

INTENT

At Park Street C of E Primary School we recognise and value the importance of science and scientific enquiry as children make connections in their learning and develop their understanding of the world and their place within it. Science at Park Street aims to develop a fun, practical and engaging high-quality curriculum that inspires the next generation to succeed and excel in science. We do this through fully adhering to the aims of the national curriculum and fostering a healthy curiosity and interest in the sciences. At the heart of our progressive science curriculum is scientific investigation. Wherever possible, we intend to deliver lessons where children learn through varied systematic enquiries, leading to them being equipped for life to ask and answer scientific questions about the world around them.

We believe science encompasses the acquisition of knowledge, concepts, skills and questioning attitudes. Throughout the programmes of study, the children will acquire and develop the key knowledge that has been identified within each unit and across each year group, as well as the application of scientific skills. We ensure that the full range of 'Working Scientifically' enquiries (fair testing, pattern seeking, research, observation over time & identifying grouping and classifying) are built-on and developed throughout children's time at the school so that they can apply their knowledge of science when using equipment, conducting experiments and investigation, building arguments and explaining concepts confidently, being familiar with scientific terminology and, most importantly, to continue to ask questions and be curious about their surroundings. Through our science learning we address the hidden curriculum: healthy me, healthy mind, healthy world ensuring we make connections of our learning for our own lives. We ensure disadvantaged pupils and pupils with SEND acquire the knowledge and cultural capital they need to succeed in life by using our in-depth knowledge of each pupil's learning needs and adapting the curriculum accordingly.

IMPLEMENTATION

We use a range of metacognitive strategies as they are proven to have a measurable and significant impact on learning (see the work of John Hattie). Learning journeys, challenge headers and success criteria develop pupils' knowledge of their own learning and progression; helping them to embed knowledge from surface to deep to transferable committing learning to long term memory to enable progression.

Teaching and Planning

- Science in the Early Years Foundation Stage is planned using the EYFS curriculum.
- Key Stage 1 and 2 teachers plan science lessons using the new National Curriculum (2014).
- Individual teachers provide short/medium term plans for each half termly topic outlined in the long term plan.
- Learning journeys in Robin, Woodpecker and Eagle classes outline the learning for each unit of work helping pupils to establish connections between their learning. Owl class introduce learning journeys during the summer term to prepare pupils for the next stage of their education, beginning to develop pupils understanding of their own progression.
- Careful planning ensures that every objective for each year group is covered at least once during the two year cycle in each class. In Key Stage 1, many objectives are covered twice through different contexts to help pupils to make connections and embed knowledge in long term memories essential for progression into Key Stage 2.
- '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.
- We incorporate cross-curricular links to science to enhance our topic based half-termly planning.
- All science lessons have focused learning objectives, clear differentiation and success criteria

- IT will be used when appropriate to enhance lessons.
- We encourage children to ask and answer their own questions as far as practicable, incorporating problem solving opportunities that allow children to apply their knowledge, and find out answers for themselves.
- EAL, PP and SEND children are supported through specific quality first teaching strategies such as provision of word banks in first language; sensory and practical curriculum; writing frames; specific scientific vocabulary teaching.

Assessment

- We mark each piece of work positively, making it clear verbally, or on paper, where the work is good, and, where appropriate, how it could be further improved. This maybe in the form of individual, small group or whole class feedback as appropriate.
- We ask questions designed to extend and scaffold further learning.
- Children are involved in the process of self-improvement, recognising their achievements and acknowledging where they could improve. They use green pencil to make corrections or improvements to their work.
- Pupils are given learning journeys to track their progress through each topic and to ensure they are aware of the objectives they will be working on and how their learning will develop. This helps them to relate their learning to previous content developing deep knowledge that they can apply to further learning.
- Formative assessment is used by teachers each lesson to identify gaps and next steps for individual pupils, enabling them to move on in their learning. This is carried out using precise questioning to test conceptual knowledge and skills, and using pupil work.
- Each science unit of work has a specific enquiry assessment task which allows teachers to make accurate assessments of children's, knowledge and skills.
- Reports to parents are written once a year, describing each child's attainment in science.
- In Reception all work is linked to the EYFS curriculum and assessed accordingly.

Early Years

Science learning in the Owl Class is taught through the curriculum area of 'Understanding the world' and is facilitated through direct teaching, continuous and enhanced provision. We use 'Development Matters' as a vehicle for delivering our curriculum. Science learning has a particular focus in the following topics: 'Into the Woods', 'Potty about Plants' and 'Up, up and away'.

Additionally, we follow children's interests in our provision and this regularly has a science investigation skill focus. In the outdoor provision children explore scientific and mathematical concepts (STEM) at the 'Investigation Station'. Children's learning is extended and developed through skilful questioning and 'in the moment' planning, further opportunities can then be planned for subsequent learning. Learning is assessed through observations and recorded in individual children's learning journals on Tapestry. Children in the Early Years are encouraged to develop a love of science learning through their playful exploration and collaboration. Science is fun in Owl Class!

Inclusion

We ensure that all our children have the opportunity to gain science knowledge and understanding regardless of gender, race or SEND. Our expectations do not limit pupil achievement and assessment does not involve cultural, social, linguistic or gender bias.

We ensure that we provide suitable learning opportunities for all children by matching the challenge of the task to the ability of the child. We achieve this in a variety of ways by:

- Setting common tasks which are open-ended and can have a variety of responses.
- Targeting tasks to the ability of the individual.
- Setting tasks of increasing difficulty (we do not expect all children to complete all tasks).
- Providing additional resources to support individual pupils.
- Utilising teaching assistants to support the work of individual children or groups of children.
- Setting additional 'challenge' tasks or questions.
- Making necessary adjustments for our SEND pupils.

- For EAL children, ensuring we develop understanding of specific scientific vocabulary using parents to support where possible. Often our KS2 children EAL learners are able to support their peers who are new to English. Teacher's use visual resources - concrete and pictorial to facilitate deeper understanding.
- Recognising that science may strongly engage our gifted and talented children and endeavouring to challenge and extend them.

Health and Safety

- Teachers must plan safe activities for science and complete a risk assessment if necessary.
- The use of any equipment/materials is to be modelled carefully prior to pupil access.
- Expectations about how to place, carry and use equipment/materials are carefully outlined.
- Pupils will be taught about the importance of personal safety and the safety of others during science lessons and use PPE where appropriate. They will become increasingly involved in assessing risks themselves as they move through the school.

The Science Co-ordinator

- Takes the lead in policy development and the implementation of the Scheme of Work.
- Supports colleagues in their development of work plans, and implementation of the Scheme of Work.
- Monitor the resources in Science and take responsibility for the purchase and organisation of central resources for Science.
- Keep up to date with developments in Science education and disseminate information to colleagues as appropriate.
- Monitor the teaching and learning of Science throughout the school.

IMPACT

The successful approach to the teaching of science at Park Street results in a fun, engaging, high-quality science education, that provides all children including disadvantaged pupils, with the foundations for understanding the world that they can take with them once they complete their primary education. We work towards the end-point that our children leave us able to question, think critically and connect their knowledge, skills and understanding working independently and as a team.