

Heatherley Primary School



Science Policy

Science Curriculum Policy

Science is a Core Subject in the National Curriculum. This policy outlines the Intent, Implementation and Impact of the Science taught in our school.

The Implementation of this policy is the responsibility of all teaching staff. We aim to provide children with an opportunity to gain a better understanding of their world and their place in it through study of biology, chemistry and physics across a variety of topic areas.

This policy is indicative of the views of all teaching staff, senior leadership and our Governing body.

All pupils are entitled to a broad and balanced curriculum regardless of race, gender, religion or ability.

Intent

The National Curriculum 2014 states that, "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."

With this as a basis, we strive to provide children with a good scientific knowledge, an ability to develop skills, a broad scientific vocabulary and a variety of investigative skills. This is achieved through a combination of high-quality teaching and exposure to practical experiences, allowing children to expand upon their innate curiosity and deepen their learning.

Our aim at Heatherley, is for all children to view themselves as scientists, using The Scientific Method to explore, experiment and develop conclusions based on their own investigation and consolidation of scientific theories based on evidence.

We ensure science is taught as a cross curricular subject where possible, allowing children to better understand how the science they learn in class can be applied to other subject areas.

Our core aims in science are:

- For children to acquire and develop their scientific knowledge through study of a variety of topic areas. This knowledge is deepened as they progress from school, building upon topic areas as they are revisited.

- For children to understand and use a range of scientific vocabulary which progresses and is built upon throughout their time at Heatherley.
- For children to be enabled to acquire practical science skills for their future education and lives in the wider world.

Implementation

As a core subject, science is taught on a weekly basis where teachers encourage children to deepen their scientific understanding through engaging lessons and a positive attitude of curiosity.

Our science Progression Grid is taken from the National Curriculum. This spans the entire school from Year 1 to Year 6. In addition, an EYFS to Years 1 and 2 document covers both the Early Years 'Understanding of the World' Goal and the Early Excellence EExAT statements, creating a connection between both curriculum frameworks, in order to provide effective transition and progression. The statements from the Progression Grid are transferred to our key to teachers' planning to ensure key learning targets are met and expanded upon. Lesson planning in science takes account of prior knowledge and skill development, whilst also building upon existing skills in readiness for the next stage in the learning journey.

The science Scheme of Work breaks year group learning down and is split into directed scientific topics, as set out in the Programmes of Study in the National Curriculum. This ensures that all knowledge and skills within topics are covered during the course of the year. Key knowledge and vocabulary are included in this document which enables teachers to deliver the precise requirements of each topic within their year group.

Key scientific knowledge and skills are taken from the science Scheme of Work in order to create meaningful learning objectives, so that subsequent planning carefully focuses on enhancing and deepening pupil's understanding of knowledge and skills. Teachers endeavour to make the learning as real as possible with an onus on hands-on learning and tactile experimentation as the teaching and application of 'working scientifically' skills form the backbone of all scientific learning. Science lessons are interwoven with maths and English skills, with a pointed approach to children's understanding of the importance of skills based learning.

Our dedication to inclusive practice means that, regardless of their ability, pupils are aided to access learning with the highest possible levels of independence, due to carefully designed tasks. Where necessary, pupils requiring extra help are sensitively supported, with minimal disruption to quality-first teaching. Our ambition is to narrow the gap between different groups of pupils and to ensure that their life-opportunities are equal, irrespective of background or ability.

Impact

Through the excellent teaching of essential concepts, skills, knowledge and vocabulary, pupils are equipped with the firm foundations upon which to further expand their understanding of the world through the specific disciplines of biology, physics and chemistry.

Because of our focus on 'working scientifically', our children are highly motivated to consolidate their practical skills. This is nowhere more evident than in practical lessons, where children have the opportunity to test their own theories. Due to the high quality teaching they have received, children have the skills to work independently in order to gain a personal and deeper understanding of how science affects their lives and futures.

Children leave Heatherley as curious, knowledgeable young scientists, who have an appreciation for how science is all around them and the impact their interactions with their world have on it. Through their study of the sciences, children become better citizens, able to play a useful role in their community, as they consider their local environments and those of the wider world.

Cognition and Learning		Communication and interaction	
Barriers	Provision	Barriers	Provision
Information may not be understood or retained	Prepare the children prior to the lesson with a pre-teach introducing key knowledge/vocabulary Consider the accessibility of science demonstrations. Plan the demonstration area so that it is clearly laid out, uncluttered and gives all children a clear view. Use the working walls and whiteboard to show the focus of each lesson and how it fits in the sequence of lessons. How do lessons link together to develop their scientific knowledge. Use symbols, images or objects to make it more accessible. Invite children to list the key points from the lesson under specific headings - e.g. in an investigation: what they were trying to find out, how they went about it, how they controlled the variables, what happened, suggested reasons for what happened and what they will do next? Review the sticky knowledge from the lesson and identify on the working/enquiry wall.	Understanding and using scientific vocabulary	• Recognise that the language of science may be challenging for many children – for example: The specific scientific use of everyday words such as ‘weight’, or terms specific to science, such as ‘electrical circuit’. • Pre-teach key vocabulary, then ensure multiple and regular exposure to these words including referring to knowledge organisers and make them clearly visual in the classroom environment. • Label equipment with a symbol and word (dual coding) • Explicitly teach the meaning of key scientific vocabulary in lessons • Provide flashcards with key vocabulary – with visual cues • Check children’s’ understanding by inviting them to reformulate explanations in their own words or in other ways. For example, after an investigation of floating and sinking, ask children to explain what happened using diagrams, as well as explaining it orally or in writing. Use vocabulary flashcards and prompts.

Memory/consolidation skills	Use mnemonics to help children remember things like the order of the colours in a rainbow or the orders of the planets. A visual framework can also be used as a consistent guide for planning an investigation in science. For example, headings of what am I finding out? What I need? What will I do? What to look for? What happened? Why did it happen? Each with picture support will simplify the method, results and conclusion format for many children. (inprint is a useful tool for this) Encourage the use of mind maps/pictures/flow charts.		• Use real objects as a starting point for developing the concepts and the language needed to describe, discuss and explain what pupils have observed or experienced. • Give children time to process and formulate their answers to questions before responding
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Physical and/or Sensory		Social, emotional and Mental Health	
Barriers	Provision	Barriers	Provision
Difficulties impacting eyesight, hearing, movement, touch etc.	Check safety procedures are understood Label new equipment and processes to help develop vocabulary Colour water so it is easier to see Consider ventilation and positioning of children for anything that may have an odour Pre-teach showing/experiencing anything that may have sensory implications -eg videos of heart, handling different materials Ask for specialist advice on equipment for children with particular SEND e.g. tactile ridges on measuring glassware for children with a visual impairment. Consider children hard of hearing when teaching sound – follow guidance to develop children’s understanding of how sound travels	Anxiety Participation/safety/ practical work	• Consistency of approach reduces children’s anxiety - it allows children to predict what will happen. Provide an overview of the lesson elements so the children know what is coming, pre-teach the child some of the elements of the lesson etc. • Consider carefully the groupings – prepare the children by ensuring they are aware of the group they will be working in. Assign roles to each member of the group with a clear outline of job roles. • You may need to specifically teach the skills of cooperation and interaction for practical work. • When organising a practical session consider: - how you establish investigation routines - the level of supervision needed - consider the resources available – does there need to be close supervision? Do some resources need limiting?
Sensory processing difficulties			

	Use of sensory aids as part of usual provision eg gloves, audio/visual support Take into account pupil sensory audits and adaptations		- how will resources be organised in the classroom - from a central point or at the table? - how the task can be broken down into manageable steps and the best way to present any instructions e.g. some children prefer diagrams, others a checklist. • Opportunities to develop social skills including being taught these discretely to support engagement in group work and collaborative learning. • Use of PSHE to discuss healthy relationships, promote well-being and explore emotive topics within learning.
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