



<b>Penshurst CE Primary School</b>	
<b>Science Policy</b>	
Date of Policy	Academic Year 21/22
Review Date	September 2022

## Science Policy 2021-22

**'it is important to view knowledge as sort of a semantic tree – make sure you understand the fundamental principles,  
i.e. the trunk and big branches, before you get into the leaves/details  
or there is nothing for them to hang on to'.**

Elon Musk

### Intention

At Penshurst CE Primary School our science curriculum aims to provide our pupils with an excellent knowledge of the world they live in now ; how the world has changed over time along side learning how it may change again in the future.. ; ensure our pupils know more and remember more – as they progress through the school. We follow the national curriculum closely and provide our pupils with a range of learning experiences that aim to ensure our pupils remain curious and that this in motivates them to want to find out more. Our curriculum is designed to support pupils to develop their knowledge in relation to the three domains of biology, physics and chemistry using an enquiry approach. Pupils use comparing/fair testing, research, observation over time, pattern seeking, identifying and classifying as wells as problem solving to develop their knowledge and skills. We want our pupils to understand the importance of science in the world today and work like a scientist to find out more about their world.

### Aims (from the National Curriculum 2014)

Using the national curriculum for Science we aim 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

We also aim to embed the following **essential characteristics** in our pupils:

- The ability to think independently and raise questions about working scientifically and the knowledge and skills that it brings.
- Confidence and competence in the full range of practical skills, taking the initiative in, for example, planning and carrying out scientific investigations.
- Excellent scientific knowledge and understanding which is demonstrated in written and verbal explanations, solving challenging problems and reporting scientific findings.
- High levels of originality, imagination or innovation in the application of skills.
- The ability to undertake practical work in a variety of contexts, including fieldwork.
- A passion for science and its application in past, present and future technologies.

### Scope of Science

At Penshurst CE Primary School we follow the National Curriculum; this sets out the areas for learning within the domains of biology, chemistry and physical processes. Through these areas pupils gain knowledge and skills relating to different aspects of science. An enquiry focus also allows pupils to develop key scientific skills such as observation, fair-testing, research, classification and problem solving.

### Implementation

We deliver a subject based curriculum; links are made if they naturally exist. For example when learning about materials there may be the opportunity to link this to learning in Design and Technology. As we have mixed aged classes we deliver a rolling programme; Year A and Year B. We also provide

opportunities to revisit prior learning and all new learning takes into account the starting points for children. Teachers plan in opportunities to revisit learning from previous year groups and all areas of learning start with a quiz or similar method of eliciting pupils ideas and thinking. When misconceptions are evident teaching is adapted to ensure that pupils thinking is challenged and their subject knowledge developed.

Breadth of study in science.

Working scientifically	Biology	Chemistry	Physics
<ul style="list-style-type: none"> <li><b>Work scientifically</b> This concept involves learning the methodologies of the discipline of science.</li> </ul>	<ul style="list-style-type: none"> <li><b>Understand plants</b> This concept involves becoming familiar with different types of plants, their structure and reproduction.</li> <li><b>Understand animals and humans</b> This concept involves becoming familiar with different types of animals, humans and the life processes they share.</li> <li><b>Investigate living things</b> This concept involves becoming familiar with a wider range of living things, including insects and understanding life processes.</li> <li><b>Understand evolution and inheritance</b> This concept involves understanding that organisms come into existence, adapt, change and evolve and become extinct.</li> </ul>	<ul style="list-style-type: none"> <li><b>Investigate materials</b> This concept involves becoming familiar with a range of materials, their properties, uses and how they may be altered or changed.</li> </ul>	<ul style="list-style-type: none"> <li><b>Understand movement, forces and magnets</b> This concept involves understanding what causes motion.</li> <li><b>Understand the Earth's movement in space</b> This concept involves understanding what causes seasonal changes, day and night.</li> <li><b>Investigate light and seeing</b> This concept involves understanding how light and reflection affect sight.</li> <li><b>Investigate sound and hearing</b> This concept involves understanding how sound is produced, how it travels and how it is heard.</li> <li><b>Understand electrical circuits</b> This concept involves understanding circuits and their role in electrical applications.</li> </ul>

## Impact

We consider accurate and focused assessment is the cornerstone of high quality teaching. It allows learning to be planned and taught accurately as well as meeting the needs of the children and ensuring high levels of expectation and support are maintained. We assess progress by using mind maps at the beginning and end of a unit of work. We also use a range of resources from Explorify.uk and the Primary School Science Trust.

The culture at Penshurst CE Primary School is one of continually using what we know in order to move on children's learning. This formative assessment happens all the time and may not necessarily be recorded. Teachers and other adults will use the information gathered through formative assessment to address gaps and to provide additional challenge for children as required and appropriate. This is most effective when done immediately and at the point of learning.

In science will assess the skills and knowledge that pupils apply to the following aspects:

- biology ( plants, animals including humans, living things and their habitats, evolution and inheritance
- chemistry (everyday materials (KS1), rocks, states of matter, materials)
- physical processes (seasonal change, light, forces & magnets, sound, electricity, forces (gravity), Earth & Space.
- Working scientifically

## Successful Teaching, Learning and Assessment

- Teachers and other staff have a secure understanding of the age group they are working with and have relevant subject knowledge that is detailed and communicated well to pupils
- Teachers use the Kent Science Scheme of Work, Explorify or materials from Primary Science Teaching Trust to plan the content of science lessons.
- Assessment information is used to plan appropriate teaching and learning strategies, including to identify pupils who are falling behind in their learning or who need additional support, enabling all pupils to make good progress and achieve well
- Work is differentiated, demanding and challenging enough for all pupils
- The contribution of Teaching Assistants has a significant positive impact on children's progress
- Children demonstrate the characteristics of effective learning and positive learning behaviours
- Well-being and involvement in learning are high

- Progress over time is very good and in line with the milestones set out in the Science Progression document.
- Achievement is high overall and ensures that the school meets National Curriculum standards
- High quality of completed work and processes in books highlight a pupil's enthusiasm for the subject.

#### **Pupils with SEND/ Additional Needs**

Pupils with SEND or additional needs receive a curriculum that is differentiated or adapted to meet their needs. Pupils with SEND have Personalised Plans which clearly identify any support / adaptations (physical or human) that will allow the pupil to reach their full potential.

#### **Links :**

Science Association (ASE) <https://www.ase.org.uk/>

Primary Science Teaching Trust [Primary Science Teaching Trust - PSTT](#)

Explorify : <https://explorify.uk/>

Making Primary Science Assessment Work : [Staff - Making Primary Science Assessment Work.zip - All Documents \(sharepoint.com\)](#)

Kent Science Scheme of Work: