



# Science

## Intent:

At Allen Edwards, practical, first-hand, scientific experiences, supported by secondary sources, allow children to develop their knowledge and understanding of the world that they live in. These experiences should enable children to observe, question, investigate, make sense of and communicate and evaluate their scientific findings. Science is taught progressively throughout the year, focusing on the knowledge and skills outlined in the National Curriculum and taught in a sequence that can best build upon the foundations of children's prior learning and understanding. The Science curriculum we provide will give children the confidence and motivation to continue to further develop their skills and understand the continuing importance of science in solving global challenges, such as climate change, food availability, controlling disease and access to water.

## Impact:

Pupils in EYFS transition to Year 1 with a wide range of scientific vocabulary to describe natural and man-made phenomena around them. In our early years, the children will have had extensive opportunities to investigate and explore a range of different materials, plants, animals and seasonal conditions and will have developed a sense of curiosity and wonder for the natural world. This model is then built upon throughout the school to develop scientific learners who are inquisitive, knowledgeable and equipped with enquiry skills to further their scientific investigations. Children will confidently use scientific vocabulary in discussions about their learning.

Pupils will be more engaged with Science, will begin to ask questions about the world around them and will be able to use science as a valuable tool in separating fact from opinion. As a result of this and the children developing key scientific characteristics, all children will make good progress from their starting points across all strands of science.

## Individually Strong, Collectively Stronger!



## Implementation:

Pedagogy in Science utilises both teacher-directed instruction and enquiry-based teaching. A balance of these models enables children to learn scientific knowledge, skills and concepts effectively while developing curiosity and motivating pupils to develop further their interest and understanding in Science. Prior knowledge is systematically checked throughout lessons but also to begin lessons through the use of daily/weekly reviews. Review strategies, such as collaborative discussions, show-me boards, odd one out, concept cartoons and 'empty your brain', are effectively used to ensure secure prior knowledge without misconceptions are built upon further in lessons.

Learning intentions and explanations are delivered clearly by the teacher in a succinct manner to stimulate thought, discussion and prediction. Teacher's questioning, both open and closed, allows for children's knowledge to be continually assessed as well as supporting or extending the development of ideas, ensuring conceptual understanding or further embedding the use of scientific vocabulary in group-based discussions. Children are provided with tailored opportunities to develop their scientific vocabulary across each term, drawing from the vocabulary they have learnt in previous year groups.

Science lessons are adapted and differentiated to ensure that children who are falling behind are supported effectively to maximise their opportunities to achieve the expected standard and children who are working at greater depth level will be given opportunities to deepen their understanding through further questioning. Collaborative learning opportunities are utilised as a way to support learners as well as challenge them to become more knowledgeable scientists with a thirst for finding answers and explaining why. Group-based investigations allow children to develop their ideas, understanding and knowledge in a safe space where mistakes are valued and judgement is removed. Meaningful and relevant links to real-life are made during Science lessons to ensure children recognise and understand the world they live in.

Strong teacher subject knowledge allows for in depth discussion within each topic. It provides opportunities for teachers to identify misconceptions before they arise in lessons and tackle these through their modelling or demonstrations. Modelling is used effectively in Science lessons to inspire, motivate and enthuse children, building the foundations for children to pose their own questions and make relevant predictions based on their prior knowledge and understanding. Modelling ensures that children understand key concepts that scientists have taken years to uncover – which hopefully their findings will support. Exciting and engaging moments captivate the children within Science lessons and further develop their desire to work practically. To further support children during Science lessons, focus groups are used to move children's learning rapidly on within a term. This enables teachers to guide discussion, address misconceptions and check understanding as well as pose questions to develop children's scientific thinking.

Teachers use practical work to form part of a broader teaching strategy ensuring that active learning is at the heart of Science lessons. Engaging the children through the use of varied scientific enquiry, regardless of their age and ability, hooks the children into their learning while developing their scientific skills and understanding. Allowing children to explore their learning by using hands-on approaches to Science enables teachers to develop enquiry-based teaching. This enquiry is scaffolded through a range of means: resources, support, questioning, pace and tasks. KS2 teachers use the science room to undertake scientific experiments to ensure children understand what is different about science as well as providing a safe, stimulating space for children to investigate. Teachers ensure equal value and sufficient time is given before or after a practical activity to interpret and explain the observations and measurements made or that are about to be made. Teachers recognise the importance of knowledge of key concepts and procedures when carrying out a scientific enquiry to guide what is done and why.

In order to ensure learning continues throughout and across lessons, verbal and written feedback is offered to children to support, guide and extend their understanding. Live, after the lesson and active feedback are all utilised to ensure that children's learning is moving on in a timely manner during Science lessons. Additional to feedback, children utilise a range of resources within Science lessons to develop their understanding. Knowledge organisers have been introduced as a means of children consolidating prior knowledge and as a tool to support and extend thinking during lessons. For more-able children, extensions of knowledge and enquiry is embedded into lessons to build deeper knowledge and an embedded scientific skill set.