

Portreath School Subject Statement 2023

Subject: Science

Leader: Claudine Jones

Quote that guides us:

“Science is magic that works.” – Kurt Vonnegut

Why is it important to teach Science?

We have three core elements at the heart of our school: relationships, experiences, and learning.

Science plays a crucial role in developing our understanding of the world around us, in building relationships, experiences and learning. Our science teaching, at Portreath School, helps us to prepare children for their life through experiences and exploration through the world in which they live in. Science encourages children to be deep thinkers and learners through exploration, discussions and investigations and helps them, in turn, to be confident communicators through the processes of explaining and reasoning their predictions and conclusions. Children can discover, explain and develop skills of enquiry through working scientifically, which also encompass Portreath’s guiding principles. We have devised a curriculum that matches the ambition of the National Curriculum and has 5 key aims that drive our curriculum. We want everyone to be:



a **DEEP THINKER** who is a fluent reader, knowledgeable, creative and that has mastered key skills in range of subjects.



an **EFFECTIVE LEARNER** who demonstrates curiosity and independence, strives to improve and is a problem solver.

a **CONFIDENT COMMUNICATOR** who is a logophile and bibliophile.



a **HAPPY AND HEALTHY INDIVIDUAL** who is inclusive, celebrates diversity and feels that they belong.



a **PERSON** who **makes a positive difference** to others, the community, the environment and the world

We have identified 7 golden threads that are the key concepts for working scientifically that weave throughout our science curriculum. They are:

1. Asking Questions
2. Make Predictions
3. Setting up Tasks
4. Observing and Measuring
5. Recording Data
6. Interpret and Communicate Results
7. Evaluating

These threads start in the EYFS and link the learning in science together across the school. They help the children to make connections. By considering these threads when planning the EYFS team start to ‘plant the seed’ of these concepts and prepare the children for their journey in KS1 and 2. As the science lead, I have worked with the EYFS lead to identify key learning for EYFS to prepare them for the study of science. The children can develop so many of the key skills needed at a very early age. For example, in EYFS, children asking questions is a key skill developed and this is an essential tool in being a great scientist.

Key Areas of Science:

- Living Things, Animals (including Humans) and Plants
- Earth and Space
- Light

- Electricity
- Sound
- Forces
- Materials

Key Concepts:

- Cause and effect
- Change
- Adaptation
- Similarities, difference and variation
- Energy
- Processes
- Growth
- The importance of the following processes of science: asking questions, designing experiments, reasoning and arguing with scientific evidence and analysing and interpreting data

Key Aims:

- Create awe and wonder through being a motivated, resilient, ambitious LEARNER who demonstrates curiosity, independence and strives to improve.
- Offer pupils access to a fascinating body of knowledge, a way of working and a way of thinking that encourages lifelong learning and supports the wider life decisions young people will be required to make, which creates knowledgeable and creative THINKERS who master key scientific skills.
- Build on pupils' curiosity, and develops their questioning, reasoning and problem-solving skills enabling children to become effective and confident COMMUNICATORS.
- Expand pupils' knowledge, understanding and appreciation of the world around them and the natural phenomena they encounter.
- Provide alternative and exciting approaches for engagement – including opportunities for outdoor learning.
- Support essential cross-curricular activities and skills such as numeracy, literacy, communication, collaboration, manual dexterity and interpersonal skills.

What we do well as a school:

The school uses a variety of teaching and learning styles in science lessons. Our principal aim is to develop children's knowledge, skills and understanding in science and to develop an enquiring mind. We do this through lessons, which include a mix of whole class, group work, paired work and individual teaching. We encourage children to ask and answer scientific questions and wherever possible, we encourage the children to use and apply their learning in everyday situations. We use ICT and the interactive whiteboard to enhance the children's learning where appropriate. Although it is taught as a discrete subject, science elements are also explored as part of a topic. In Key Stage One and Early Years a science theme sometimes directs the topics. We try to make science as practical as possible. We include visits to local secondary schools to use their facilities and invite science experts, including secondary school teachers in to run sessions. We had the Space Dome in at the school in 2020 and all children got to explore it. Elements of science are explored through our outdoor learning sessions.

WE believe that Portreath's Science Key Aims promote children becoming HAPPY and HEALTHY INDIVIDUALS and CITIZENS who are confident and have a sense of belonging and interest in the wider world.

Curriculum Design

We carry out the curriculum planning in science in two phases (long term and medium term). The long-term plan maps the scientific topics studied in each term for each year group. Our medium-term science plans are based on the scientific topics listed on the long-term plan. They ensure an appropriate balance and distribution of work across each term and over the two-year cycle. Due to mixed year groups we have put together a long-term plan that ensures each class covers the relevant material. Planning is annotated by the class teacher and used for reference in future teaching. To ensure clear sequences of learning we use the Crofty MAT progression documents to plan lessons. These give small steps that build towards key end points that link to the National Curriculum. These break down the National Curriculum statements into smaller steps. Vocabulary is a key focus and key tier 3 vocabulary is identified for each topic. Each term we 'tick off' the end points and highlight the small steps in a shared digital area for Science to demonstrate coverage.

Enquiry-based approaches should enable pupils to enhance their scientific knowledge, understanding, skills and attitudes and further develop their curiosity about the world around them. Pupils have regular access to appropriate hands-on practical activities that: support the development of motor, manipulative and age-appropriate technical skills, underpin their understanding of key scientific concepts, encourage them to ask productive questions, explore and investigate possible answers and communicate their findings to others and provide opportunities for developing both independent learning and team working skills.

Science in EYFS is taught through the Understanding the World part of the Foundation Stage Curriculum. Children are provided with hands on opportunities to investigate, observe, ask and answer questions, become inquisitive and to further their knowledge and understanding of the world. All of these skills help to prepare them for Science in KS1.

Resources

The central science cupboard is well - resourced with suitable materials and is regularly replenished. IT and a range of other media are used to support the collection, analysis, interpretation and presentation of data and evidence.

Local secondary schools also lend us equipment.

Knowledge Focused

Each class has a Knowledge Organiser for the Science units which are put into Science book. From September 2020 the children put a copy of these in a scrap book which acts as a record of their journey and as a resource to reactive and revisit learning. The KO is used regularly and sent home to ensure this key information is remembered and can be retrieved. Leaflets about the topic are also sent home so parents can support learning at home.

Training

Over the last couple of years, we have had a number of training sessions in staff meetings and through twilights to explore fully the National Curriculum and design the sequence of learning. The sessions helped develop staff's subject knowledge. Science Leader had liaised with science leaders across the MAT to create small steps that build towards key end points that link to the National Curriculum. These break down the National Curriculum statements into smaller steps. The Science lead signposts staff to any relevant courses, including online CPD. The science lead is currently completing the PSQM programme (Primary Science Quality Mark).

What does monitoring tell us?

Discussion with children with their books and knowledge organisers show that children are able to articulate what they have learnt not just activities undertaken. The children demonstrated their enthusiasm and engagement with the science. SILC visits demonstrated that the children are able to talk about what they have learnt in detail, not just what they had done. Displays around the school and science books show quality work and progression across the school. Lesson observations during Ofsted demonstrated clear progression across the school in term of learning and expectations and also demonstrated a sequence of learning and how learning builds on previous learning.

Next Steps

- **Science lead to continue work linked to PSQM**
- **Develop science enquiry across the school**
- **Further CPD for staff**