Policies and Guidelines in Respect of

Science

Sea View Primary School

Responsible Personnel: **Science Coordinator.**

Process of Policy Development and Consultation

This document is a statement of aims, principles and effective strategies for **Science** at Sea View Nursery and Primary School

This policy will be reviewed regularly in line with the schedule set out for review of all policy documents.

Date Created: June 2022

Review Date: June 2024

Head Teacher: J Weightman

Chair of Governors: A Newham

Science

Introduction

This policy is a statement of the intent, implementation and impact of Science teaching and learning at Sea View Primary.

At Sea View Primary we believe a high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. 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 key foundational knowledge and concepts can be used to explain what is occurring, predict how things will behave, and analyse causes. This foundational understanding should be consolidated through their appreciation of the specific applications of science in society and the economy.

Intent

Our Science Vision and Principles

At Sea View Primary we recognise the importance of Science in every aspect of daily life. We follow the 2014 National Curriculum for Science, which aims to ensure that all children:

• 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.

At Sea View Primary we strive to provide children with a cross curricular, vocabulary rich science curriculum which inspires and enables pupils to explore and discover the world around them, led by their natural curiosity.

We believe that good science teaching and learning happens when:

- Children are confident using scientific vocabulary when explaining and exploring
- Children recognise the purpose of, and see the relevance of, their science in everyday life
- Children ask their own questions and investigate them confidently choosing equipment and recording results
- Science is cross curricular and purposeful and makes links with literacy, maths and the wider curriculum
- Children are engaged and enthused by hands on science which is explored through a range of settings (outdoor, indoor, visitors).

Implementation

Learning and teaching styles

The expectation is that learning and teaching styles will differ from each lesson and will address the needs of the children and the needs of the subject being taught. At Sea View Primary School we utilise many learning and teaching styles.

- All lessons have clear learning goals, to be shared and reviewed with the pupils
- Lessons are a mix of enquiry and knowledge based to ensure secure understanding
- Planning allows for a wide range of scientific enquiry, including: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources.
- The national curriculum for Science reflects the importance of spoken language in pupils' development, stating the quality and variety of language that pupils hear and speak are key factors in developing their scientific vocabulary and articulating scientific concepts clearly and precisely. Therefore at Sea View we take every opportunity to expose children to the correct scientific language and encourage children to build up an extended specialist vocabulary.
- Lessons make effective links with other curriculum areas and subjects, where appropriate, especially English, Mathematics and Computing.
- At Sea View we plan opportunities to enrich our students' scientific experiences and encourage enquiring minds by ensuring we involve visitors and outdoor learning wherever possible.

Curriculum Planning

The National Curriculum is the basis for our Science planning. An overall curriculum map has been created, using the National curriculum, to provide a framework for Science taught within our school. Science is taught weekly, during 90 minute lessons. To assist teachers in their planning to ensure coverage, the following documents are used:

- Topic overviews - which detail progression and national curriculum statements
- Working Scientifically Planning grids – which provide ideas for staff
- Topic specific vocabulary grids
- Progression grids – which enable staff to see what skills and knowledge have been taught previously, and will be taught in the future.

Teaching staff work from a wide range of high quality resources such as: our Sea View Working Scientifically Planning grids, STEM learning, The Ogden Trust, The Royal Society of Chemistry, and A Creative Approach to Teaching Science by Nicky Waller which enable teachers to plan high quality, purposeful medium term plans based on each National Curriculum topic. These medium term plans set out the learning goal, steps to success and lesson content for each lesson. Teachers also include a wide range of resources, including the school environment within their planning to enhance and enrich the children's learning.

Teachers are also encouraged to use NUSTEM's primary careers tool to make links to STEM careers where appropriate during the teaching of topics, to inspire children and enable them to make links between their learning and science in the world.

Foundation Stage Planning

In EYFS, in accordance with the 'Statutory framework for the early years foundation stage', focus will be put on the seven areas of learning, with the scientific aspect of pupils' work relating to the objectives set out within the framework during themed half termly topics.

NUSTEM Partnership

At Sea View we are a partner school of NUSTEM (Northumbria University Science Technology Engineering and Maths). Each year NUSTEM work with teachers to deliver workshops which support the curriculum, provide support with planning and engaging children in the curriculum, deliver parent workshops and facilitate CPD for teachers.

Cross Curricular Links

Science and Computing

We see computing as an important tool in Science. Children are able to research, communicate, collect and interrogate data in a variety of ways. Children use computing to display their learning and as a research tool as a secondary resource. Children have the opportunity to use data loggers, voice recorders and digital thermometers to collect results and interpret them during enquiries to enrich their learning experiences.

English

Pupils are encouraged to use their speaking and listening skills to describe what is happening.
Pupils' writing skills are developed through recording their planning, what they observe and what they found out.
Science based texts are sometimes used in English lessons and in guided reading sessions.

Maths

Science will involve a degree of numeracy at all levels.
Pupils use their knowledge and understanding of measurement and data handling.
Where appropriate, pupils record their findings using charts, tables and graphs.

PSHE

Health education is referenced and taught during several National Curriculum topics focusing on the following aspects: Health and growing, teeth and eating, moving and growing, keeping healthy and life cycles

History

Scientific discoveries and the contribution of individuals to science will be studied.

Science and inclusion

At Sea View we recognise that pupils are entitled to access the Science curriculum at a level appropriate to their needs. Gender, learning ability, physical ability, ethnicity, linguistic ability and/or cultural circumstances will not impede pupils from accessing all science lessons. Where it is inappropriate for a pupil to participate in a lesson because of reasons related to any of the factors outlined above, the lessons will be adapted to meet the pupil's needs and alternative arrangements involving extra support will be provided where necessary. All efforts will be made to ensure that cultural and gender differences will be positively reflected in all lessons and teaching materials used. Sea View aims to provide more academically able pupils with the opportunity to extend their scientific thinking through extension activities such as problem solving, investigative work and research of a scientific nature.

Marking work

Please refer to the whole School Marking Policy.

Reporting to parents
This will be done at Parents Evenings in the autumn and spring terms and Science will be reported on specifically on the annual end of year academic report for each pupil.

Health and Safety
At Sea View we recognise it is important that children are taught the rules of safety when undertaking experiments and investigations. All pupils will be shown how to correctly use equipment and will be monitored by staff members whilst using equipment. All pupils will be made aware of how they are expected to behave, ensuring that they show respect to other people and the environment. Pupils are made aware of the personal safety protocols and equipment needed when using different equipment or carrying out different tasks.

As members of CLEAPSS, teachers are able to contact CLEAPSS and refer to online resources to support with planning involving resources, experiments or investigations. A copy of the ASE's Be Safe manual is also available in school to support staff.

Resources
Practical science resources are centrally located in the Phase 2 learning bay. Data Loggers are available by request from the science co-ordinator. Teachers have the resource documents needed for planning within their year bands and further resources stored centrally online, plus some topic books within classes.
The subject leader must be informed of any changes regarding science resources i.e missing or broken resources and/or when new or replacement of resources are required. A yearly audit is carried out to check and replenish where needed.

Impact

In Sea View we have been recognised for our achievements in Science teaching, being awarded the Primary Science Quality Mark (PSQM). Through the intent and implementation of Science teaching and learning, pupils confidently use scientific vocabulary to explain and explore the world around them. Our pupils are able to recognise the purpose of Science in everyday life and understand how their learning can shape their future aspirations due to the partnerships with local Universities, outreach opportunities and in school focused events and visitors. By being encouraged to ask questions, they are able to investigate confidently using a range of equipment safely, record their finds and explain them. As a result, they are confident, engaged and enthused by the subject.

Monitoring
The Science curriculum is monitored by the science co-ordinator, SLT and MLT (where appropriate) through staff meetings, observation of teaching, monitoring of medium term plans and children's work, pupil and teacher voice, annual curriculum contributions and analysis of data.

Assessment

Assessment in science is based upon scientific knowledge and understanding, rather than achievement in English or maths.

Children in EYFS are assessed continuously throughout the year in the form of formative assessment which includes routine interactions with children and reflection of the knowledge, skills and understanding that the child demonstrates in the course of everyday learning. Progression maps are updated each term to monitor that the children are making progress in each subject area and this supports planning and next steps.

Phase 1 and 2 will be assessed continuously throughout the year. Throughout the year, teachers will plan on-going creative formative assessment opportunities in order to gauge whether pupils have achieved the key learning objectives. Examples include: talking to pupils and asking questions, discussing pupils' work with them, marking work against the learning objective, observing practical tasks and activities and pupils' self-evaluation of their work. In addition to formative assessment, pupils will undertake a summative assessment at the end of each topic. Assessment data is populated after each topic on iTrack which is used to assess children's progress throughout each academic year using the following descriptors:

Working Towards (working below the expectations for the year group)
Expected (working at expected level for year group)

These grades are based on the expectations for children in that year group.