Woodlands Primary School

SCIENCE POLICY &
STATEMENT OF INTENT

Status:	Current	
Date Adopted by Governing body:	January 2020	
Created by Melinda Birt	January 2020	
Review by Curriculum Committee:	January 2022	2 years

Statement of Intent

At Woodlands School we believe that children should have the opportunity to develop an understanding of the world in which they live. We want them to ask questions about the world, using first-hand exploration in order to foster curious and enquiring minds.

W**e aim to**:

- Deliver high quality, interesting and engaging science lessons, to prepare our children for life in an increasingly scientific and technological world.
- Use scientific contexts to develop and consolidate cross-curricular skills, applying their ICT, Literacy and Numeracy skills in science.
- Relate science to everyday life through the use of everyday materials and situations. Fostering concern about, and active care for, our environment.
- Help our children develop and extend scientific knowledge and understanding.
- Help develop and extend our children's ability to work scientifically, encouraging a scientific approach to problem-solving, with a good attitude towards Health and safety.
- Encourage our children's instinctive curiosity, perseverance, enjoyment, and enthusiasm, and develop their science capital.
- Teach science in a global and historical context; including the contributions significant scientists from a range of cultures.
- Build scientific vocabulary so that pupils can articulate scientific concepts clearly and precisely.

Our Principles of Science Teaching

***We can ask questions and test our ideas to develop and deepen our understanding of the world around us.**

***We are excited and enthusiastic about Science.**

***Our Science lessons are linked to other curriculum subjects.**

***Our Science relates to our real life experiences.**

***We can use equipment, working scientifically to find an answer.**

***We can investigate with 'hands on' experiments.**

***We can use and apply our science skills.**

***We can listen to each other, to build on each other's ideas and overcome problems.**

***We can use the correct scientific vocabulary**

*** Our lessons are fun and engaging. We can explore the environment around us.**

Implementation

Teachers create a positive attitude to science learning within their classrooms and reinforce an expectation that all pupils are capable of achieving high standards in science. Our whole school approach to the teaching and learning of science involves the following;

● Science will be taught in planned and arranged single subject blocks, to have a enquiry-based approach. This is a strategy to enable the achievement of a greater depth of knowledge.

● Through our planning, we involve problem solving opportunities that allow children to apply their knowledge, and find out answers for themselves. Children are encouraged to ask their own questions and be given opportunities to use their scientific skills and research to discover the answers. This curiosity is celebrated within the classroom. Planning involves teachers creating engaging lessons, often involving high-quality resources to aid understanding of conceptual knowledge. Teachers use precise questioning in class to test conceptual knowledge and skills, and assess pupils regularly to identify those children with gaps in learning, so that all pupils keep up.

● We build upon the knowledge and skill development of the previous years. As the children's knowledge and understanding increases, and they become more proficient in selecting, using scientific equipment, collating and interpreting results, they become increasingly confident in their growing ability to come to conclusions based on real evidence.

● Working Scientifically skills are embedded into lessons to ensure these skills are being developed throughout the children's school career and new vocabulary and challenging concepts are introduced through direct teaching. This is developed through the years, in-keeping with the topics.

● Teachers demonstrate how to use scientific equipment, and the various Working Scientifically skills in order to embed scientific understanding. Teachers find opportunities to develop children's understanding of their surroundings by accessing outdoor learning and workshops with experts.

● Children are offered a wide range of extra-curricular activities, visits, trips and visitors to complement and broaden the curriculum. These are purposeful and link with the knowledge being taught in class.

● Regular events, such as Science Week or project days, such as Nature Day, allow all pupils to come off-timetable, to provide broader provision and the acquisition and application of knowledge and skills. These events often involve families and the wider community.

Impact

The successful approach at Woodlands Primary results in a fun, engaging, high-quality science education, that provides children with the foundations and knowledge for understanding the world. Our engagement with the local environment ensures that children learn through varied and first hand experiences of the world around them. Frequent, continuous and progressive learning outside the classroom is embedded throughout the science curriculum. Through various workshops, trips and interactions with experts and local charities, children have the understanding that science has changed our lives and that it is vital to the world's future prosperity. Children learn the possibilities for careers in science, as a result of our community links and connection with national agencies such as First Futures, ensuring that children have access to positive role models within the field of science from the immediate and wider local community. From this exposure to a range of different scientists from various backgrounds, all children feel they are scientists and capable of achieving. Children at Woodlands Primary School overwhelmingly enjoy science and this results in motivated learners with sound scientific understanding.

Teaching Objectives

- Teachers plan and deliver science in ways that are imaginative, engaging, purposeful, well managed and enjoyable, incorporating a range of teaching and learning styles.
- Giving clear and accurate teacher explanations and offering skilful questioning.
- Offering ample opportunity for investigation and enquiry, through hands on practical experience, with increasing levels of independence.
- Making links between science and other subjects, and using ICT in particular to enhance the teaching and learning of the subject.
- Work collaboratively in pairs, groups and/or individually.
- Develop their questioning, predicting, observing, measuring and interpreting skills; recording their work in a variety of ways e.g. writing, diagrams, graphs, tables.
- Providing opportunities for use of scientific vocabulary to articulate predictions and understanding of scientific concepts.
- Provide engaging and interactive science displays, which include key vocabulary and relevant questions, to inspire and inform.

Curriculum Organisation

- Science in the Early Years Foundation Stage is planned using the Early Years Curriculum 'Understanding of the World'. Key Stage 1 and 2 teachers plan science lessons using the new National Curriculum (2014).
- In Key Stage 1 and Key Stage 2 science is taught as a discrete subject in timetabled blocks; although cross curricular links are developed where possible. Each topic is revisited as the children progress through the school, allowing the children to consolidate prior learning and aid progression.

Y1 Afternoon curriculum overview 2019-20

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Term 1 (7 ½ weeks)	Art – Sketching Self-portraits. Is a self-portrait the same as a photograph?		DT – Food and nutrition- Healthy food is all boring and hard to prepare, agree or disagree?		Music- What's the difference between a note and a beat?	Science – Seasonal changes. What is your favourite season and why?		
Term 2 (7 weeks)	History – Significant individuals – Explorers – Why are the achievements of Neil Armstrong and Christopher Columbus important?			Geography – Map skills – Which four countries make up the UK? Name and locate the capital cities and surrounding seas.		KS1 Nativity Science – My body. Can you smell things using your ear? Explain!		
Term 3 (6 weeks)	Geography – compare area of UK with non-Euro – What is the same and what is different about these two locations? – one UK and one non- Euro		Science – Mrs Martindale says 'I'd love to make a nice comfy chair, I think I'll use just tissues!' Do you think this is a good idea? Explain!		Art – Painting. Do you have to use a paintbrush to paint?			
Term 4 (6 weeks)	Science – Plants. All plants look exactly the same, agree or disagree?		DT – Cutting. You need to cut up a sausage, a picture of batman and a piece wood. What tools will you use?		Geography – Weather and Seasons. Would you wear a woolly hat all year round? Explain.			
Term 5 (5 weeks)	Music- Can you make a rhythm with your body?	History – The Great Fire of London – Why was the Great Fire of London such an important event?			SPORTS WEEK			
Term 6 (7 ½ weeks)	Art – Collage. Does a collage always have to be made with just one material?		Animals including humans – Identifying animals. Would all animals make a good pet? Explain.			Geography – Field work. What is the most interesting thing you can find in your local area?	History – Local history – What is the Magna Carta? Why is it significant?	

Y2 Afternoon curriculum overview 2019-20

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Term 1 (7 ½ weeks)	Science- Living things and their habitat			**Geography**- What are the key human and physical features of Bemerton Heath?			Art – How can different textures be represented with a pencil? (Animal sketching)	
Term 2 (7 weeks)	DT – Cam toys		Geography – Map skills		KS1 Christmas play			
Term 3 (6 weeks)	History – How has phone technology changed in the last 20 years?		Art – Young gallery (photography)		Music			
Term 4 (6 weeks)	Science -plants		Art – What are the similarities and differences between Van Gogh's Sunflowers and Georgia O'Keefe's …?		Geography- How does the climate change based on where in the world a country is?			
Term 5 (5 weeks)	Music	**History** – How was life different on the Titanic compared to the QE2?			SPORTS WEEK			
Term 6 (7 ½ weeks)	DT – Food and nutrition (Greek salad)		Science – Use of everyday materials		History – What are the similarities and differences between the lives and actions of Rosa Parks and Emily Davison?		Science-Animals including humans	

Y3 Afternoon curriculum overview 2019-20

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Term 1 (7 ½ weeks)	Science - Light		Geography – Map skills		Geography – How do the UK and Poland compare?		DT – Why is it important to measure and cut accurately when making a bird box?	
Term 2 (7 weeks)	History – How did Britain change from the Stone Age to the Iron Age?			KS2 Christmas Play			Art – colour mixing	
Term 3 (6 weeks)	DT – What is the importance of safety and hygiene when cooking (Food and nutrition – healthy cooked breakfast)		Science – Forces and magnets		Art – How did the impressionists represent water? (Monet/painting)			
Term 4 (6 weeks)	History – What impact did the Roman Empire have on Britain?			Music	Science – Plants			
Term 5 (5 weeks)	Art – How does a landscape artist decide where to sketch from? (Constable – Salisbury Cathedral)		Science - Rocks		SPORTS WEEK			
Term 6 (7 ½ weeks)	Geography – What are the causes and effects of volcanoes?		Art – Collage (texture and rubbings)	Science – Animals inc. humans		Music	RSE	

Y4 Afternoon curriculum overview 2019-20

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Term 1 (7 ½ weeks)	Science – Living things and their habitats (environment)		DT – How do levers, pulleys and gears help us move heavy objects easily?		Geography – Map skills	Geography – How does life in the Amazon rainforest differ from life in the … (another biome)?		
Term 2 (7 weeks)	Science – Animals inc. humans – Eating & Digestion		Music	Art – How do Cubist artists make 3D images into 2D?		KS2 Christmas play	Art – Observational sketching	
Term 3 (6 weeks)	History – How did the Anglo-Saxons live?		History – How did life change when the Vikings invaded? Art – sculpture (clay)		Science - States of matter			
Term 4 (6 weeks)	Science - Sound		Geography – What are the causes of global warming and what implication does this have on the future?		Art – How do the animals of Henri Rousseau and Franz Marc compare? (painting)			
Term 5 (5 weeks)	DT – Why is it important to have a healthy, balanced meal each day? (Dinner using eatwell plate)		Science – Electricity – Circuits & conductors		SPORTS WEEK			
Term 6 (7 ½ weeks)	History – What were the greatest achievements of the Ancient Egyptians?			Music	Geography – How was land used around the settlement of…?		RSE	

Y5 Afternoon curriculum overview 2019-20

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Term 1 (7 ½ weeks)	Art – Pop Art (Painting) - colour		DT –What makes an item of clothing successful?		History – What was life like in the trenches?		Geography – Map skills	
Term 2 (7 weeks)	History – How did Britain change during WW1? / Science – Properties and changes of materials			KS2 Christmas play			Music	
Term 3 (6 weeks)	Science - Forces		Art – Young gallery		DT – How could you influence a teenage market to swap fizzy drinks with a healthy alternative? (Food and nutrition)			
Term 4 (6 weeks)	Art – How are people represented in Roy Lichtenstein's work? (Sketching) / History – Was life in Ancient Greece peaceful?		History – What influence has Ancient Greece had on the Western World?		Science – Earth and Space			
Term 5 (5 weeks)	Geography –How do the cities of London and Mumbai compare?		Music	Art – Is printing an efficient method for mass-producing images?	SPORTS WEEK			
Term 6 (7 ½ weeks)	Science – Life Cycles		Geography – What is the process of a river?		Geography – How has river use in London changed over time?		RSE inc. Animals including humans	

Y6 Afternoon curriculum overview 2019-20

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Term 1 (7 ½ weeks)	Geography – Map skills		Science - Electricity		DT – Is it possible to create a nutritious fast food meal? (Food and nutrition)			
Term 2 (7 weeks)	UK History – What were the plans of the gunpowder plotters?		Science - Light		Art - Shoe box Magrite – Sculpture and sketching			
Term 3 (6 weeks)	Science – Living things and their habitats		Geography – comparing major cities	WW2 – Why did Britain win the Battle of Britain?		KINGSWOOD		
Term 4 (6 weeks)	DT –How can electrical circuits be used in children's games?		Science – Evolution and Inheritence		Geography – What is the overall impact of a tsunami?			
Term 5 (5 weeks)	Art – What do surrealist artists make their work seem dream-like? (painting)		Revision	SATS	SPORTS WEEK			
Term 6 (7 ½ weeks)	Science – Animals inc. humans		WW2 – How did propaganda help defeat Germany? / Art – Surrealist photography		Geography - Fieldwork	SRE	Local History – How has Salisbury changed since 1900?	

- Science is delivered either by the class teacher or by the science co-ordinator.
- All science lessons have focussed skills and knowledge based learning objectives, clear differentiation and success criteria to ensure that pupils make at least good progress.
- 'Working scientifically' is embedded throughout the areas of learning in key stage 1 and 2; this focuses on the key aspects of scientific enquiry which enable pupils to investigate and answer scientific questions.
- ICT is promoted as a good tool for enquiry work, including use of microscopes, interactive white-boards, digital thermometers, digital cameras and video recorders, web cameras and data logging systems. The schools shared system has a science folder within which resources are shared. The school combines these secondary sources with first-hand scientific enquiries, building children's science skills.
- Lessons mainly take place within the classroom, but teachers are encouraged to utilise the school grounds or local woodland, and the science laboratories at Sarum Academy, when appropriate.

Continuity and Progression

- Continuity and progression should be achieved through the planning, which must include the progression of skills as well as scientific concepts.
- Learning objectives should be based on the National curriculum statements within the programme of study.
- All aspects of the programmes of study are delivered at a level which matches the age and ability of the children.

- Teachers track pupil progress through recording observations on the assessment sheets.
- Progression and continuity is monitored by the science co-ordinator at the end of Term 2, Term 4 and Term 6. Through reviewing planning and children's work.

Working Scientifically Progression

Statements taken from:
Science programmes of study: key stages 1 and 2, National curriculum in England (2013) DFE
Statutory framework for the early years foundation stage (2017) DFE

skills \ stage	EYFS	KS1	Lower KS2	Upper KS2
PLAN	➢ choose the resources they need for their chosen activities and say when they do or don't need help	➢ ask simple questions and recognising that they can be answered in different ways	➢ ask relevant questions and using different types of scientific enquiries to answer them ➢ set up simple practical enquiries, comparative and fair tests	➢ plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
DO	➢ know about similarities and differences in relation to places, objects, materials and living things ➢ make observations of animals and plants ➢ explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. ➢ select and use technology for particular purposes	➢ observe closely, using simple equipment ➢ perform simple tests ➢ identify and classify	➢ make systematic and careful observations and, where appropriate, take accurate measurements using standard units, use a range of equipment, including thermometers and data loggers	➢ take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
RECORD	➢ represent their own ideas, thoughts and feelings through design and technology, art, music, dance, role play and stories	➢ gather and record data to help in answering questions.	➢ gather, record, classify and present data in a variety of ways to help in answering questions ➢ record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables	➢ record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
REVIEW	➢ talk about the features of their own immediate environment and how environments might vary from one another ➢ explain why some things occur and talk about changes	➢ use their observations and ideas to suggest answers to questions	➢ report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions ➢ use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions ➢ identify differences, similarities or changes related to simple scientific ideas and processes ➢ use straightforward scientific evidence to answer questions or to support their findings	➢ 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

Time allocation

At KS1 pupils should spend the equivalent of 1.5 hours a week on science (54 hours per school year) and at KS2 this rises to the equivalent of 2 hours a week (72 hours per school year).

Resources

- Science resources are stored in a central resource area in the shared area.
- A signing out book is to be used whenever resources are borrowed so that equipment doesn't go missing and resources can be updated and reordered when necessary.
- Woodlands has access to the West Salisbury science cluster resources, including microscopes and the 'My Body' boxes.
- A wildlife garden and a shelter with seating are in development (in conjunction with Salisbury Rotary and Wilton Rotary).
- Sarum Academy have offered to lend us resources and allow classes to experience using their science laboratory.
- The school also has a wide variety of scientific texts in the library.
- The science co-ordinator is responsible for updating and renewing science resources.

Cross-curricular links

- PSHE - Health Education e.g. humans as organisms; micro-organisms, caring for our environment, drugs and alcohol, and team work.
- Citizenship - Understanding and being able to make informed decisions about scientific advances.
- SRE – Human lifecycles, puberty, human reproduction.
- Literacy – Story Making Project: Text based investigations; Non-fiction – Scientific texts.
- Numeracy – Problem solving, data handling, identifying patterns.
- Design & Technology - Forces, electricity and materials.
- Geography - Environmental issues, rocks and soils, fossils, volcanoes.
- ICT – Communication, data logging, CD Rom and Internet.
- PE – Human skeleton (joints and muscles), healthy eating, exercise, heart and circulatory system, and forces.
- History - Development of things in everyday life and famous scientists.
- Art - Materials and forces
- Music - Sound

Skills

- Speaking and listening - Group discussion, reporting back, questioning, and precise use of language.
- Reading - Following instructions, researching, extending knowledge, and use of scientific language within texts.
- Writing - Planning, labelling, instruction writing, correct use of spelling, punctuation and grammar.
- Numeracy - Application of number, measuring, using graphs, charts and tables, and pattern seeking.
- ICT - Collecting, sorting and retrieving data from a variety of sources; data logging, word processing; sharing information through electronic media.
- Problem solving - Finding ways to answer scientific questions with creative solutions.

- Improving own learning & performance - Reflecting on and evaluating what they have achieved.
- Working with others -When carrying out investigations.

Health and Safety

- Teachers must plan safe activities for science, include any safety precautions that should be taken in the planning and complete a risk assessment if planning investigations out of school grounds.
- Teachers and teaching assistants need to be aware of health and safety procedures when using equipment or food in science lessons.
- Pupils must be aware of the need for personal safety and the safety of others during science lessons.
- Safety googles are available within the science resource area.
- The Association for Science Education document 'Be Safe' is available for consultation and can be found in the science co-ordinator's cupboard.

Equal Opportunities

- We ensure that all our children have the opportunity to gain scientific skills, knowledge and understanding regardless of gender, race, class, physical or intellectual ability.
- Our expectations do not limit pupil achievement and assessment does not involve cultural, social, linguistic or gender bias.
- We aim to teach science in a broad global and historical context, using the widest possible perspective and including the contributions of people of many different backgrounds.
- We draw examples from other cultures, recognising that simple technology may be superior to complex solutions.
- Lessons planned are always inclusive of all learning abilities. We recognise the particular importance of first-hand experience for motivating children with learning difficulties. We also recognise that science may strongly engage our gifted and talented children, and we aim to challenge and extend them.

Community Links

- Cluster group – Sharing good practice, ideas and expertise, developing a consistent approach within schools and across the cluster, looking at examples of pupil's work and planning and exploring new resources and assessment formats for tracking skills and knowledge in science.
- Sarum Academy – Use of resources and science laboratory.

Assessment, Reporting and Recording

- The learning objectives and success criteria for each lesson is clearly stated to the children at the start of each lesson and displayed in their books for each piece of work.
- Assessment is an integral part of teaching and should be used to inform future planning and delivery. It allows teachers to identify what the children already know, what has been learnt and to monitor children's progress.
- Assessment activities are completed at the end of each unit, and data inputted by the teacher into Insight to track attainment and progress.
- Summary data is evaluated, shared and utilised to create next steps.
- Written work is marked positively (see Marking policy), making it clear where the work is good, and how it could be further improved.

Evaluation and Monitoring

- Science co-ordinator evaluates planning and children's books termly.
- Annual lesson observations are conducted by the science co-ordinator and Headteacher and / or science governor.
- Feedback and advice is given to teacher, and targets set when areas for development are identified.
- Pupil interviews take place twice a year to inform science teaching and development.

The Role of the Subject Leader

The subject leader's responsibilities are:

- To ensure a high profile of the subject
- To plan and regularly update the Science Subject Action Plan
- To ensure a full range of relevant and effective resources are available to enhance and support learning.
- To ensure progression of the key knowledge and skills identified within each unit and that these are integral to the programme of study and secure at the end of each age phase.
- To monitor pupil work/books in Science and ensure that key knowledge is evidenced in outcomes, alongside and as supported, by the SLT (Senior Leadership Team). This includes carrying out a book scrutiny for each unit of Science work.
- To ensure staff receive prompt feedback and make sure that staff achieve the development points that they are given.
- To monitor planning and the quality of Science teaching.
- To lead further improvement in and development of the subject as informed by effective subject overview.
- To ensure that the Science curriculum has a positive effect on all pupils, including those who are disadvantaged or have low attainment.
- To ensure that the Science curriculum take account of the school's context, promotes children's pride in the local area and provides access to positive role models from the local area to enhance the Science curriculum.
- To ensure that approaches are informed by and in line with current identified good practice and pedagogy.
- The subject leader will attend relevant training for curriculum leaders and share information with staff.
- To ensure CPD is in place through working with the head teacher/ leadership team and at staff meetings.
- Assessment - The leader will also monitor staff use of the INSIGHT Assessment tracking system. Evidence will be kept from year to year.
- To work closely with the Lead Governor for Science (providing appropriate support and challenge) and ensure that they meet with the subject leader at least three times every academic year (once every old term).

Progression of Knowledge in Science	
Plants	
Year 1	Can identify and name a variety of common wild and garden plants, including deciduous and evergreen trees Can identify and describe the basic structure of a variety of common flowering plants, including trees
Year 2	Can 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
Year 3	Can identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers Can 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 Can 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
Animals, including humans	
Year 1	Can identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals Can identify and name a variety of common animals that are carnivores, herbivores and omnivores Can describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets) Can identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense
Year 2	Can notice that animals, including humans, have offspring which grow into adults find out about and describe the basic needs of animals, including humans, for survival (water, food and air) Can describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene
Year 3	Can identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat Can identify that humans and some other animals have skeletons and muscles for support, protection and movement
Year 4	Can describe the simple functions of the basic parts of the digestive system in humans Can identify the different types of teeth in humans and their simple functions Can construct and interpret a variety of food chains, identifying producers, predators and prey
Year 5	Can describe the changes as humans develop to old age
Year 6	Can identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood Can recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function Can describe the ways in which nutrients and water are transported within animals, including humans
Living things and their habitats	
Year 2	Can explore and compare the differences between things that are living, dead, and things that have never been alive Can identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other Can identify and name a variety of plants and animals in their habitats, including microhabitats Can describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food
Year 4	Can recognise that living things can be grouped in a variety of ways Can explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment

	Can recognise that environments can change and that this can sometimes pose dangers to living things
Year 5	Can describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird Can describe the life process of reproduction in some plants and animals
Year 6	Can 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 Can give reasons for classifying plants and animals based on specific characteristics
Seasonal changes	
Year 1	Can observe changes across the 4 seasons Can observe and describe weather associated with the seasons and how day length varies
Everyday materials / States of matter	
Year 1	Can distinguish between an object and the material from which it is made Can identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock Can describe the simple physical properties of a variety of everyday materials Can compare and group together a variety of everyday materials on the basis of their simple physical properties
Year 2	Can identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses Can find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching
Year 4	Can compare and group materials together, according to whether they are solids, liquids or gases Can observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) Can identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature
Year 5	Can 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 Can know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution Can use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating Can give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic Can demonstrate that dissolving, mixing and changes of state are reversible changes Can 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
Rocks / Evolution and inheritance	
Year 3	Can compare and group together different kinds of rocks on the basis of their appearance and simple physical properties Can describe in simple terms how fossils are formed when things that have lived are trapped within rock Can recognise that soils are made from rocks and organic matter
Year 6	Can recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago Can recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents Can identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution
Light	
Year 3	Can recognise that they need light in order to see things and that dark is the absence of light notice that light is reflected from surfaces Can recognise that light from the sun can be dangerous and that there are ways to protect their eyes

	Can recognise that shadows are formed when the light from a light source is blocked by an opaque object Can find patterns in the way that the size of shadows change
Year 6	Can recognise that light appears to travel in straight lines Can 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 Can 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 Can use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them
Forces	
Year 3	Can compare how things move on different surfaces Can notice that some forces need contact between 2 objects, but magnetic forces can act at a distance Can observe how magnets attract or repel each other and attract some materials and not others Can 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 Can describe magnets as having 2 poles Can predict whether 2 magnets will attract or repel each other, depending on which poles are facing
Year 5	Can explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object Can identify the effects of air resistance, water resistance and friction, that act between moving surfaces Can recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect
Electricity	
Year 4	Can identify common appliances that run on electricity Can construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers Can 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 Can recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit Can recognise some common conductors and insulators, and associate metals with being good conductors
Year 6	Can associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit Can 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 Can use recognised symbols when representing a simple circuit in a diagram
Sound	
Year 4	Can identify how sounds are made, associating some of them with something vibrating Can recognise that vibrations from sounds travel through a medium to the ear Can find patterns between the pitch of a sound and features of the object that produced it Can find patterns between the volume of a sound and the strength of the vibrations that produced it Can recognise that sounds get fainter as the distance from the sound source increases
Earth and space	
Year 5	Can describe the movement of the Earth and other planets relative to the sun in the solar system Can describe the movement of the moon relative to the Earth Can describe the sun, Earth and moon as approximately spherical bodies Can use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky