Science at Pinchmill Primary
Intent, Implementation and Impact

Intent

The National Curriculum states, "A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science."

The national curriculum for science aims to ensure that all pupils:

- develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics
- develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them
- are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future
- are equipped with the scientific vocabulary to confidently talk about what they have learnt and to ask questions to explore and develop their learning further.

At Pinchmill Primary School, we want our children to be confident and curious pupils who apply their skills in a scientific way, using lines of enquiry across the curriculum and in later life. They should be able to ask and answer challenging question and successfully carry out investigations.

We will deliver a Science Curriculum that:

- Builds upon prior knowledge and a progression of skills to ensure all children have a secure understanding and knowledge of key science concepts
- Develops creativity and challenges all of our learners through outstanding and inclusive teaching practice
- Inspires and excites our children through engaging practical sessions which are enriched with visits and visitors
- Will develop aspirational learners with an awareness of the key role that science plays within our community and the world and the opportunities that this creates for future careers
- Encourages our children to be self-motivated, independent, curious and resilient learners by developing inquiry–based skills and sessions
- Encompasses outdoor learning to create meaningful experiences within their natural environment
- Build interest in STEM fields to build and develop on in the secondary setting

Implementation

Throughout the teaching of science, we aim to enable pupils to develop a keen interest in Science and develop a sense of excitement and curiosity about the world around them. Children are encouraged to ask questions and be curious and their surroundings. A love of science is nurtured through a varied and exciting science curriculum.
The school uses the national scheme of work for science as the basis of its curriculum planning. The national scheme has been adapted to the local circumstances of the school in that we make use of the local environment in our fieldwork and we choose a locality where the physical environment differs from that which predominates in our immediate surroundings.
We carry out our curriculum planning in science in three phases (long-term, medium term and short-term). The long term plan maps the scientific topics studied in each term during the Key Stage. In some cases, we combine the scientific study with work in other subject areas, especially at Key Stage 1; at other times the children study science as a discrete subject.
Our medium term plans, which we have based on the national scheme of work in science, give details of each unit of work for each term. As we have some mixed-age classes, we do our medium-term planning on a two-year rotation cycle. In this way we ensure complete coverage of the National Curriculum without repeating topics.

At Pinchmill Primary School, teachers create a positive attitude to science learning within their classrooms and reinforce an expectation that all children are capable of achieving high standards in Science. Our whole school approach to the teaching and learning of Science involves the following:

- Science will be taught in planned and arranged room tasks by the class teacher. Our strategy is to enable all children to be catered for through adapted and scaffolded planning suited to their abilities.
- We plan for problem solving and real life opportunities that enable children to find out for themselves. Children are encouraged to ask their own questions and be given opportunities to use their scientific skills and research to discover the answers. This curiosity is celebrated within the classroom. Planning involves teachers creating practical, engaging lessons with opportunities for questioning in class to test conceptual knowledge and skills, and assess children regularly to identify those children with gaps in learning.
- Working scientifically skills are embedded into lessons to ensure these skills are being developed throughout the children's school career.
- We have planned the topics in science so that they build upon prior learning. We ensure that there are opportunities for children of all abilities to develop their skills and knowledge in each unit and we also build progression into the science scheme of work, so that the children are increasingly challenge as they move up through the school.

Our children begin their science experience in Early Years Foundation Stage, with informal investigation within the setting. Teachers facilitate children's curiosity with open ended questions ad clearly thought our learning experiences which are both child led and adult led.

In KS1, children continue to build on their science knowledge with more formal weekly science lessons where they are taught to use the following practical scientific methods, processes and skills: 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 and gathering and recording data to help in answering questions. When completing activities, children are provided with modelled examples and are taught the skills needed to achieve the learning objective. It is then upto the children how they present their work and findings. For those children struggling to independently present their work, they will be provided with scaffold support.

Moving in to KS2, children are to use the following practical scientific methods, processes and skills: 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 to report 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 and using straightforward scientific evidence to answer questions or to support their findings. In KS2 children are required to present their findings and research independently with clear learning objectives set out in the beginning of the lesson.

Impact

The successful approach to the teaching of Science at Pinchmill Primary results in a fun, engaging, high quality science education. It provides children with the foundations for understanding the world that they can take with them once they complete their primary education.

- Children will become resilient, independent and curious scientists who ask question and find things out for themselves
- Science will be a high profile subject throughout the school
- Children will be enthusiastic and motivated scientific learners
- Outdoor learning will be utilised where appropriate for science lessons.
- Pupil voice will be used to further develop the Science curriculum through questioning of pupil's views and attitudes towards Science, to assess the children's enjoyment of science and to motivate learners.
- Teachers will have a good level of subject knowledge
- Marking and feedback- encourages 'deeper' thinking for greater depth understanding
- Confident and curious children who can eagerly talk about their science lessons and discoveries they have made

- Children’s misconceptions are addressed through oral and written feedback