Woodlands Primary School

SCIENCE POLICY &
STATEMENT OF INTENT

Status:	Current	
Date Adopted by Governing body:	January 2023	
Created by Melinda Bradberry	January 2023	
Review by Curriculum Committee:	January 2025	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.
- Staff and children 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 an 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.
- Events, such as Science days, allow all pupils to come off-timetable, to provide broader provision and the acquisition and application of knowledge and skills.

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, 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 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

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Term 1 (6 weeks and 2 half weeks)	SCIENCE – Everyday materials		GEOGRAPHY – Our local area.		ART – Is a self-portrait the same as a photograph?			
Term 2 (7 weeks)	DT – How do I make a tasty and healthy dessert?		HISTORY – Grace Darling		COMPUTING – iSafe	Xmas performance		
Term 3 (7 weeks)	SCIENCE – Seasonal changes		HISTORY – Why was the Great Fire such an important event?		GEOGRAPHY – Continents and oceans of the world		COMPUTING – iAlgorithm	
Term 4 (6 weeks)	SCIENCE – Plants		DT – How do I join different fabrics to make an item?		ART – Printing- Is it best to put the object on the paper or paper on the object?			
Term 5 (5 weeks)	COMPUTING - iProgram	SCIENCE – Animals, including humans		ART – What can you use for a nature sculpture? Goldsworthy				
Term 6 (7 weeks)	GEOGRAPHY – Comparing the weather in an area of the UK with non-European locations (Kenya, Australia, Antarctica)		HISTORY – The Moon Landing		COMPUTING - iDraw	SCIENCE - RSE	ART HISTORY– Cave art- Do you have to use a paint brush to paint?	

Y2 Afternoon curriculum overview

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Term 1 (6 weeks with 2 half weeks)	ART - Sketching How can different textures be represented with a pencil?		SCIENCE – Animals, including humans		GEOGRAPHY – What are the characteristics of the four countries that make up the United Kingdom?			
Term 2 (7 weeks)	COMPUTING – E-safety	HISTORY – How did Caxton & Bell change the way that we communicate?		DT – How do I build a stable structure?		Xmas performance		
Term 3 (7 weeks)	GEOGRAPHY – How does the climate change based on where in the world a country is located?		SCIENCE – Use of everyday materials		COMPUTING - Programming	HISTORY – What are the similarities and differences between the lives and actions of Rosa Parks and Emily Davison?		
Term 4 (6 weeks)	DT – How do I create a unique bookmark?		ART - Painting What are the similarities and differences between Van Gogh and O-Keefe?		SCIENCE – Living things and their habitats			
Term 5 (5 weeks)	ART - Sculpture What can be used to make a sculpture		COMPUTING – Data	SCIENCE – Plants				
Term 6 (7 weeks)	GEOGRAPHY – What are the key human and physical features of Bemerton Heath?		COMPUTING – Technology in our lives	ART - History Frank Bowling	HISTORY – The Sinking of the Titanic		SCIENCE - RSE	

Y3 Afternoon curriculum overview 2022-23

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Term 1 (6 weeks with 2 half weeks)	SCIENCE - Light		ART - Sketching – How does a landscape artist decide where to sketch from?		Computing safety	COMPUTING - network	Christmas	
Term 2 (7 weeks)	HISTORY – How did Britain change from the Stone Age to the Iron Age?		HISTORY – What impact did the Roman Empire have on Britain?		ART – Sculpture- Which way of making a clay pot do I prefer?	DT – How do I help the environment by replacing the plastic bag?		
Term 3 (5 weeks)	SCIENCE – Animals inc. humans		GEOGRAPHY – How do the UK and Poland compare?		SCIENCE- Forces and magnets			
Term 4 (6 weeks)	GEOGRAPHY – Create a tour/map of the school (Fieldwork	Geography- OS map symbols	SCIENCE – Plants		Art – How did the Impressionists represent water in painting?	Art History- Alma Thomas		
Term 5 (6 weeks)	SCIENCE – Rocks		GEOGRAPHY – What are the causes and effects of volcanoes?	Computing- Programming	Knowledge re-cap weeks			
Term 6 (7 weeks)	COMPUTING – Digital Research	DT – How can I create a healthy seasonal drink?		HISTORY – What was responsible for the mysterious decline of the Mayans?		SCIENCE RSE	Computing- Simulate	

Y4 Afternoon Curriculum Overview

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Term 1 6 weeks with 2 half weeks	HISTORY – How did the Anglo-Saxons live? GEOGRAPHY – Map Skills		HISTORY – Were the Vikings bloodthirsty brutes or honourable warriors?		ART – SKETCHING – How are people represented by Roy Lichtenstein?			
Term 2 (7 weeks)	SCIENCE – States of Matter			COMPUTING – Online Safety iSAFE		DT – Are all pizzas unhealthy?		
Term 3 (6 weeks)	GEOGRAPHY – How does life in the Amazon differ from life in the New Forest?		SCIENCE – Electricity		COMPUTING – iDATA	ART – Painting Animals of Franz Marc and Henri Rousseau		
Term 4 (6 weeks)	SCIENCE – Living things and their habitats & Sound			DT – How do I help the environment by building a home for a wild animal?		COMPUTING – iALGORITHM		
Term 5 (6 weeks)	GEOGRAPHY – What are the causes of global warming and what implication does this have for the future?			COMPUTING – iANIMATE	SCIENCE – Animals including humans			
Term 6 (7 weeks)	GEOGRAPHY – How was land used around the settlement of…	COMPUTING – iPROGRAM	Art – Sculpture Giacometti	ART HISTORY – Pablo Picasso	HISTORY – What are the greatest achievements of the Ancient Egyptians?		SCIENCE - RSE	

Y5 Afternoon curriculum overview

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Term 1 6 weeks with 2 half weeks	SCIENCE – Properties and changes of materials		ART - Sketching- How can different shading techniques enhance my sketch?		COMPUTING – E-safety	RE	Consolidation	
Term 2 (7 weeks)	HISTORY – What was life like in the trenches?		HISTORY – How did Britain change during WW1?		DT – How do I bring a picture to life?		RE	
Term 3 (7 weeks)	SCIENCE – Earth Space		GEOGRAPHY – How does a UK region compare with a region in a Euro country and a region within North or South America? Map Skills		Art - Painting- How did pop artists use colour for impact?			
Term 4 (6 weeks)	ART HISTORY – Banksy		SCIENCE – Life Cycles		Computing Draw Model /DT (Merged subjects) Kapow – Digital World navigating the world - CAD 3D			
Term 5 (5 weeks)	Science – Forces		GEOGRAPHY – How has river use changed over time? – What is the process of a river? (Fieldwork)			Computing Web		
Term 6 (7 weeks)	Computer Programming	HISTORY – What influence has Ancient Greece had on the western world?			ART - Printing- is printing an effective method of mass producing images? William Morris	SCIENCE – RSE SCIENCE – Changes and reproduction		

Y6 Afternoon curriculum overview

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Term 1 6 weeks with 2 half weeks	SCIENCE - Light		ART - Sketching Sketching- How do I create a 3D image on a 2D page?		GEOGRAPHY – What is the overall impact of a tsunami?			
Term 2 (7 weeks)	SCIENCE – Changing Circuits		DT – How do I help keep the school safe and secure?		RE	The Time Travelling Giant – Local History Project Salisbury Museum		
Term 3 (6 weeks)	GEOGRAPHY – How do the major cities of the world compare?		SCIENCE – Evolution and Inheritance		HISTORY – WW2			
Term 4 (6 weeks)	ART - Painting - What do surrealist images tell us about the artist?		SCIENCE – Healthy bodies		DT – Is it possible to create a nutritious fast food meal?	Art - Sculpture Sculpture- If you could build a statue to represent yourself, what would it look like? Gormley		
Term 5 (6 weeks)	SCIENCE – Classifying Organisms		Art History – Frida Kahlo	Geography Map Skills/Fieldwork		Year 6 Residential		
Term 6 (7 weeks)	Year 6 Performance		Year 6 Parent Performances	HISTORY – Local history unit (Old Sarum and Salisbury Cathedral)		SCIENCE – RSE Year 6 Activities Week	Year 6 Leavers Service	

- Science is delivered either by the class teacher or by the science leader.
- 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 when appropriate.

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).

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

Science Overviews

Each science topic for each year group has a detailed overview, listing the National Curriculum objectives, Knowledge and skills objectives, vocabulary, prior knowledge and progression, enrichment opportunities, key scientists, health and safety and resources.

<table>
<tr><td colspan="4">Unit Overview
Year 1 – Science – Everyday materials</td></tr>
<tr><td rowspan="2">National Curriculum Coverage</td><td colspan="3">Lesson Series</td></tr>
<tr><td colspan="2">Knowledge Objectives:</td><td>Skills Objectives:</td></tr>
<tr><td>*distinguish between an object and the material from which it is made.
*identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock.
*describe the simple physical properties of a variety of everyday materials.
*compare and group together a variety of everyday materials on the basis of their simple physical properties.

*asking simple questions and recognising that they can be answered in different ways
*observing closely, using simple equipment
*performing simple tests
*identifying and classifying
*using their observations and ideas to suggest answers to questions
*gathering and recording data to help in answering questions</td><td colspan="2">1. To be able to identify a variety of common materials.
2. To be able to distinguish between an object and the material from which it is made.
3. To be able to describe materials according to their properties.
4. To be able to describe why some materials suit certain objects better than others.
5. To carry out an experiment to find out which materials are waterproof.
6. To recap what we have learnt about everyday materials.
Learning Review: EOU Quiz & task.</td><td>1. To identify a variety of common materials.
2. To sort a variety of common objects into groups according to the materials that they are made from.
3. To match materials to various properties.
To group objects and materials according to their properties.
4. To suggest why a material has been chosen for a particular purpose.
5. To test a variety of materials to see which are waterproof and which aren't.
To draw conclusions from their experiment.
6. To identify materials that are suitable for a particular purpose.</td></tr>
<tr><td>Enrichment Opportunities / Home-School Links:
Pupils should explore, name, discuss and raise and answer questions about everyday materials so that they become familiar with the names of materials and properties such as: hard/soft; stretchy/stiff; shiny/dull; rough/smooth; bendy/not bendy; waterproof/not waterproof; absorbent/not absorbent; opaque/transparent. Pupils should explore and experiment with a wide variety of materials, not only those listed in the programme of study, but including for example: brick, paper, fabrics, elastic, foil.

Pupils might work scientifically by: performing simple tests to explore questions, for example: 'What is the best material for an umbrella? ... for lining a dog basket? ... for curtains? ... for a bookshelf? ... for a gymnast's leotard?'.

Key Scientists: Ole Kirk Kristiansen (1891-1958) Danish carpenter. Invented Lego.</td><td>Vocabulary:
Object, properties, purpose, use, suitable
Natural, manmade, factories, trees, sand, rock, plants, animals
Wood (pine, ash, oak), plastic, metal (gold, silver, aluminium, stainless steel), glass, stone, bricks, clay, marble, wool, cotton, fabric, paper, cardboard, leather, wax, cellophane, tissue paper, greaseproof paper, foil, newspaper
Fragile, transparent, hard, soft, waterproof, absorb, stiff, rigid, bendy, flexible, rough, smooth, wrinkly, stretchy, elastic, dull, shiny, bumpy, fluffy, prickly, flat, comfortable, cosy, strong, weak, sturdy, tough</td><td>Prior knowledge / experience
Statutory Framework for the Early Years Foundation Stage (2021):
Speaking
-Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary;
- Offer explanations for why things might happen.
Creating with materials
-Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.</td><td>Future learning where this knowledge can be consolidated
Year 2: Use of everyday materials
* Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.
*Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.

Links to PSHEE:
Growing and Changing</td></tr>
<tr><td>Health and Safety:
*Check for allergies to wool, latex, etc.
*Wash hands after handling natural materials.
*Check materials and objects for sharp edges before children handle them.
*When carrying out investigations ensure children are aware of how to use the equipment safely.</td><td colspan="3">Resources:
*Y1 Science SOW – PlanBee – Everyday materials (on staff share)
*Lesson 1: Lego explores why Lego is made of plastic - https://www.twinkl.co.uk/resource/tp-sc-14-planit-science-year-1-scientists-and-inventors-unit-pack
*BBC Bitesize video clips - https://www.bbc.co.uk/bitesize/topics/zrssgk7/resources/1
*Microscopes (WSSC resource) – they will need to be booked in advance, please ask MB</td></tr>
</table>

Scheme of work

- Planbee resources have been provided for each science topic. These materials include PowerPoints, lesson plans, activity sheets and end of unit quizzes.
- The resources are intended to be a supportive tool to be used alongside other materials. Teachers are encouraged to be creative in their planning, to use resources selectively, always with the knowledge and skills objective in mind.
- Big Questions are put to the children at the beginning of each science topic to assess initial understanding. These will be answered individually, without access to knowledge organisers. These questions are then revisited at the end of the topic, to encourage children to apply their learning to develop their previous answer.
- Throughout the year, science topics are revisited. Explorify is used for revision, to assess understanding and extend learning

Resources

- Science resources are stored in a central resource area in the shared area. Additional resources are listed on the science overview for each topic.
- A signing out book is to be used whenever resources are borrowed.
- Resources are audited annually, so 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).
- 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.

Recording

We have given our teachers permission to be more creative in their styles of recording, as '…not all children have writing skills that match their science skills.' **PSTT**

Floorbooks

- One class one book, for recording by teachers and children. Year 1 science evidence is recorded entirely in the floorbook.
- Floorbooks were introduced to provide a broader record of science skills, understanding and learning during practical investigations.
- The floorbook should include key questions, a record of discussion and verbal answers, ideas about how to investigate, photographs, children's sketches, diagrams and notes.
- There will be evidence of responses for each individual pupil, for example, making predictions, identifying variables, recording observations and measurements and writing conclusions.
- The floorbook is great evidence for those children who struggle to record, whose written work does not always reflect their ideas and understanding.

CFL Books - From Year 2 upwards.

- Science skills and knowledge objectives are stuck into the front of the CFL book. These are then highlighted, dated and ticked only when achieved. This will give a clear picture of which objectives have been taught, and when, and the progress of each child. It will also give each child a clearer insight into their own achievement.
- Big questions will be answered in the CFL books at the beginning of each science topic and revisited at the end to see how their understanding has changed.
- Knowledge organisers will be stuck into the CFL books, to allow children to refer to them during the topic and refer back to later.
- Revision, assessment investigations (in upper Key Stage 2) and quizzes will also be documented in the CFL books.

Digital Devices

- We encourage the use of photographs, audio recording and video in science. These can act as evidence or as a prompt to help children to remember their ideas when they are recording in their books.
- The location of the digital file can be noted in the floorbook. Digital evidence should be filed in one place for quick and easy access.

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.

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).

Appendix

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