraged to follow their interests and fascinations with making observations of animals and plants. Then explain why some things occur and talk about the changes they see. Children also talk about similarities and differences in relation to objects, materials and living things. After child led children are encouraged to reflect on their experiences, talk about what they have seen, explain their knowledge and discuss what they would like to find out further.</p>
Year 1	<p>Children enjoy learning about the world around them by identifying a range of common wild and garden plants including deciduous and evergreen trees. They need to classify common animals (birds, fish, amphibians, reptiles, mammals) using descriptions, what they eat and by the body coverings. Children become fascinated when identifying parts of the human body and which part of the body is associated with each sense. Children will need to observe and describe the four seasons, describing different weathers and how the day length varies. In each unit children will be reflective on their start knowledge and what they know at the end of the unit.</p>
Year 2	<p>Children enjoy learning about all living things and habitats through plants, animals and humans. This will include exploring and comparing the differences between things that are living, dead and things that have never been alive. Children will need to identify that most living things live in habitats which they are suited, how different habitats provide for the basic needs of different kinds of animals and plant, and how they depend on each other. It will be important for children to identify and name a variety of plants and animals in their habitats, including micro-habitats. Children will need to identify and name different food sources, describe how animals obtain their food from plants or other animals, using the idea of a simple food chain. Children will be given the opportunity to plant and grow plants. Through observations children will describe how seeds and bulbs grow into mature plant, find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. Children learn the importance of humans having exercise, eating the right amounts of different foods and having good hygiene. This will include finding out the basic needs of animals, including humans and notice animals, including humans have offspring which grow into adults.</p>
Year 3	<p>Children will enjoy learning about animals, humans and plants. The children will need to identify and describe function of different parts of the flowering plants, explore the requirements of plants for life and growth. Children will need to identify how water is transported in plants and the life cycle of a flowering plant to include pollination, seed formation and seed dispersal. With animals and humans children will need to explore the need for the right types and amounts of nutrition, understanding they cannot make their own food and they need to get nutrition from what they eat. Through building up a fascination of humans and other animals, children will need to identify they have skeletons, muscles which offer support, protection and movement.</p>

Year 4	<p>Children will learn about living things being grouped in a variety of ways, explore and use classification keys to help group. Children will need to identify and name a variety of living things in their local and wider environment. When exploring the environments children will need to recognise that environments will change and these changes will pose dangers to living things. Children will learn when identifying human functions of the digestive system, organs, different types of teeth and their functions. There will be the opportunities to make and interpret food chains, identifying producers, predators and prey. The children will learn about solids, liquids and gases, explore changes of states through heat and cooling, measure or research temperature in degrees Celsius. Children will also learn about the water cycle to include evaporation, condensation in association with temperature.</p>
Year 5	<p>When learning about earth and space children will become fascinated about the movement of Earth, other planets, the sun in the solar system and spherical bodies. Children will be asked to describe the movement of the moon relative to Earth. Children will be asked to explain day and night, movement of the sun across the sky through the Earth's rotation.</p> <p>Children will be comparing and grouping everyday materials based on their properties, hardness, solubility, transparency, conductivity and response to magnets. Through investigations there will be opportunities to explore dissolving to form a liquid, and how to recover a substance from a solution. Children will develop knowledge of solids, liquids and gases, exploring how mixtures can be separated through filtering, sieving and evaporation. Through these investigations children will explore that dissolving, mixing are reversible changes. Children will learn some changes make new materials and some changes are not reversible associated with burning and action of acid on bicarbonate of soda. Children will give reasons based on evidence from comparative and fair tests using materials made of metals, wood and plastics.</p> <p>With living things children will discuss, explore and describe the different life cycles of a mammal and an amphibian. Children will learn about the life process of reproduction in plants and animals. There will be an opportunity for children to look at and describe the changes in humans as they move into old age.</p>
Year 6	<p>Children will learn how living things are classified, through common observed characteristics based on similarities and differences. This will include micro-organisms, plants and animals. Children will need to give reasons for classifying plants and animals based on specific characteristics. There will be opportunities for children to recognise living things change over time. A fascination builds when exploring fossils and the information they can provide from Earth millions of years ago. Children will also be looking at the offspring of living things and that some offspring may vary and not be identical to their parents. Through their learning children will describe how food and water are transported in animals and humans. Children will need to identify and name parts of the human circulatory system, describe the functions of the heart, blood vessels and blood.</p> <p>When learning about light children will explore the idea light travels in straight lines, objects are seen because they give out or reflect light into the eye. Children will be learning how light travels from objects to our eyes and is reversible. Through light travelling in straight lines children will have to explain why shadows have the same shape as the objects.</p>

Whole School

Sometimes science and spiritual ideas do cause conflict but in a modern society it is important to understand why these conflicts arise so we can respect the views of others and move forward.

Science involves the search for meaning and purpose in natural and physical phenomena. It is the wonder about what is special about life, the awe at the scale of living things from the smallest micro-organism to the largest tree and the interdependence of all living things and materials of the Earth. It concerns the emotional drive to know more and to wonder about the world and aesthetically appreciate its wonders including for example the enormity of space and the beauty of natural objects or phenomena, plants, animals, crystals, rainbows, the Earth from space etc. It helps us understand our relationship with the world around us how the physical world behaves, the interdependence of all living things.

Pupils' moral development is shown by their

- Ability to recognise the difference between right and wrong readily apply this understanding in their own lives and, in so doing, respect the civil and criminal law of England
- Understanding of the consequences of their behaviour and actions
- Interest in investigating and offering reasoned views about moral and ethical issues, and being able to understand and appreciate the viewpoints of others on these issues

Foundation Stage	<u>Whole School</u> When carrying out modelled, intermediate or an independent investigation the children will be able to decide which variable to use to ensure the test remains fair. When carrying out an investigation children will take responsibility for their own and other safety. They are aware of the consequences of their behaviour and actions could jeopardise the results of the investigation. At the start of an investigation the children will offer reasoned views about their predictions for the test and will listen carefully to the viewpoints of others. Moral education in Science encourages children to become increasingly curious, to develop open mindedness to the suggestions of others and to make judgments on evidence not prejudice.
Year 1	
Year 2	
Year 3	
Year 4	
Year 5	
Year 6	

Pupils' social development is shown by their

- Use a range of social skills in different contexts, including working and socialising with pupils from different religious, ethnic and socio-economic backgrounds
- Willingness to participate in a variety of communities and social settings, including by volunteering, cooperating well with others and being able to resolve conflicts effectively
- Acceptance and engagement with the fundamental British values of democracy, the rule of law, individual liberty and mutual respect and tolerance of those with different faiths and beliefs; the pupils develop and demonstrate skills and attitudes that will allow them to participate fully in and contribute positively to life in modern Britain

Foundation Stage	All children in Foundation Stage use their senses to explore their immediate and wider environment. They are always encouraged and give the opportunities to observe carefully and discuss the similarities and differences in places, objects, materials and living things. Children volunteer to join the Eco garden group.
Year 1	During the units the children will talk about what they see, touch, smell, hear or taste. They will ask simple questions and recognise that they can be answered differently and other children may have other ideas or thoughts. Children will look closely at things to be able to identify and classify. Within their learning children will talk to other about what they have done and explain what they have found out.
Year 2	Children will have to use scientific vocabulary to describe what they have seen and measured throughout their units. It will be important that the children ask other questions and use other sources to find answers. Through investigations they will need to offer their suggestions, use prompts to support their findings and work collaboratively to find things out. When working scientifically children will need to evaluate and use explanations of whether things have happened as they expected.
Year 3	To work scientifically children will need to plan a fair test and explain why the test is fair. Children need to understand why they need to collect information to answer their question. Through their investigations children need to think scientifically and ask scientific questions and use scientific enquires to answer them.
Year 4	In the units throughout the year children will need to ask scientific questions and use different types of scientific enquires to answer them. They will need to explain their findings in different ways, for example, display, presentation, graphs, and writing. Children will learn to use the results to draw simple conclusions, make predictions for new values, suggesting improvements and raise further questions. In an investigation children will make predictions based on something they have found out. Children will learn the skills to record and present what they have found using scientific language, drawings, labelled diagrams, keys, bar charts and tables.
Year 5	The children will plan different types of scientific enquires to answer questions, including recognising and controlling variables where necessary. To work in a scientific manner children will report and present findings from enquiries. These will include conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. Children will develop the skills to identify scientific evidence that has been used to support or refute ideas or arguments. They will use this evidence to evaluate their predictions, conclusions and any further ideas.

Year 6	The children will plan different types of scientific enquires to answer questions, including recognising and controlling variables where necessary. To work in a scientific manner children will report and present findings from enquiries. These will include conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.
--------	---

Whole School

Scientists are collaborators. Sharing ideas, data, and results for further testing and development by others. This is a key principle of the scientific method. We encourage pupils to work together on scientific investigations and to share results to improve reliability. Pupils must take responsibility for their own and other people's safety when undertaking practical work. Science has a major impact on the quality of our lives. In Science lessons, pupils consider the social impact, both positive and negative, of science and technology.

In Key stage 2 Gifted and Talented children in science are willing to participate within the community and different social settings by attending the Tomorrows Achievers courses.

<p>Pupils' cultural development is shown by their</p> <ul style="list-style-type: none"> • Understanding and appreciation of the wide range of cultural influences that have shaped their own heritage and that of others • Understanding and appreciation of the range of different cultures within school and further afield as an essential element of their preparation for life in modern Britain • Knowledge of Britain's democratic parliamentary system and its central role in shaping our history and values, and in continuing to develop Britain • Willingness to participate in and respond positively to artistic, sporting and cultural opportunities • Interest in exploring, improving understanding of and showing respect for different faiths and cultural diversity, and the extent to which they understand, accept, respect and celebrate diversity, as shown by their tolerance and attitudes towards different religious, ethnic and socio-economic groups in the local, national and global communities 	
Foundation Stage	<p>In foundation stage the children are taken on walks within the local community to look at the similarities and differences within our cultures. We use the immediate environments to look at changes around us and exploring with their senses, talking and joining in with activities. Children participate with willingness in cooking activities for Chinese New Year looking at the changes in food. With Diwali children explore light and dark, using clay to make Diya lights.</p>
Year 1	<p>In the units children are willing to participate and explain what material objects are made from. They will explore identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock. They will show an understanding through explanations why a material might be useful for a specific job. Children will describe the simple physical properties of a variety of everyday materials e.g. hard/soft; stretchy/stiff; shiny/dull; rough smooth; waterproof/ not waterproof; bendy/ not bendy; absorbent/ not absorbent; opaque/ transparent. Children will need to sort materials in to groups on the basis of their simple physical properties.</p>
Year 2	<p>Throughout the year children will identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for a particular use. Children will explore with interest to improve their understanding and make conclusion on how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</p>
Year 3	<p>In the units for rocks children will explore with interest to make comparisons and group together different kinds of rocks on the basis of their appearance and simple physical properties. They will describe in simple terms how fossils are formed when things that have lived are trapped within rock. They will need to recognise that soils are made from rocks and organic matter. When learning about light children will improve their understanding that they need light in order to see things that dark is the absence of light. They will notice light is reflected from surfaces. Children will learn light from the sun can be dangerous and that there are ways to protect their eyes. When exploring shadows children will recognise that shadows are formed when the light from a light source is blocked by an opaque object and find patterns in the way that the size of shadows change. Children will need to participate in investigations where children can compare how things move on different surfaces. There will be an opportunity to notice that some forces need contact between two objects, but magnetic forces can act at a distance. Children will observe how</p>

	<p>magnets attract or repel each other and attract some materials and not others. This will give the children to opportunity to improve their understanding through comparisons and grouping a variety of everyday materials on the basis of whether they are attracted to a magnet and identify some magnetic materials. Children will need to describe magnets as having two poles and predict whether two magnets will attract or repel each other, depending on which poles are facing.</p>
<p>Year 4</p> <p>Willingness to Participate</p> <p>Explore</p> <p>Interest</p> <p>Improve understanding</p>	<p>Children will improve their understanding through identifying how sounds are made, associating some of them with something vibrating, recognising that vibrations from sound travel through a medium to the ear. They will find patterns between the pitch of a sound and features of the object that produced it. They will also find patterns between the volume of a sound and the strength of the vibrations that produced it. Through their willingness to participate the children will need to recognise that sounds get fainter as the distance from the sound source increases.</p> <p>There will be opportunities to identify common appliances that run on electricity. Through participation and exploring electricity children will construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. This will give them the opportunity to 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. In their explorations the children will improve their understanding that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. Children will need to recognise some common conductors and insulators and associate metals with being good conductors.</p>
<p>Year 5</p>	<p>In this unit the children will participate with interest in activities which will support their explanations of unsupported objects which fall towards the Earth is because of the force of gravity acting between the Earth and the falling object. This will give the children the opportunity to improve their understanding of the effects of air resistance, water resistance and friction, which act between moving surfaces. Children will need to recognise that some mechanisms including levers, pulleys and gears, allow a smaller force to have a greater effect.</p>
<p>Year 6</p>	<p>Children will need to associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. The children will need to participate in investigations with interest to improve their understanding by using comparisons and giving explanations for their reasons in variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches. When recording their investigations children will recognise and use symbols when representing a simple circuit in a diagram.</p>
<p>Whole School</p> <p>It is important that the children understand that scientific development comes from all across the world, from people of all backgrounds and cultures. Some of science's most important discoveries have come from other parts of the world and it's important for students to understand this as many believe that progress comes largely from the UK or America. It is also important to understand how the different cultures around the world can have different impacts on the planet and what impact more economically developed countries have on poorer areas. This will also be vital into the future as we need to monitor the impact of quickly developing cultures around the world on our environment.</p>	

