Science Curriculum Statement

At Carter's Charity, our vision is to provide our children with a high quality, inclusive education inspired by British Values. Excellent teaching and learning form the basis of all our work delivered through a caring, creative ethos.

Our children are encouraged to have a positive attitude, develop resilience in their approach to learning, become confident in their own ability, independent and motivated to achieve their full potential.

We believe that it is our duty to make learning fun, engaging, memorable, accessible and ambitious for all children, instilling in them a love of learning.

We take seriously our duty to teach children about the fundamental British Values of mutual respect and tolerance, democracy, the rule of law and individual liberty. These values are woven through our curriculum so that our learners leave us prepared for life in modern Britain.

Science Intent

"The most important thing is to never stop questioning. Curiosity has its own reason for existing. " Albert Einstein.

When children leave Carter's, they will be curious, critical thinkers, organized, focused, have good observational and communication skills and be able to form their own opinions. A strong level of knowledge and understanding will built upon in layers in order that they have real mastery and can channel this knowledge and understanding, making it a transferable skill.

It is our endeavour to provide a high-quality science education that provides children with the foundations they need to recognise the importance of science in every aspect of daily life. We want our children to appreciate how science has changed the lives of human beings and know that it is vital to the world's future prosperity. Therefore, all pupils will be taught essential aspects of the knowledge, methods, processes and uses of science.

Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of

excitement and curiosity about natural phenomena. Our curriculum also encourages children to become enquiry-based learners, collaborating through researching, investigating and evaluating experiences. It will provide opportunities for the critical evaluation of evidence and rational explanation of scientific phenomena as well as opportunity to apply their mathematical knowledge to their understanding of science, including collecting, presenting and analysing data. Children will be immersed in key scientific vocabulary, which supports in the acquisition of scientific knowledge and understanding. The following types of scientific enquiries are woven throughout our curriculum: Pattern Seeking, Comparative/Fair Testing, Research, Observation Over Time and Identifying, Grouping and Classifying to ensure that children are gaining a full breadth of opportunities to engage in learning as scientists.

All aspects of 'Working Scientifically' from the National Curriculum are interwoven throughout our curriculum, again, to ensure that children understand what it means to be a successful scientist. All children will be provided with a broad and balanced science curriculum, which builds on prior learning and reflects the equality and diversity policies and practice in school.

Knowledge in our Science Curriculum

In the Early Years Foundation Stage, Science is delivered to pupils within the 'Understanding the World' part of the EYFS Curriculum. By the end of reception, children will learn to:

- Explore the natural world around them, making observations and drawing pictures of animals and plants.
- Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.
- Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.

From Year One upwards, our Curriulum is taught in single classes as set out in the National Curriculum.

	Carter's Charity Primary School		Science CURRICULUM OVERVIEW 2024-25		
YR	Plant seeds, talk about what plants need to help them to grow.	Explore the natural world around them, using all senses. Explore and describe seasonal changes in Autumn.	Explore the natural world around them, using all senses. Explore and describe seasonal changes in Winter. Changing seasons: winter ice experiments. Nocturnal animals.	Recognise some environments that are different to the one in which they live. Sort animals according to their habitats. Explore a range of animals. Learn their names and label their body parts. Making sense of different environments and habitats After close observation, draw pictures of the natural world, including animals and plants	Significant figures who have been to space
Y1	**Throughout the year** ***Plants*** ***Seasonal Change***				
	Animals including humans	Seasonal Change (Autumn & Winter focus)	Everyday materials	Seasonal Change (Spring & Summer focus)	Plants
Y2	**Throughout the year** ***Plants (bulbs & seeds)*** ***Living things and their habitats***				
	Uses of everyday materials		Animals including humans	Living things and their habitats	Plants
Y3	**Throughout the year** ***Plants (gathering evidence of life cycles)***				
	Animals including humans - Skeletons, Muscles & Nutrition	Rocks & Soils	Forces & Magnetism	Plants (parts, functions, investigating growth statements)	Light Plants (life cycle statements)
Y4	**Throughout the year** ***Living Things & their habitats (naming & identifying living things in their environment)***				
	Animals including humans – teeth & digestion	Electricity	States of Matter	Sound	Living Things & their habitats
Y5	Forces - Gravity & Resistance	Properties of Materials	Space	Living Things & habitats	Animals including humans
Y6	Electricity	Living Things & their Habitats	Animals including humans - Circulation & Health	Evolution & Inheritance	Light

Working Scientifically

During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- 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.

During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- asking relevant questions and using different types of scientific enquiries to answer them
- setting up simple practical enquiries, comparative and fair tests

- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.
- identifying differences, similarities or changes related to simple scientific ideas and processes.
- using straightforward scientific evidence to answer questions or to support their findings.

During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.
- taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- using test results to make predictions to set up further comparative and fair tests.
- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations.
- identifying scientific evidence that has been used to support or refute ideas or arguments.

Science Implementation

At Carter's Charity Primary school, we make the learning of science interactive and engaging through the use of correct scientific resources and activities. It is carefully planned, following the long term plan, to ensure progression of learning in each year group, particularly for those subject areas such 'Animals including Humans' and 'Materials' which are covered in several consecutive year groups. Progression of skills when 'working scientifically' are similarly specified to ensure that all these skills are taught, practised and progressed throughout a child's primary education. PLAN (from The Association of Science Education) is used as the basis for our planning and assessment in Science to enable teachers to have a clearer understanding of National Curriculum planning and assessment.

In addition TAPS (Teacher Assessment in Primary Science) 'Why and How' resources from Bath Spa University are used to provide a framework of focused activities and assessments for all 'Working Scientifically' progression throughout the school. Each year group teaches science as a minimum fortnightly and mainly weekly throughout the academic year following the long term plan for Science. The organisation of age appropriate content and technical vocabulary enables pupils to discuss, investigate and evaluate in all areas of science and long term plans have been devised to enable children to easily see the link between their science learning and other curriculum areas.

In every KS1 & KS2 year group science is to be taught weekly (or fortnightly in exceptional circumstances), following the LTP of topics and the PLAN and TAPS documentation for unit planning. Further details of this documentation can be found in the year group and Science subject files. PLAN documents give the key learning, key vocabulary and evidence collection for each unit. TAPS documents and activities are to be completed for each unit, where applicable, to ensure 'working scientifically' is covered appropriately in every year group and progressed effectively throughout the school.

In the EYFS this is taught through a balance of adult directed input and group activities as well as time to explore materials and resources in continuous provision. Children will have opportunities in adult-led groups to develop skills and knowledge and then there will be an opportunity to revisit these through activities and continuous provision.

Teachers are familiar with the whole school progression document and revisit prior learning at the beginning of, and regularly throughout, units of work. At the beginning of each unit of work the children will discuss and write what they already know about the topic, using retrieval tasks, this is followed at the end of the topic by a short assessment to check for subject knowledge and sticky learning.

Pupils explore knowledge and conceptual understanding through engaging activities and an introduction to relevant specialist vocabulary. As suggested in Ofsted's Science research review (April 2021), the 'working scientifically' skills are integrated with conceptual understanding rather than taught discretely. This provides frequent, but relevant, opportunities for developing scientific enquiry skills.

Lessons incorporate various learning strategies, including independent work, paired or team work, practical tasks and tasks using technology. Teachers adapt lessons to best meet the needs of their class.

Written work is completed in Science exercise books in line with our Presentation, Marking and Feedback Policy. Practical work is often photographed and placed in the children's workbooks as well as being shared with parents on ClassDojo.

Children with Special Educational Needs and Disabilities

Our Science curriculum is inclusive and ambitious for all learners and we expect that all children should be successful, regardless of any special educational need. All learners are

given full access to the Science curriculum. Class teachers will adapt teaching inputs and provide additional support through scaffolding for any child who requires support. Strategies to support children with Special Educational Needs or Disabilities might include adaptation of resources, adult support, pre-teaching of vocabulary or content and alternative ways of recording understanding.

Science Impact

The expected impact of our curriculum is that children will:

- Develop a body of foundational knowledge for the Biology topics in the National curriculum: Plants; Animals, Including Humans; Living Things and Their Habitats; Evolution and Inheritance.
- Develop a body of foundational knowledge for the Chemistry topics in the National curriculum: Everyday Materials; Uses of Everyday Materials; Properties and Changes of Materials; States of Matter; Rocks.
- Develop a body of foundational knowledge for the Physics topics in the National curriculum: Seasonal Changes; Forces and Magnets; Sound; Light; Electricity; Earth and Space.
- Be able to evaluate and identify the methods that 'real world' scientists use to develop and answer scientific questions.
- Identify and use equipment effectively to accurately gather, measure and record data.
- Be able to display and convey data in a variety of ways, including graphs.
- Analyse data in order to identify, classify, group, and find patterns.
- Use evidence to formulate explanations and conclusions.
- Demonstrate scientific literacy through presenting concepts and communicating ideas using scientific vocabulary.
- Understand the importance of resilience and a growth mindset, particularly in reference to scientific enquiry.
- Meet the 'Understanding the World' Early Learning Goals at the end of EYFS, and the end of key stage expectations outlined in the National curriculum for Science by the end of Year 2 and Year 6.

The impact of our curriculum is constantly monitored by class teachers through both formative and summative assessment opportunities. Our lesson plans include guidance for teachers in assessing pupils against the learning objectives and any relevant scientific enquiry skills.

At the end of each unit of work, assessment tests are undertaken and allow children to demonstrate what they have learned and remembered. At the end of each unit of work, children are assessed based on their performance in lessons and summative assessment and recorded on the school's internal tracking system as working below the expected standard or working at the expected standard as exemplified in end of key stage requirements. Working scientifically skills are assessed through TAPS lessons.

Standards of teaching and learning in Science are monitored by the subject leader, the headteacher, as well as the SENDCo who will monitor Science provision for children with Special Educational Needs and Disabilities. Monitoring may include: pupil interviews, work scrutiny and lesson observations.