

# Science

Subject Leader: Mrs Blandford

## Our science curriculum intent

Learn from yesterday, live for today' hope for tomorrow. The important thing is not to stop questioning" – Albert Einstein"

At Porthleven, we believe that Science helps us to explore and explain the world around us. Our curriculum is designed to help children progressively build knowledge, skills, and vocabulary that are transferrable and enhance learning across all subjects and support their spiritual, moral, social, and cultural development. Through careful planning and rich resources, we nurture curiosity about the world and the desire to observe and investigate what they see. Our science provision aims for children to gain knowledge through practical skills and meaningful experiences linked to real life and the natural world. We wish to inspire a lifelong fascination with the world long beyond their time at Porthleven.

Learning in Science is taught discretely each week. Units have been sequenced in order to ensure progression on knowledge through from EYFS to Year 6. Each year groups units are sequenced meaningfully to ensure that the children have the necessary knowledge needed. For example, in year 4, children learn about states of matter in Autumn term first and then Sound later in the summer term as they require knowledge of particles in order to conceptually understand how sound travels. In Year 5, the children learn about forces in the Autumn term and then in the summer term they learn about earth and space ensuring they understand gravity first. We also ensure more challenging units such as Evolution and inheritance in Year 6 are near the end of the year, so they have the necessary skills and learning to understand these concepts.

In addition to our science curriculum being informed and aligned to the National Curriculum, we have also mapped out the substantive knowledge that we wish children to learn to ensure progression for every unit. The essential knowledge for each lesson is introduced to pupils as a 'Knowledge Drop,' with the theme: 'many drops make a mighty ocean.' To help children retain this knowledge, along with content from other subjects, pupils take part in daily retrieval exercises, such as low-stakes quizzes, each morning. At the start of each unit, teachers assess each child's prior knowledge and ensure that all lessons taught are relevant and developmental. Lessons are planned to ensure all learners are supported in line with the school's commitment to inclusion ensuring every pupil can succeed.

## The Porthleven Way

We refer to the culture of the Porthleven Way by linking its principles to the teaching and learning in Science.

We are **safe**

Through the Porthleven Way, children are taught how to safely handle equipment, follow instructions, and understand the importance of a safe learning environment for all. They also understand how, through the knowledge learnt in lessons, they can keep themselves safe for example from UV rays in Light in Year 3, to the dangers of electricity in Y4 and lifestyle choices to keep them healthy.

We **belong**:

Science learning under the Porthleven Way fosters a sense of belonging by encouraging teamwork and collaboration. Whether conducting experiments in small groups or engaging with bigger projects students work together, supporting one another in exploring scientific concepts and discovering how science connects to their shared environment.

We are **responsible**:

The Porthleven Way instils responsibility by teaching students the importance of being accountable for their learning and actions, both in the classroom and in the wider community. In science, this translates to making

informed decisions about sustainability, caring for the environment, and respecting ethical guidelines in scientific inquiry.

#### **We learn:**

The Porthleven Way embraces the principle of continuous learning, encouraging students to approach science with curiosity and a growth mindset. Through hands-on experiences, experiments, and real-world applications, students actively engage with the national science curriculum, developing critical thinking skills and a deeper understanding of scientific concepts.

#### **We can**

In line with the Porthleven Way's belief in students' potential, the science curriculum helps students realise that they can overcome challenges, ask big questions, and solve problems. By providing opportunities for inquiry-based learning and problem-solving activities, students gain the confidence to tackle complex scientific topics and develop their own scientific ideas. They are also able to think about their own futures and what they could achieve in their future careers through discussions about famous scientists and scientific jobs they could access in the future.

### **What will children experience through Science at Porthleven?**

In Porthleven, we use the Plymouth Science scheme from EYFS to Year 6. However, we adapt this scheme to follow our own Porthleven Way of science.

#### **EYFS**

Taking their first steps in EYFS in understanding the world, we prioritise encouraging children's curiosity of the world around them and whenever possible learning in the natural environment. They begin the year learning about themselves in 'All about me' and their bodies, they then learn through celebrations in Autumn 2 about materials and how they change. In spring, they learn through their 'Everyday Heroes' about nurses, dentists, firemen and other professions and how they help to look after us. In spring 2, in 'Ready, Steady Grow! Unit they investigate minibeast and grow their own plants. In the summer term through their Wildlife wonders unit the children learn about animals and in their Summer 2 unit 'Land Ahoy!' they look at underwater habitats and floating and sinking.

#### **KS1 & 2**

Our science curriculum is enquiry based ensuring that through the school the children cover the 5 key enquiry types through their science lessons. In each lesson, we will follow a S plan for our lesson structure: beginning with a retrieval starter and low stake quizzing, then introducing the substantive knowledge drop and the 'As scientists' learning intention for that lesson. We will also highlight to the children the working scientifically skill we will be developing. Key 'Vital Vocabulary' for that lesson will be highlighted and discussed. Science vocabulary is built upon in each year group and there is a progression of key vocabulary that runs through each unit of work.

#### **Enquiry types and working Scientifically skills**

Our children need varied opportunities to practise their skills and learn through different enquiry types which will form the activities they are undertaking:

- pattern spotting
- classifying and identifying
- observations over time
- fair testing
- research
- problem solving.

While working in these different enquiry types we will ensure demonstration, modelling and practice of the key disciplinary skills needed to work scientifically:

- Asking questions

- Making predictions
- Planning and setting up enquiries
- Observation and measuring
- Recording results
- Interpreting and reporting results
- Evaluating

These skills will be modelled through lessons and scaffolded to enable children to learn and practise them as they go through the school. We will ensure to focus on only one or two skills during an enquiry to enable us to have the time to model it clearly and children given opportunities to practise. These skills are revisited constantly throughout teaching units and across the year. There is a clear progression on these working scientifically skills and what these skills would look like in each year group and how they develop through their school careers.

### **Curriculum Impact**

Our science curriculum is carefully defined and sequenced, ensuring a precise approach to assessment. Our assessments measure the specific knowledge pupils have learned and can apply. It will identify misconceptions and expose gaps in knowledge that can be addressed by the teacher. It is everyone's responsibility to assess how well each aspect of the curriculum has been mastered and to provide opportunities to reinforce prior learning.

### **Assessment for learning- (daily: in class)**

- Using consistent feedback and live marking strategies- (See Marking and Feedback Policy)
- Targeted questioning
- Pupil self-assessment and peer-assessment
- Low stakes testing – Rapid Recall, Knowledge drop quizzes in the mornings.
- Using resources such as Explorify and challenge questions to challenge and deepen their understanding.

### **Formative Assessment**

- Teachers assess at the beginning and end of every science unit, through pupils recalling their previous learning using concept maps at the beginning and completing assessment at the end of the unit.
- Knowledge, skills, and concepts of foundation subjects are assessed through the answering of questions.
- Learning is evidenced in our learning conversations (adult/child, child/child, etc).
- Learning is evidenced in targeted questioning and response.
- Children's learning is moderated through book looks by teachers and subject lead.