

Bonneygrove Primary School Curriculum Guidance



Science

Intent

At Bonneygrove Primary School, we wish to prepare our children for life in an increasingly scientific and technological world. By providing a creative, broad and balanced learning experience based on the objectives of the National Curriculum, we aim to give all children the opportunity to explore, question and understand the world in which they live. Through a learning environment which encourages curiosity, perseverance, open-mindedness, critical thinking and collaboration, we strive to develop their knowledge and understanding of important scientific ideas, processes and skills through the specific disciplines of biology, chemistry and physics.

Aims

- To stimulate interest, curiosity and enjoyment in the subject
- To create enthusiasm and wonder about the world
- To equip children with the scientific knowledge required to understand the uses and implications of science, today and for the future.
- To develop the skills of enquiry
- To enable children to investigate and explore theories by developing the skills of investigation – observation over time, prediction, pattern seeking, measuring, interpretation, communication, questioning, explanation and evaluation.
- To develop co-operation and the sharing of ideas through collaborative working.
- To enable children to become effective communicators of scientific ideas, facts and data.
- To ensure children become responsible for their own health and safety and that of others when undertaking scientific activities
- To understand and care for the world in which they live.

Implementation

High Expectations

Our Horizons curriculum offers challenging and differentiated ideas for our science topics. Experiments are woven into our curriculum to allow teachers the opportunity to model scientific skills in order to provide children a suitable challenge.

Checking for Understanding (AfL)

At the start and end of each topic, children complete a KWL grid to show: What is already known (K), What would like to be known (W) and What has been learnt (L).

With children learning and applying scientific skills, it is vital to check children's understanding to ensure progress. Our use of the self-assessment jigsaw grids provides children with the opportunity to evaluate their own learning against the success criteria and allows teachers to address misconceptions whilst the lesson is fresh in children's minds.

Sticky Learning

Our Horizon's curriculum ensures that all new learning is linked to previously learned concepts. This helps to embed new knowledge and ensures new learning is cumulative and built on firm foundations. The curriculum also encourages frequent revisiting, reviewing and consolidation of information throughout the unit and subsequent units as well as building on prior learning year after year.

Teachers make sure learning is meaningful and purposeful to children's lives by making topics relatable to the world outside our window. We encourage children to stop and think about why things are the way they are. Why are things cold? What is the coldest temperature ever recorded? In Science lessons, children are taught strategies to help them to remember, for example, classifying and grouping information as well as verbal rehearsal. Learning is presented in a variety of ways with the use of visual aids, modelling, active learning, discussion, role play and use of concrete resources.

Oracy

Science is a core subject that relies heavily on students' ability to understand new terms and concepts. Children are encouraged to 'talk like scientists' - discussing their ideas and explaining their thinking which aids with understanding and embeds learning.

A strong focus on vocabulary helps children understand and communicate using appropriate terminology, and the incorporation of visual aids makes learning stick. Teachers expose children to new terminology at the start of a topic and continually refer to vocabulary throughout the unit. Working walls display vocabulary cards with pictures to support meaning; speaking frames are used to support children with articulating their ideas and Kahoot quizzes are used to reinforce vocabulary and concepts as well as to assess learning.

Learning powers

Our use of self-assessment tools promote independence and encourage a growth mindset within Science. By encouraging children to reflect, it allows them to take responsibility for their learning. Self-assessment lets our students consider their decisions, reflect on actions, and consider/plan future processes. We encourage children to explore their own ideas, which will naturally lead to new discoveries. Children are taught to see 'mistakes' as learning opportunities which foster qualities like resilience and perseverance. We encourage a supportive science classroom where everyone is responsible for helping each other learn, for example, through partner talk and peer support.

Cross Curricular links

Children are expected to use their English skills; reading, writing and speaking and listening during science lessons. Children apply their mathematical knowledge to their understanding of science, through working on investigations where they learn to estimate and predict, collect, compare and record data as well as analyse results and draw conclusions. Science also makes a contribution to the teaching of PSHE. For example, teaching the children about keeping healthy and staying safe, along with teaching them collaborative skills.

SEN

At Bonneygrove we are proud of the provisions we have in place to help support our children with additional needs. Science is a topic that contains numerous experiments and opportunities to interact with the senses in ways that other topics cannot. However, as some children can experience sensory overload we are mindful to ensure all of our children are able to share the same experience. We have taken a holistic approach to providing for our SEN pupils and each teacher caters for each individual need of a child.

At Bonneygrove Primary School, we make reasonable adjustments for all our children (including those with SEND). In our school, we ensure that all of our children registered as SEND, including the provision of auxiliary, are not at a substantial disadvantage compared with their peers.

At Bonneygrove, we are guided by the SEND Code of Practice - Right Support, Right Place, Right Time March 2023. We recognise that each child has a specific need, including:

- Communication and interaction
- Cognition and learning

- Social, emotional, and health difficulties
- Sensory and/or physical needs

The above needs will be addressed through quality first teaching, effective differentiation, use of resources (primary and secondary), individual interventions, small group interventions, specialist provision and other supporting agencies.

Here at Bonneygrove, we ensure children with SEND have every opportunity to succeed and recognise that additional support may be required to ensure they progress and attain in line with their peers. We do this by utilising various strategies- e.g.

SEND area of need	Barrier to learning	Strategies
• Hearing Impairment		
• Communication and Interaction	• Specific interests • Attention span • Fine motor skills • Managing physical resources particularly “fiddly bits” such as crocodile clips in circuits • Difficulty recording	• Adapted equipment - Alternative ways of recording
• Cognition	• Understanding • Recording • Recall of instructions • Remembering key facts and vocab • Retaining focus • Retaining information	• Revisit prior learning • Pre-teach and post teach • Ways of recording – cloze label diagrams, record, pictures • Knowledge organisers • Adapted equipment • Alternative ways of recording
• SEMH	• Making links to prior learning • Resilience/fear of failure. • Concentration span • Safety regarding impulsive behaviour •	• Revisit prior learning • Pre-teach and post teach • Ways of recording – cloze label diagrams, record, pictures • Adapted equipment • Alternative ways of recording • Knowledge organisers
• Sensory and/or physical needs	• Managing physical resources particularly “fiddly bits” such as crocodile clips in circuits • Difficulty recording • Reading • Navigating classroom • Managing resources and equipment • May struggle with contrasting colours on the board	• Adapted equipment • Positioning in classroom • Visuals Pictorial representations • Video • Vocab lists and explanations/dictionaries so words can be revised

	• Difficulty in hearing instructions • Vocab • Managing practical investigations/ interactions • Filtering noise to hear what is important • Low self esteem • Difficulty with vocabulary. • Awareness of safety	• Position with role model for safety • Task planners • Use of signing of needed • Ensure mini- mic is working and check hearing aids daily • Alternative ways of recording • Positioning in classroom • Visuals Pictorial representations • Video • Vocab lists and explanations/dictionaries so words can be revised • Position with role model for safety • Task planners • Use of signing of needed • Ensure mini- mic is working and check hearing aids daily
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Outdoor Learning

Every year group is given the opportunity to engage with outdoor learning for example, observing plants, studying consumers and producers in our woods, creating wildlife documentaries.

Philosophy for Children

Science topics allow for big questions to be posed to the children which develops their critical thinking. For example: Should animals be taken from their natural habitat? Why are chimpanzees endangered?

Mindfulness

Mindfulness means paying full attention to something. It means slowing down to really notice what you're doing. Being mindful is the opposite of rushing or multitasking. We encourage children to be mindful when setting up experiments and to conduct research so that they can focus on their projects.

Growth Mindset

We believe that a growth mindset can be fostered in any child. Our Science curriculum introduces famous scientists who have had to overcome huge challenges in their lives, for example, Stephen Hawking,

Ethics

By the time children leave Bonneygrove, we want them to be blossoming into responsible citizens with the real potential of making the world a better place. In Science, children study important current world topics, for example, recycling, deforestation and its impact.

Sportsmanship

Science teaches children the concept of 'Fair Play' through fair tests in investigations.

Impact

Children begin their science journey in the Early Years Foundation Stage where they start to make sense of their physical world through exploring, observing and finding out about technology and the environment. Children learn about similarities and differences in relation to places, objects, materials and living things. They are given opportunities to talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur, and they talk about changes.

This journey of Science exploration at Bonneygrove culminates in Year 6, where we aim for all children to have the foundations and knowledge for understanding the world.

By the end of Year 6, we want the children to have developed a deeper understanding of a wide range of scientific ideas and begin to recognise how these ideas help them to understand and predict how the world operates. Children will also have begun to recognise that scientific ideas change and develop over time.

Throughout their time at Bonneygrove, the children will be able to select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information. Children should be able to draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings. Children will be able to work collaboratively and practically to investigate and experiment.

We want the children to be able to explore and talk about their ideas; ask their own questions about scientific phenomena, reflecting on prior taught knowledge and explain processes they have taken and be able to reason scientifically.

Children should also be able to read, spell and pronounce scientific vocabulary correctly and spelling of key vocabulary is introduced in each topic and monitored closely to ensure its engagement and understanding.