



Science Policy

**William Reynolds Primary School and
Nursery**

Approved by Governors June 2016
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Information Page

These policies are referred to in the document

Whole School Vision Statement

Curriculum Maps

Whole School Monitoring Cycle

Termly Raising Attainment Plans (RAPs)

Teaching Learning and Assessment Policy

Risk Assessments

Introduction

At William Reynolds Primary School and Nursery we believe that teaching and learning in Science should stimulate and excite pupils' curiosity about the world around them. It provides first hand experiences and support for pupils to develop enquiring minds, learning how to question and discuss science through collaboration. Starting from the views already held, pupils are given the opportunity to have their views challenged, to change their views and ultimately improve their understanding. A planned range of practical experiences set in meaningful contexts helps to develop a range of investigative skills and allows pupils to take risks and learn from their mistakes, developing them into independent learners as well as providing opportunities to promote pupils' spiritual, moral, social and cultural development in science. *(See Appendix 1- SMSC in Science)*

Aims and Objectives

(see Whole School Vision Statement)

The national curriculum for science aims to ensure that all pupils:

- develop **scientific knowledge and conceptual understanding** through the specific disciplines of biology, chemistry and physics
- develop understanding of the **nature, processes and methods of science** through different types of science enquiries that help them to answer scientific questions about the world around them
- are equipped with the scientific knowledge required to understand the **uses and implications** of science, today and for the future.

The teaching of Science is planned to help develop the key scientific skills through:

- Asking questions
- Hypothesising and predicting
- Planning and carrying out a range of investigations
- Using equipment correctly
- Observing and measuring
- Recording data
- Presenting results in a variety of ways, including the use of ICT
- Comparing and evaluating results, looking for patterns
- Drawing conclusions

In addition, Science provides the opportunity for pupils to develop the following cross-curricular skills:

- Communication in a variety of contexts through promoting the skills of reading, writing, speaking and listening. (research skills)
- Application of number through the use of weights and measures, handling data, estimating and predicting
- Use of ICT to measure, record, present and interpret Data where appropriate, and use of the internet
- Working corroboratively with others
- Problem solving
- Independent individual thinking as they follow a line of enquiry

Role of the Subject leader

- Maintain high standards of subject knowledge by attending available courses, conferences and subject leaders' update meetings.
- Support staff in making judgements of children's attainment, including using assessment materials and questioning of children.
- Encourage and support staff in the implementation of the agreed procedures and closely monitor the progression of activities and consistency of approach across both year groups and Key Stages through lesson observation and book scrutiny.
- Monitor the progress made by pupils, both individuals and cohorts, through data analysis, monitoring the tracking of children by teachers and through talking to groups of children to seek their views.
- Keep the written policy document and scheme of work up to date and evaluate the content and method.
- Monitor planning as part of on-going subject monitoring and evaluation of practice. (Curriculum maps monitored yearly)
- Arrange training as appropriate to meet the needs of individuals and the school.
- Provide external activities for pupils such as visiting groups and gifted and talented workshops (Tomorrows achievers).
- Liaise with other subject leaders to ensure coherence across subject areas.
- Purchase and organise all Science resources, ensuring they are readily available and well maintained.
- To be aware of national and local developments through reading relevant materials and attending courses as appropriate.

- Submit regular feedback on standards and monitoring in Science to the staff and Senior Leadership Team.
- Inform the Governing Body of progress in this area through meetings with the link Governors for science.

Learning and Teaching

The minimum teaching time for Science in each year group is one lesson per week. The exact timing of this is at the discretion of the individual class teacher. A science week is planned in school on an annual basis.

Short term planning is completed on a whole school planning format for Science, which will include: lesson objectives, success criteria, assessment for learning, main teaching points, differentiation, a plenary, a lesson evaluation as well as identifying the type of investigation and the science enquiry skill focus where appropriate. This planning is submitted to the Science subject leader each term as part of the monitoring cycle.

Spiritual, moral, social and cultural development

The teaching of science offers pupils many opportunities to examine some of the fundamental questions in life e.g. the evolution of living things and how the world was created. Through the teaching of science, pupils have the opportunity to discuss, for example the effects of smoking and the moral questions involved in the issue. Pupils are given the chance to reflect on the way people care for the planet and how science could contribute to the way we manage the earth's resources. Science teaches pupils about the reasons why people are different and, by developing the children's knowledge and understanding of physical and environmental factors, it promotes respect for other people. *(See appendix 1- SMSC in Science)*

The Foundation Stage

At William Reynolds Primary School, the Foundation Stage pupils investigate science as part of Understanding of the World. Children are encouraged to investigate through practical experience; teachers guide the children and plan opportunities that allow the children to experience and learn whilst experimenting for themselves. Pupils are supported to develop an understanding about things occurring around them in their day-to-day lives. Children are encouraged to be creative and inquisitive as they participate in activities. They are encouraged to use their natural inquisitiveness while taking part in exploratory play in specific scientific areas as well as areas that link across the EYFS framework.

In Foundation Stage, a large format Floor Book is used to capture evidence of experiences offered to pupils to support the key persons in the assessing a pupil's development of "Understanding the World" This will also include work linked to forest school. Individual evidence is recorded in the pupil's learning journal.

Key stage 1

The principal focus of science teaching in key stage 1 is to enable pupils to experience and observe phenomena, looking more closely at the natural and humanly-constructed world around them. Pupils are encouraged to be curious and ask questions about what they notice. They are helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests, and finding things out using secondary sources of information. Pupils begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways. Most of the learning about science is through the use of first-hand practical experiences, but there will also be some use of appropriate secondary sources, such as books, photographs and videos.

Pupils read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

Lower key stage 2

The principal focus of science teaching in lower key stage 2 is to enable pupils to broaden their scientific view of the world around them. They do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. They are encouraged to ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple comparative and fair tests and finding things out using secondary sources of information. They should draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out.

Pupils read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge.

Upper key stage 2

The principal focus of science teaching in upper key stage 2 is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. At upper key stage 2, pupils encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They also begin to recognise that scientific ideas change and develop over time. Pupils will 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 comparative and fair tests and finding things out using a wide range of secondary sources of information. Pupils are encouraged to draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings.

Pupils read, spell and pronounce scientific vocabulary correctly.

Recording

In Key Stage 1, each class records whole class work in a yearly Floor Book. This book is to record whole class experiences e.g. modelled investigations. Individual science books are also in place in Key stage 1 and 2 where pupils record individual responses; this is used as evidence to support assessment. To link cross curricular work science work may also be recorded in individual writing journals where literacy based concepts are taught with a science context. Mathematics linked to a science unit will be recorded in science books.

Learning Environment

There is a learning wall for science in each base, this is used as a teaching aid where curriculum targets for science are on display as well as to celebrate children's achievements. Targets are reviewed half termly to focus teaching and learning on raising attainment.

These displays provide a stimulus for learning during the earlier stages of a unit, developing to include examples of pupils' work that demonstrate the progress being made.

Monitoring

The monitoring of science is included in our whole school monitoring cycle and involves the monitoring of medium term planning, book scrutiny, lesson

observations, the learning environment and pupil interviews (see Whole School Monitoring Cycle). Feedback from monitoring is used to inform the next steps for development and these are included in the Raising Attainment Plan (RAP).

Assessment

All lessons include a clear learning objective, with a context where appropriate, and an assessment for learning (AFL) opportunity. (see Teaching Learning and Assessment Policy)

As well as during each lesson, assessment is carried out throughout the year, across the school. In each class, teachers use the assessing without levels document created by the school for **six identified pupils across the ability range**. These grids are highlighted as the skills are achieved, and used to inform assessment (**See Appendix 2**). This formative assessment is then used to set curriculum targets to address identified areas, through future units. From Year 5 onwards, use of past SAT papers is used to help assess children's knowledge. Rising Stars assessment tools are used from years 1 -6. The diagnostic test is used to assess children's prior knowledge and the end of unit test helps measure progress made by the pupils. This summative data is then used to targets areas of scientific learning at the correct pitch and to identify the next steps for the pupils.

Equal opportunities

All pupils, regardless of gender, ability or race will have equal access to the teaching of Science. However, this teaching will be differentiated appropriately to meet the needs of individual pupil and their own experiences. Lessons and activities are planned to include all children by using a range of approaches. This includes: questioning, use of equipment, and mixed ability grouping to enable children to offer peer support. Day to day assessments carried out by the class teacher will support the identification of pupils working at different abilities.

Equal opportunities are considered when we decide upon the resources we provide and the teaching strategies we employ. In our curriculum planning we ensure that all pupils, with due respect to their culture, religion and background, have equal access to all areas of the curriculum, extra curricular activities, all areas of the grounds, equipment and resources, the staff, and time to contribute to the whole class and group work.

Citizenship

We encourage all pupils to take an active part in the life of their school and its neighbourhood. Science can provide opportunities for pupils to gain the knowledge, skills and understanding they need to lead confident, healthy and independent lives and to become informed, active and responsible citizens.

Through science, pupils learn:

- that people and other living things have needs and that they have a responsibility to meet them.
- what might improve or harm their local, natural and built up environments and some of the ways people look after these resources.
- how to make simple choices that improve their health, including healthy diet and exercise and sexual development.
- that medicines are helpful but can also be harmful if not used properly.
- to identify and respect differences and similarities between people.

Resources

Science resources are stored as labelled unit boxes, with supplementary generic resources also available. Each classroom also has their own 'Class Science kit' which consists of: planning boards, corresponding post-it notes, teacher books e.g. 'Getting to grips with graphs' and 'Scientific Enquiry Games', stop watch, etc.

ICT resources available within school include: Cameras, microscopes, data loggers, and Ipad.

A resources audit is carried out annually to ensure future spending is targeted appropriately. The subject leader to inform the following year's budget for science uses this information.

Additionally, there are developing resources within our school grounds which allow effective teaching of environmental science e.g., our Eco garden and Wildlife Area, as well as visit out into the local environment and visitors to school. Forest school makes use of these resources in the school grounds.

Health and Safety

The class teacher will carry out risk assessments where it is deemed appropriate. The Risk Assessment is completed using the school's proforma, which requires the signature of the Head teacher or Deputy Head. Resources available to support this include: CLEAPSS bulletins and newsletter, and other publications as well as the "Be Safe" booklet.

Pupils' spiritual development is shown by their

- 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	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.
Year 1	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.
Year 2	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.
Year 3	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.
Year 4	Children will learn about living thing being grouped in a variety of way, explore and use classification key 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

	<p>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 degree 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 test 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 mammals and 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 reason for classifying plants and animals based on specific characteristics. There will be opportunities for children to recognise living thing 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 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 in reversible. Through light travelling in straight lines children will have to explain why shadows have the same shape as the objects.</p>
<p>Whole School</p> <p>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.</p> <p>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 phenomenon, 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.</p>	

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	<p><u>Whole School</u></p> <p>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.</p> <p>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.</p>
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	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.
Year 1	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.
Year 2	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.
Year 3	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

	<p>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 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 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>

National Standard - 1c,1b,1a

Talk about what they see, touch, smell hear or taste

Ask simple questions and recognise that they can be answered differently

Use simple equipment to help make observations

Perform a simple test

Tell other people about what they have done

Identify and classify things they observe

Explain what has been found out

Show they work using pictures, labels and captions

Record findings using standard units

Put some information in a chart or table

Year 1 Science - Biology - Life and Living Processes (Plants, Animals, including humans)

National Standard - 1c,1b,1a

Identify and name a range of common wild and garden plants including deciduous and evergreen trees

Name the petals, stem, leaf and root of a plant

Point out some differences between different animals

Classify common animals (birds, fish, amphibians, reptiles, mammals)

Describe how an animal is suited to its environment

Identify parts of the human body and say which part of the body is associated with each sense

Name, draw and label the basic parts of the human body

Classify animals by what they eat (carnivore, herbivore, omnivore)

Sort some animals by body covering, for example, scales, fur and skin

Year 1 Science - Chemistry - Materials

National Standard - 1c,1b,1a

Explain what material objects are made from

Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock

Explain why a material might be useful for a specific job

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

Sort materials in to groups on the basis of their simple physical properties

Year 1 Physics - Seasonal Changes

National Standard - 1c,1b,1a

Observe changes across the four seasons

Observe and describe weather associated with the seasons and how day length varies

YEAR 1 Science - National Standard - 1c,1b,1a

Working Scientifically	Biology	Chemistry	Physics
<p>Talk about what they see, touch, smell hear or taste</p> <p>Ask simple questions and recognise that they can be answered differently</p> <p>Use simple equipment to help make observations</p> <p>Perform a simple test</p> <p>Tell other people about what they have done</p> <p>Identify and classify things they observe</p> <p>Explain what has been found out</p> <p>Show they work using pictures, labels and captions</p> <p>Record findings using standard units</p> <p>Put some information in a chart or table</p>	<p>Identify and name a range of common wild and garden plants including deciduous and evergreen trees</p> <p>Name the petals, stem, leaf and root of a plant</p> <p>Point out some differences between different animals</p> <p>Classify common animals (birds, fish, amphibians, reptiles, mammals)</p> <p>Describe how an animal is suited to its environment</p> <p>Identify parts of the human body and say which part of the body is associated with each sense</p> <p>Name, draw and label the basic parts of the human body</p> <p>Classify animals by what they eat (carnivore, herbivore, omnivore)</p> <p>Sort some animals by body covering, for example, scales, fur and skin</p>	<p>Explain what material objects are made from</p> <p>Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock</p> <p>Explain why a material might be useful for a specific job</p> <p>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</p> <p>Sort materials in to groups on the basis of their simple physical properties</p>	<p>Observe changes across the four seasons</p> <p>Observe and describe weather associated with the seasons and how day length varies</p>

Year 1 - Mastery		
Working Scientifically	Biology	Chemistry
<p>Find out by watching, listening, tasting, smelling and touching</p> <p>Talk about similarities and differences</p> <p>Explain what they have found out using scientific vocabulary</p> <p>Make accurate measurements</p>	<p>Classify animals according to number of given criteria</p> <p>Point out the differences between living things and non-living things</p> <p>Say why certain animals have certain characteristics</p> <p>Sort some plants by those that can be eaten and those that cannot</p> <p>Sort some animals on a simple branching diagram such as meat eaters and non meat eaters; swim and cannot swim</p>	<p>Explain what happens to certain materials when they are heated or cooled, for example, bread, ice, chocolate, jelly, etc..</p>

Year 2 Science - Working Scientifically

National Standard - 2c,2b,2a

Use scientific vocabulary to describe what they have seen and measured

Ask people questions and use secondary sources to find answers

Observe closely, using simple equipment

Say whether things happened as they expected

Organise things in to groups

Find simple patterns (or associations)

Use text, diagrams, pictures, charts, tables to record their observations

Perform simple tests

Suggest how, and use prompts, to find things out

Year 2 Science - Biology - Life and Living Processes (Living things and their habitats; Plants; Animals, including humans)

National Standard - 2c,2b,2a

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

Describe how different habitats provide for the basic needs of different kinds of animals and plant, 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

Identify and name different sources of food

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

Describe the importance for humans of exercise, eating the right amounts of different types of food and hygiene

Find out about and describe the basic needs of animals, including humans for survival (water, food and air)

Notice that animals, including humans, have offspring which grow into adults

Year 2 Science - Chemistry (Uses of everyday materials)

National Standard - 2c,2b,2a

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

YEAR 2 Science - National Standard - 2c,2b,2a

Working Scientifically	Biology	Chemistry
<p>Use scientific vocabulary to describe what they have seen and measured</p> <p>Ask people questions and use secondary sources to find answers</p> <p>Observe closely, using simple equipment</p> <p>Say whether things happened as they expected</p> <p>Organise things in to groups</p> <p>Find simple patterns (or associations)</p> <p>Use text, diagrams, pictures, charts, tables to record their observations</p> <p>Perform simple tests</p> <p>Suggest how, and use prompts, to find things out</p>	<p>Explore and compare the differences between things that are living, dead and things that have never been alive</p> <p>Identify that most living things live in habitats to which they are suited</p> <p>Describe how different habitats provide for the basic needs of different kinds of animals and plant, and how they depend on each other</p> <p>Identify and name a variety of plants and animals in their habitats, including micro-habitats</p> <p>Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain</p> <p>Identify and name different sources of food</p> <p>Observe and describe how seeds and bulbs grow into mature plants</p> <p>Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy</p> <p>Describe the importance for humans of exercise, eating the right amounts of different types of food and hygiene</p> <p>Find out about and describe the basic needs of animals, including humans for survival (water, food and air)</p> <p>Notice that animals, including humans, have offspring which grow into adults</p>	<p>Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses</p> <p>Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching</p>

Year 2 - Mastery

Working Scientifically	Biology	Chemistry
<p>Say whether things happened as they expected and if not why not</p> <p>Use information from books and online information to find things out</p>	<p>Suggest more than one way of grouping animals and plants and explain their reasons</p> <p>Name some characteristics of an animals that help it to live in a particular habitat</p> <p>Describe what animals need to survive and link this to their habitats</p> <p>Describe what plants need to survive and link it to where they are found</p> <p>Classify living things into groups according to a range of criteria they have been given</p>	<p>Describe the properties of different materials using words like transparent or opaque, flexible etc.</p> <p>Say which materials are natural and which are man made</p> <p>Tell which materials cannot be changed back after being heated, cooled bent, stretched or twisted</p>

Year 3 Science - Working Scientifically

National Standard - 3c,3b,3a

Ask relevant questions and use different scientific enquires to answer them

Plan a fair test and explain why it is fair

Explain why they need to collect information to answer a question

Make systematic and careful observations and where appropriate, take accurate measurements using standard units

Record their observations in different ways, for example, labelled diagrams, charts etc.

Explain what they have found out and use their measurements to say whether it helps to answer their question

Use a range of equipment including a thermometer and data logger

Year 3 Science - Biology - Life and Living Processes (Plants, Animals, including humans)

National Standard - 3c,3b,3a

Identify and describe the functions of different parts of flowering plants, for example, 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

Understand 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

Year 3 Science - Chemistry - Rocks

National Standard - 3c,3b,3a

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

Year 3 Physics - Light, Forces and Magnets

National Standard - 3c,3b,3a

Recognise that they need light in order to see things 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

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

YEAR 3 Science - National Standard - 3c,3b,3a

Working Scientifically	Biology	Chemistry	Physics
<p>Ask relevant questions and use different scientific enquires to answer them</p> <p>Plan a fair test and explain why it is fair</p> <p>Explain why they need to collect information to answer a question</p> <p>Make systematic and careful observations and where appropriate, take accurate measurements using standard units</p> <p>Record their observations in different ways, for example, labelled diagrams, charts etc.</p> <p>Explain what they have found out and use their measurements to say whether it helps to answer their question</p> <p>Use a range of equipment including a thermometer and data logger</p>	<p>Identify and describe the functions of different parts of flowering plants, for example, roots, stem/trunk, leaves and flowers</p> <p>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</p> <p>Investigate the way in which water is transported within plants</p> <p>Explore the part that flowers play in the life cycle of flowering Plants, including pollination, seed formation and seed dispersal</p> <p>Identify that animals, including humans, need the right types and amount of nutrition</p> <p>Understand that they cannot make their own food; they get nutrition from what they eat</p> <p>Identify that humans and some other animals have skeletons and muscles for support, protection and movement</p>	<p>Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties</p> <p>Describe in simple terms how fossils are formed when things that have lived are trapped within rock</p> <p>Recognise that soils are made from rocks and organic matter</p>	<p>Recognise that they need light in order to see things that dark is the absence of light</p> <p>Notice that light is reflected from surfaces</p> <p>Recognise that light from the sun can be dangerous and that there are ways to protect their eyes</p> <p>Recognise that shadows are formed when the light from a light source is blocked by an opaque object</p> <p>Find patterns in the way that the size of shadows change</p> <p>Compare how things move on different surfaces</p> <p>Notice that some forces need contact between two objects, but magnetic forces can act at a distance</p> <p>Observe how magnets attract or repel each other and attract some materials and not others</p> <p>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</p> <p>Describe magnets as having two poles</p> <p>Predict whether two magnets will attract or repel each other, depending on which poles are facing</p>

Year 3 - Mastery

Working Scientifically	Biology	Chemistry	Physics
<p>Record and present what they have found using scientific language, drawings, labelled diagrams, bar charts and tables</p> <p>Use their findings to draw a simple conclusion</p>	<p>Explain how the muscular and skeletal systems work together to create movement</p> <p>Classify living things and non-living things by a number of characteristics that they have thought of</p> <p>Explain how certain living things depend on one another to survive</p> <p>Explore the role of flowers in the life cycle of flowering plants, including pollination, seed formation and seed dispersal</p>	<p>Begin to relate the properties of rocks with their uses</p>	<p>Investigate the strengths of different magnets and find fair ways to compare them</p> <p>Explain why lights need to be brighter or dimmer according to need</p> <p>Explain why their shadows change when the light source is moved closer or further from the object</p>

Year 4 Science - Working Scientifically

National Standard - 4c,4b,4a

Ask relevant questions and use different types of scientific enquires to answer them

Set up simple practical enquires, comparative and fair tests

Decide which information needs to be collected and decide which is the best way for collecting it

Take measurements using different equipment and units of measure and record what they have found in a range of ways

Make accurate measurements using standard units

Explain their findings in different ways, for example, display, presentation, writing

Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions

Make predictions based on something they have found out

Record and present what they have found using scientific language, drawings, labelled diagrams, keys, bar charts and tables

Year 4 Science - Biology - Life and Living Processes (Living things and their habitats, Animals, including humans)

National Standard - 4c,4b,4a

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

Identify and describe the simple functions of the basic parts of the human digestive system

Describe the simple functions of the organs of the human digestive system

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

Year 4 Science - Chemistry - States of Matter

National Standard - 4c,4b,4a

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

Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature

Year 4 Physics - Sound, Electricity

National Standard - 4c,4b,4a

Identify how sounds are made, associating some of them with something vibrating

Recognise that vibrations from sound 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

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

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

YEAR 4 Science - National Standard - 4c,4b,4a

Working Scientifically	Biology	Chemistry	Physics
<p>Ask relevant questions and use different types of scientific enquires to answer them</p> <p>Set up simple practical enquires, comparative and fair tests</p> <p>Decide which information needs to be collected and decide which is the best way for collecting it</p> <p>Take measurements using different equipment and units of measure and record what they have found in a range of ways</p> <p>Make accurate measurements using standard units</p> <p>Explain their findings in different ways, for example, display, presentation, writing</p> <p>Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</p> <p>Make predictions based on something they have found out</p> <p>Record and present what they have found using scientific language, drawings, labelled diagrams, keys, bar charts and tables</p>	<p>Recognise that living things can be grouped in a variety of ways</p> <p>Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment</p> <p>Recognise that environments can change and that this can sometimes pose dangers to living things</p> <p>Identify and describe the simple functions of the basic parts of the human digestive system</p> <p>Describe the simple functions of the organs of the human digestive system</p> <p>Identify the different types of teeth in humans and their simple functions</p> <p>Construct and interpret a variety of food chains, identifying producers, predators and prey</p>	<p>Compare and group materials together, according to whether they are solids, liquids or gases</p> <p>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</p> <p>Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature</p>	<p>Identify how sounds are made, associating some of them with something vibrating</p> <p>Recognise that vibrations from sound travel through a medium to the ear</p> <p>Find patterns between the pitch of a sound and features of the object that produced it</p> <p>Find patterns between the volume of a sound and the strength of the vibrations that produced it</p> <p>Recognise that sounds get fainter as the distance from the sound source increases</p> <p>Identify common appliances that run on electricity</p> <p>Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers</p> <p>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</p> <p>Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit</p> <p>Recognise some common conductors and insulators and associate metals with being good conductors</p>

Year 4 - Mastery

Working Scientifically	Biology	Chemistry	Physics
<p>Plan and carry our scientific enquiry by controlling variables fairly and accurately</p> <p>Use test results to make further predictions and set up further comparative tests</p> <p>Record more complex data and results using scientific diagrams, classifications keys, tables, bar charts, line graphs and models</p> <p>Report findings from scientific enquiries through written explanations and conclusions</p>	<p>Explain how people, weather and the environment can affect living things</p> <p>Explain how certain living things depend on one another to survive</p>	<p>Group and classify a variety of materials according to the impact of temperature on them</p> <p>Relate temperature to change of state of materials</p>	<p>Recognise if all metals are conductors of electricity</p> <p>Work out which metals can be used to connect across a gap in a circuit</p>

Year 5 Science - Working Scientifically

National Standard - 5c,5b,5a

Plan different types of scientific enquires to answer questions, including recognising and controlling variables where necessary

Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate

Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs

Use test results to make predictions to set up further comparative and fair tests

Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations

Identify scientific evidence that has been used to support or refute ideas or arguments

Year 5 Science - Biology - Life and Living Processes (Living things and their habitats, Animals, including humans)

National Standard - 5c,5b,5a

Describe the differences in life cycles of a mammal, an amphibian, an insect and a bird

Describe the life process of reproduction in some plants and animals

Describe the changes as humans develop to old age

Year 5 Science - Chemistry - Properties and Changes of Materials

National Standard - 5c,5b,5a

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

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

Year 5 Physics - Earth and Space, Forces

National Standard - 5c,5b,5a

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

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

YEAR 5 Science - National Standard - 5c,5b,5a

Working Scientifically	Biology	Chemistry	Physics
<p>Plan different types of scientific enquires to answer questions, including recognising and controlling variables where necessary</p> <p>Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</p> <p>Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</p> <p>Use test results to make predictions to set up further comparative and fair tests</p> <p>Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations</p> <p>Identify scientific evidence that has been used to support or refute ideas or arguments</p>	<p>Describe the differences in life cycles of a mammal, an amphibian, as insect and a bird</p> <p>Describe the life process of reproduction in some plants and animals</p> <p>Describe the changes as humans develop to old age</p>	<p>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</p> <p>Know that some materials will dissolve in liquid to form a solution</p> <p>Describe how to recover a substance from a solution</p> <p>Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</p> <p>Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</p> <p>Demonstrate that dissolving, mixing and changes of state are reversible changes</p> <p>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</p>	<p>Describe the movement of the Earth, and other planets, relative to the Sun in the solar system</p> <p>Describe the movement of the Moon relative tot the Earth</p> <p>Describe the Sun, Earth and Moon as approximately spherical bodies</p> <p>Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky</p> <p>Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</p> <p>Identify the effects of air resistance, water resistance and friction, that act between moving surfaces</p> <p>Recognise that some mechanisms including levers, pulleys and gears, allow a smaller force to have a greater effect</p>

Year 5 - Mastery

Working Scientifically	Biology	Chemistry	Physics
<p>Explore different ways to test an idea, choose the best way and give reasons</p> <p>Vary one factor whilst keeping the others the same in an experiment</p> <p>Use information to help make a prediction</p> <p>Explain (in simple terms) a scientific idea and what evidence supports it</p>	<p>Create a timeline to indicate stages of growth in certain animals, such as frogs and butterflies</p> <p>Observe their local environment and draw conclusions about life cycles, for example, the vegetable garden or plants in a shrubbery</p>	<p>Describe methods for separating mixtures, for example, filtration, distillation</p>	<p>Compare the time of day at different places on the earth</p> <p>Describe how the motion is affected by forces, for example, including gravitational attractions, magnetic attraction and friction</p> <p>Work out how water can cause resistance to floating objects</p>

Year 6 Science - Working Scientifically

National Standard - 6c,6b,6a

Plan different types of scientific enquires to answer questions, including recognising and controlling variables where necessary

Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate

Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs

Use test results to make predictions to set up further comparative and fair tests

Report and present findings from enquires, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations

Year 6 Science - Biology - Life and Living Processes (Living things and their habitats, Animals, including humans, Evolution and inheritance)

National Standard - 6c,6b,6a

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

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

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

Year 6 Physics - Light, Electricity

National Standard - 6c,6b,6a

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

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

YEAR 6 Science - National Standard - 6c,6b,6a

Working Scientifically	Biology	Physics
<p>Plan different types of scientific enquires to answer questions, including recognising and controlling variables where necessary</p> <p>Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</p> <p>Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</p> <p>Use test results to make predictions to set up further comparative and fair tests</p> <p>Report and present findings from enquires, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations</p>	<p>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</p> <p>Give reasons for classifying plants and animals based on specific characteristics</p> <p>Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood</p> <p>Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</p> <p>Describe the ways in which nutrients and water are transported within animals, including humans</p> <p>Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago</p> <p>Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</p> <p>Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution</p>	<p>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</p> <p>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</p> <p>Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them</p> <p>Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</p> <p>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</p> <p>Use recognised symbols when representing a simple circuit in a diagram</p>

Year 6 - Mastery

Working Scientifically	Biology	Physics
<p>Use information from different sources to answer a question and plan a scientific enquiry</p> <p>Make a prediction which links with other scientific knowledge</p> <p>Plan in advance which equipment they will need and use it well</p> <p>Link their conclusions to other scientific knowledge</p>	<p>Explain how some living things adapt to survive in extreme conditions</p> <p>Analyse the advantages and disadvantages of specific adaptations, such as being on two rather than four feet</p> <p>Begin to understand what is meant by DNA</p> <p>Readily group animals into reptiles, fish, amphibians, birds and mammals</p> <p>Make a diagram of the human body and explain how different parts work and depend on one another</p> <p>Compare the organ systems of humans to other animals</p>	<p>Use the ray model to explain the size of shadows</p> <p>Explain the danger of short circuits and what a fuse is</p>

