

# Seabrook Church of England Primary School

## Science Policy

Date: October 2021

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### Introduction

At Seabrook Church of England Primary School, “Everybody Matters” in our school community. The vision of Seabrook Church of England Primary School is centred around our Christian values of Love, Respect, Peace, Forgiveness, Hope and Perseverance. Our vision statement states, ‘As a community of learners we believe God loves us equally and unconditionally and wants us to live life in all its fullness.’

This policy outlines the teaching, organisation and management of science taught at Seabrook Church of England Primary School based upon the National Curriculum statutory guidelines and our school’s vision and curriculum intent. The implementation of this policy is the responsibility of all teaching staff.

The National Curriculum details that:

*A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics...Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.*

Alongside this, at Seabrook Church of England Primary School, our science teaching and learning is underpinned by the key messages of our curriculum intent:

*To teach a curriculum that is exciting, fun and imaginative. You can walk into any of our classrooms and find children who are engaged in thinking, questioning and learning and enjoying learning.*

*We believe our curriculum and its implementation must develop pupils who are enquiring, resilient, independent and have high aspirations. Alongside these qualities needed for academic success, our Christian values pervade our approach; developing a sense of love, respect, peace, forgiveness, perseverance and hope are just as important.*

## **1. Science Vision and Objectives**

The following objectives derived from the above aims will form the basis of our decisions when planning, delivering and assessing a scheme of work.

### **1.1 Engagement:**

- To develop pupils' enjoyment and interest in science and an appreciation of its contribution to all aspects of everyday life, developing their curiosity about the natural world.
- To develop a knowledge and appreciation of the contribution made by a broad range of scientists to our understanding of the world, including scientists from different cultures.
- To develop children's ability to ask and answer scientific questions through a range of enjoyable and interesting experiences and to make links from their scientific investigations to the real world.
- To nurture a positive attitude towards science and increase children's understanding of how science is used in the wider world.
- To use our local area where possible when exploring science related to the environment.
- To use pupil voice in the planning and implementation of science learning.
- To enable **all** pupils, regardless of ability or background to be able to access and participate fully in science learning.
- To engage children's enthusiasm for science in an annual science week, which is rich in practical activities.
- To raise future career aspirations for children in the field of science.

### **1.2 Teaching and Learning:**

- To provide a range of engaging and relevant learning experiences which allow pupils to acquire and develop knowledge, skills and understanding in the key areas of Life Processes and Living Things, Materials and their Properties, Physical Processes and Scientific Enquiry contained within the programmes of study of the National Curriculum 2014.
- To use a range of teaching and learning strategies to create memorable learning opportunities, providing pupils with a range of specific investigations and regular practical work which gives them a worthwhile experience to develop their understanding of science.
- To follow the Seabrook CEP school progression of skills document for the relevant year group to consolidate and build upon the skills in the previous year group and Key Stage.
- To introduce pupils to the language and vocabulary of science and to give pupils regular opportunities to use the scientific terms necessary to communicate ideas about science.
- To progressively develop pupils' ability to plan, predict, carry out, observe, measure and evaluate simple scientific investigations using a range of equipment and to appreciate the meaning of a 'fair test' in gaining reliable and accurate results.
- To give pupils opportunities to use a range of scientific measuring instruments within practical activities, such as thermometers, measuring cylinders and force meters, and to develop their skill in being able to read them accurately in the appropriate unit of measurement.
- To develop pupils' ability to record results in an appropriate manner including the use of labelled diagrams, graphs, tables and charts, developing an increasing attention to detail and accuracy as they progress through the school, and to evaluate this evidence to draw conclusions.
- To give pupils opportunities to use ICT (e.g. video, digital camera, data logger) to record their work and to store results for future retrieval throughout their science studies.
- To give pupils the chance to obtain information using the Internet, including to research scientific questions sparked by their own curiosity.

## 2. Inclusion

Teaching and learning in science at Seabrook CEP School recognises that children bring a diverse range of knowledge, experiences, talents and abilities and, as such, the study of science will be planned to give pupils a suitable and engaging range of differentiated activities appropriate to their age and abilities. All pupils will be given the opportunity to take an active part in the task, gain in confidence and develop their scientific knowledge and understanding, along with their scientific enquiry skills, as outlined in the objectives stated above. We strive to meet the needs of those pupils with special educational needs, those with disabilities, those with special gifts and talents, and those learning English as an additional language, and we take all reasonable steps to achieve this. For further details see individual whole-school policies: Special Educational Needs; Disability; Gifted and Talented; English as an Additional Language (EAL).

In keeping with our school motto that, “Everybody Matters” in our school, Seabrook Church of England Primary School’s curriculum intent states:

*It is our fundamental belief that every child should feel valued and experience the feeling of success in a wide range of curriculum areas. We believe that through the curriculum we can impact on what is in children’s heads and how they feel about themselves, so that they feel capable, confident, empowered and ready to tackle any challenge they may face.*

### 2.1 Methods used in the classroom to achieve inclusive science lessons:

- Whole-class and group teaching.
- Classroom organisation.
- Support and/or challenge from teachers and teaching assistants.
- Access to iPad technology in classrooms for enquiry-based research to develop understanding and answer pupil questions.
- Adult support to structure scientific thinking and probe higher-levels of questioning.
- Use of science working walls with key scientific vocabulary and teaching concepts accessible for children to use to support their learning.
- Ample opportunities provided for children to ask, as well as answer, scientific questions.
- Talk partner work, role-play and group discussion to share and develop scientific ideas and predictions.
- Opportunities to interpret and show results using a variety of data, including, tables, statistics, graphs, labelled diagrams, and photographs.
- Frequent practical investigation to answer a question or solve a problem, during which the children will focus on one or more scientific enquiry skill from the following: questioning, researching, predicting, fair testing, planning, testing, selecting and using equipment, presenting data, interpreting and analysing data, drawing diagrams, evaluating.
- Careful differentiation in activities provided, which are accessible to all and which challenge all pupils at their level, including extending the more able.
- Enriching learning opportunities will be planned in for all pupils to enjoy, taking into account widening the participation and experiences of Pupil Premium and vulnerable children.
- Plentiful availability of resources and equipment of different complexities.
- Central resource store of science reference books and other resources readily available and fully stocked.

### 2.2 Methods used specifically for children with a Special Educational Need or English as an additional language to achieve inclusive science lessons:

- Adjustments to the task or format of recording.
- Bespoke teaching materials and/or scientific resources tailored to the child’s need.
- Extra adult support as required.

- Teacher/TA scribe to record scientific ideas if appropriate.
- Additional resources.
- Mixed-ability pairings.
- Encouragement to become independent learners and work with peers.
- The use of technology (e.g. sound buttons, iPads, laptops) or specialist equipment.
- Personalised provision in place for children with IEPs – some IEP targets may relate specifically to science if appropriate.

### 2.3 Representation and Diversity

We will also ensure inclusivity and diversity in the teaching of significant scientists and important scientific discoveries made by both men and women of a range of races and backgrounds, acknowledging the contribution of those from other countries and cultures to ensure wide curriculum coverage and representation for all pupils.

We will not only emphasise the positive effects humans have had on science in the world but also include problems that some human activities can produce.

## **3. Planning**

### 3.1 Long-Term Planning

All year groups will have their science topics for the two-year cycle set out on their curriculum overviews with an indication of which term they are required to teach each topic. Topics have been allocated in line with the National Curriculum 2014. This will be periodically reviewed by the Senior Leadership Team and science subject leader.

### 3.2 Medium-Term and Short-Term Planning

At Seabrook CEP School, we follow the Chris Quigley Science Scheme as a basis for science planning, which provides carefully planned progression of knowledge and skills. It also highlights statutory requirements for each topic, objectives from the National Curriculum programmes of study for science, key knowledge, including scientific vocabulary. Key information, vocabulary and 'proof of progress' questions (POP) are identified by class teachers from the scheme and arrange into knowledge organisers. Teaching staff are responsible for ensuring the up-to-date planning and resourcing of their science lessons, including adequate differentiation and challenge for all pupils in the tasks, teaching materials and scientific resources provided.

## **4. Continuity and Progression**

### 4.1 Foundation Stage

Foundation Stage pupils investigate science as part of Understanding of the World, though links can also be made to the areas of Mathematics, Literacy, Personal, Social and Emotional Development and Communication, Language and Literacy. Children are encouraged to investigate through practical experience; teachers guide the children and plan opportunities that allow the children to experience and learn whilst experimenting for themselves.

### 4.2 Key Stages 1 and 2

Pupils in Key Stage 1 will be introduced to science through focused observations and explorations of the world around them in specific science lessons. These will be developed through supported investigations at Key Stage 1 into more independent work at Key Stage 2. The knowledge and content prescribed in the National Curriculum will be introduced throughout both key stages in a progressive and coherent way.

Seabrook CEP school has a progression of skills document to aid staff in ensuring that pupils are developing the appropriate skills for their age in science which consolidate and build upon the previous year group and/or Key Stage.

## **5. Recording and Assessment**

The recording of science learning will take different forms depending on the Key Stage within the school:

### **5.1 Recording at Foundation Stage**

Evidence of science learning in Foundation Stage will form part of the children's Learning Journey book, predominately relating to objectives in the 'Understanding the World' area of learning. Evidence may take the form of photographs, observations made by staff, direct quotes from children and any written or pictorial evidence the children themselves produce.

### **5.2 Recording at Key Stage 1**

Key Stage 1 will make use of a class floor book to record science learning, including a range of evidence such as direct quotes from the children, photographs, written and pictorial evidence from the children and observations made by teaching staff. Teachers should also keep assessment grids, which should include a record of each child's understanding of the knowledge-based learning objectives within a topic and their ability to demonstrate aptitude for the scientific enquiry skills relevant to their age.

### **5.3 Recording at Key Stage 2**

In Key Stage 2, each child will have an individual exercise book for science, which can be used in conjunction with a class floor book if desired. Individual books may record evidence in varied ways such as direct quotes from the children, photographs, written and pictorial evidence from the children and observations made by teaching staff, though there is an expectation in Key Stage 2 that children will have ample opportunities to produce written work, including writing up practical investigations. Teachers should also keep assessment grids, which should include a record of each child's understanding of the knowledge-based learning objectives within a topic and their ability to demonstrate aptitude for the scientific enquiry skills relevant to their age.

### **5.4 Assessment**

- Assessment grids will provide a record of progression through each topic and record each child's knowledge and understanding of the objectives and scientific enquiry skills.
- Throughout the school, teachers will assess whether children are working at/above or below the expected level for their age based on their understanding and application of the content of the National Curriculum 2014.
- Progress and attainment is reported to parents through parents' evenings and end of year reports.
- Much of the work done in science lessons is of a practical or oral nature and, as such, recording will take many varied forms thus making marking different depending on the task. It is, however, important that written work is marked regularly and clearly, as an aid to progression and to celebrate achievement. When appropriate, pupils may be asked to self-assess or peer assess their own or other's work. Marking for improvement comments should be made in line with the school's marking policy.

## **6. Monitoring**

Monitoring in science will take place through the use of various strategies:

- Lesson observations
- Book scrutiny
- Pupil conferencing
- Sharing planning
- Reviewing assessment grids
- Speaking with teaching staff

## **7. Health and safety**

All science experiments are to be carried out in accordance with national safety guidelines published in the ASE 'Be Safe' publication. Potential safety issues should be recorded on short-term plans and a risk assessment carried out if necessary. Teachers must seek advice/permission from the Executive Head and/or Heads of School if they have any concerns or queries about the safety of activities planned or resources to be used in science. Pupils will be taught to use scientific equipment safely when using it during practical activities and will always be adequately supervised. Class Teachers and Teaching Assistants will check equipment before use in class and report any damage, taking defective equipment out of action.

The following matters must be taken into account as a priority:

- Correct adult to children ratios.
- Known methods of alerting other members of staff in an emergency.
- Known emergency evacuation procedures.
- Potential hazards should be identified and addressed when planning lessons;
- At no point should any science experiment with primary children involve fire/naked flames, sharp objects, aerosols, excessively heavy equipment or dangerous chemicals which could cause irritation or harm. If there are any items not listed which may also pose a threat, the Health and Safety manager should be informed and his/her advice or permission sought.
- Teachers are advised that children should wash their hands after completing practical science investigations (where appropriate), remove items of clothing which could pose a danger when performing practical work, and wear protective safety equipment to cover hands, clothes, eyes and/or faces if necessary.
- Should First Aid be required during science, equipment is available in each classroom, which is to be administered by trained members of staff. Other trained members of staff/parents may also need to be informed.
- Clean, drinking water is available in every classroom sink should it be required.
- Very young children should not use equipment which could pose a choking hazard.
- Staff have a responsibility to ensure that resources are all child-friendly and have been ordered from reputable suppliers.
- Children should receive thorough explanation/adult modelling before undertaking experiments independently and should be adequately supervised.
- Sufficient space should be allowed when conducting science experiments, moving from the classroom to an outside space if necessary for the safe conduction of the investigation.

## **Role of Subject Leader**

The subject leader, in collaboration with the Senior Leadership Team, will:

- Provide a strategic lead and direction for science in the school.
- Ensure curriculum coverage in line with National Curriculum requirements.
- Ensure that there is adequate consolidation and progression in children's knowledge and skills across the school.
- Complete an annual action plan for the subject with objectives to work on to improve science teaching over the academic year, which will be reviewed and evaluated at points throughout the year.
- Ensure the school is stocked with adequate resources, working within a prearranged budget.
- Support colleagues in their science teaching.
- Stay informed about current developments in the subject.
- Take responsibility for their own CPD in the subject and to plan for an annual staff meeting to address CPD in science across the teaching team.
- Monitor standards of teaching and learning using the strategies outlined above in the 'Monitoring' section.
- Organise an annual science week to celebrate science learning and enthuse children.

*Each class teacher has a responsibility to co-ordinate the science planning, teaching, recording and assessment for their year group(s).*