Science

At Portway Junior School, the science curriculum will encourage children to wonder at the world around them. Through scientific discussion and inquiry, the children will gain the necessary substantive knowledge and disciplinary skills to build a strong foundation for investigative science as well as motivating their desire to understand 'why' the world works as it does.

We use learning journeys provided by the Hampshire Inspection and Advisory Service (HIAS) as a way to ensure that the children receive an equitable start to their scientific education throughout Key Stage 2; comprehensive coverage of the key ideas in Science must be accessible and inclusive for all pupils within our learning community. Children are encouraged to work collaboratively and competently in line with our Portway Code of being Ready, Respectful and Safe, as well as reflecting our school values of pride, resilience, integrity, dedication and encouragement within their scientific practice.

The principal focus of science teaching in Lower Key Stage 2 is to enable pupils to broaden their scientific view of the world around them through a series of engaging and relevant learning opportunities, as well as continue to progress their skills and knowledge from Year 2. These opportunities are planned in line with the aims of the National Curriculum, ensuring that progression is achieved throughout the key stage. This is particularly evident across units such as Animals including Humans, which are revisited differently in Year 3, 4 and 5.

As their journey of scientific discovery continues into Upper Key Stage 2, the children's ability to devise, plan and carry out successful practical investigations will develop; due to this, the children will be able to assess the efficacy of their own investigations and discuss them in depth, also considering the concept of 'error' in their findings and using this data to refute or justify hypotheses. In addition to developing their understanding of practical testing, the pupils are given exciting opportunities to study theoretical concepts such as Darwinism as part of their Evolution topic in Year 6 and to discuss how human understanding of our place in the universe has changed over time during our Space unit in Year 5.

At Portway Junior School, we believe that it is crucial to equip the children with a variety of fundamental science skills:

- 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 enquiry that help them to answer scientific questions about the wider world;
- Be equipped with the scientific knowledge required to understand the uses and implications of Science, today and for their future education;
- Develop the essential scientific enquiry skills to deepen their scientific knowledge;
- Use a range of methods to communicate their scientific findings and present it using a range of media, including I.C.T., oral presentations, diagrams, graphs and charts.
- To familiarize themselves with the concept of disciplinary skills (previously referred to as 'Working Scientifically) and to be given the opportunities to do so regularly;
- Develop a respect for the materials and equipment they handle with regard to their own, and other children's safety;
- Develop an enthusiasm and enjoyment of scientific learning and discovery.

How is Science taught at *our* school?

Teachers at Portway Junior School create a positive attitude to science learning within their classrooms and reinforce an expectation that all children are capable of achieving positive outcomes in Science.

Science is taught by the class teacher and planned in close conjunction with the Science subject leader, who works in conjunction with the Hampshire Inspection and Advisory Service (HIAS) on planning and curriculum development. In order to develop the confidence and skills of the staff in the delivery of Science, teachers work alongside the Science Leader to plan sessions in line with the expectations set out by HIAS.

Through our planning, we involve problem solving opportunities that allow children to 'find out' the answers to key questions for themselves. Children are encouraged to ask their own questions and be given

opportunities to use their substantive and disciplinary knowledge to discover the answers to the questions which are posed within the learning.

- Science planning at Portway involves teachers creating engaging lessons, using high-quality, accessible and regularly updated resources.
- Teachers use precise questioning to test conceptual knowledge and skills, assessing students both during lesson time to identify gaps and misconceptions, as well as summatively at the end of each unit of learning.
- The Curriculum Map at Portway builds upon the learning and skill development of previous years. This is clearly set out in the Curriculum Map for the coming year that is used by all staff and was developed collaboratively to ensure that Science coverage is broad and balanced across all year groups.
- As the childrens' knowledge and understanding increases, they will become more proficient in selecting and using appropriate scientific equipment, collating and interpreting results, as well as becoming increasingly confident in their growing ability to draw conclusions based on their understanding of relationships between independent and dependent variables.
- Disciplinary skills at Portway are embedded into lessons to ensure these skills are being developed throughout the children's school career. New vocabulary and challenging concepts are introduced through direct teaching. Opportunities to learn and practise specific disciplinary skills, such as using data loggers, force meters, weights and measures and understanding the trends in data are taught explicitly - these are fundamental Science skills that the children need to be able to use in a variety of scenarios. The children will be taught to represent data in different ways, such as bar charts and scatter graphs to enable them to draw conclusions accurately. Teachers demonstrate how to use scientific equipment, and the various disciplinary skills in order to embed scientific understanding.
- Teachers will find opportunities to develop children's understanding of their surroundings by also accessing outdoor learning in Science, which is embedded further by Portway's Forest School provision.

At Portway Junior School, the impact of the implementation of Science is to ensure that children not only acquire appropriate age related knowledge, but also the disciplinary skills which will provide the foundations for understanding the world through the specific disciplines of biology, chemistry and physics.

Teachers will assess children at the end of each unit using questions from the Hampshire Inspection and Advisory Service (HIAS), which are a standardized method of summative assessment used throughout Key Stage 2. Assessment will also take place using informal strategies, such as the use of mind maps, verbal, modeled and written outcomes and reflection tasks or presentations. This information will be passed up with the cohort so that future teachers are aware of areas of strength as well as misconceptions which may need to be addressed and revisited as part of their future learning.

By the end of Key Stage 2, all children will:

- Have had an opportunity to practice their investigative skills across a number of the scientific disciplines
- Use a standardised approach to scientific investigation which will provide a 'starting off point' for future investigations
- Have had an equitable experience of Science teaching and learning, pitched appropriately for their learning needs
- Be able to refer to prior knowledge to support their learning
- Have a deeper grasp of a range of Scientific vocabulary through using Knowledge Organisers, HIAS vocabulary cards and Widgit visuals to support understanding
- Feel a level of confidence about undertaking practical investigative science and planning fair tests in the future.
- Have had an opportunity to ask questions about the environment around them as well as develop a curious and inquisitive approach to finding out more about how their world works.