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Science Policy

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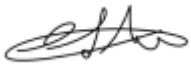
Signed by:  Chair of Governors

Signed by: Headteacher

This policy reflects the values and philosophy of Ranelagh Primary School in relation to the teaching and learning of science. It gives a framework within which teaching and support staff work and it gives guidance in planning, teaching and assessment.

Policy Statement & Philosophy

At Ranelagh Primary School, we believe that a high-quality science education provides the foundations for understanding the world through biology, chemistry, and physics. Science has changed our lives and is vital to the world's future prosperity. Our curriculum nurtures pupils' natural curiosity, fosters rational thinking, and equips them with essential foundational knowledge, enquiry skills, and scientific vocabulary to understand natural phenomena.

Purpose of Science

In accordance with the National Curriculum programme of study statement it is our understanding that a high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. It is necessary for children to understand how Science has had a fundamental impact on peoples' collective experiences and is at the core of understanding how the world functions. 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 science can be used to explain what is occurring, predict how things will behave, and analyse causes

Aims

- 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

Spiritual, Moral, Social and Cultural development through science

Science provides opportunities to promote:

- Spiritual development — through pupils sensing the natural, material, physical world they live in, reflecting on their part in it, exploring questions such as where does life start and where does life come from?
- Moral development — through helping pupils see the need to draw conclusions using observations and evidence rather than preconception or prejudice, and discussion of the implications of the uses of scientific knowledge, including the recognition that such uses can have both beneficial and harmful effects.
- Social development — through helping pupils recognise how the formation of opinion and the justification of decisions can be informed by experimental evidence and drawing attention to how different interpretations of scientific evidence can be used in discussing social issues.
- Cultural development — through helping pupils recognise how scientific discoveries and ideas have affected the way people think, feel, create, behave and live, and drawing attention to how cultural differences can influence the extent to which scientific ideas are accepted, used and valued.

Curriculum and Time Allocation

Science is a core subject. In order that children are able to develop good scientific inquiry skills, science should be taught as a separate timetabled subject at least once a week in KS1 and KS2. In Reception, Science and Working Scientifically is introduced through continuous provision. Lessons are delivered by the Class Teacher.

In addition, we are committed to linking our learning in science to other curriculum areas as appropriate. Oracy is a priority during scientific investigations. The children develop their writing skills with predictions, evaluations and recording data. Mathematical skills including measuring and data handling are an important part of lessons. Science work can be recorded in maths or English books when appropriate.

Scheme of Work

We are following the White Rose Science scheme of work which we adapt to meet the needs of the cohort. White Rose Science is a complete curriculum programme for primary Science which provides units of work for Key Stage One and Two and additional teacher material. It is designed to ensure pupils engage with a coherent progression of the scientific concepts and skills specified in the National Curriculum. From starting points suitable for all, the units develop to provide appropriate challenges for pupils of varying abilities. The units have key questions to develop the use of appropriate Scientific enquiry, as well as a focus on the acquisition and application of key subject knowledge, concepts and vocabulary throughout. Skills, knowledge and understanding in Science progress through Year 1 to Year 6, being taught, developed and applied throughout the schemes of work. A range of opportunities are provided to enable all pupils to communicate their knowledge and understanding of the subject. Links are made within and across units to support pupils in making connections and in developing a strong overview of Scientific knowledge and interdisciplinary competence.

In order to promote the use of correct scientific vocabulary, each classroom should have a display of vocabulary related both to science enquiry and the current science topic.

Medium term plans should be completed to show the aims of the series of lessons and the vocabulary to be taught. The plans should include ways in which the teacher plans to teach the aims but they are flexible to allow for the children to lead the lessons and for plans to be reconsidered after initial assessment for learning.

Approach of the Units

Each module is designed with children's natural inquisitiveness in mind and entry point questions are based on authentic classroom experience (of the teachers that designed the scheme) with flexibility to incorporate enquiries suggested by the children within your specific cohort. Pupils are able to make links to their own experiences and discuss their ideas with their peers. Each lesson has a clear learning intention and success criteria that are written in child-speak to exemplify what is required for them to be successful in the lesson. Assessment is woven throughout units rather than as a wholesale assessment at the end and there is an online toolkit available which we will be developing our use of this academic year. All pupils have their own exercise book and marking follows the school's marking policy.

Intent

White Rose Science provides a comprehensive curriculum that is designed to meet the needs of all pupils and foster a lifelong intellectual curiosity and rigour. It is cohesively structured and allows children to apply their prior knowledge to new contexts. At its core is a child-centred approach, tailored to enhancing pupils' understanding of key questions about their world. Its emphasis is not just on Scientific knowledge but on working Scientifically in a range of ways. Following from children's feedback the scheme was chosen to allow as many opportunities, where conceptually appropriate, for them to explore their understanding in a practical context. One of the fundamental ideas of the scheme is that all children work from a shared starting point to answer the same key questions. Teachers are expected to modify the delivery of the scheme to meet the needs of their classes whilst retaining this core approach. The focus throughout is on 'The Spirit of Enquiry'. At its core, we are cultivating an interest in Science rooted in practical exploration where appropriate to the subject matter and age appropriate for the pupils. Throughout the units, knowledge, skills and concepts are brought together holistically, underpinned by the development of a strong and evolving subject vocabulary with which to talk about and discuss the Science being learned. An enquiry approach is used as a shared experience, with key and supplementary questions, to encourage curiosity, deepen thinking and embed research skill. This hopefully mitigates against a didactic approach and encourages teaching and learning to become a joint pupil / teacher 'adventure' or 'journey'.

Implementation

White Rose Science is designed to be delivered by nonspecialists, with core Scientific knowledge identified and explained throughout. The scheme suggests ways that each lesson can feature an element that is child led to encourage engagement and to explore concepts in a context that is meaningful to the children. Assessment for learning during the lesson, largely through discussion, is a key litmus test of pupil understanding. Questioning throughout lessons allows pupils opportunities to demonstrate the depth of their thinking and teachers an immediate chance to address any misconceptions. This together with

recorded outcomes across the unit allows teachers to gauge pupil competence. Teachers use marking and verbal feedback as strategies to address misconceptions, enhance understanding and further challenge pupils that have shown a strong understanding of the content. We incorporate the use of knowledge organisers within our units to create a clearer summative assessment for teachers. Science is taught weekly in KS1 and KS2. In Reception, Science and Working Scientifically is introduced through continuous provision. Working scientifically skills are split into eight key areas: • Ask questions • Plan • Make observations

• Take measurements

• Gather, record and classify data

• Present findings

• Answer questions and make conclusions

• Evaluate (KS2 only)

Impact

The impact of White Rose Science is evidenced through the pupils' use and understanding of the identified Scientific concepts and their ability to apply this understanding in new contexts including combining their theoretical knowledge with practical enquiry. It is evidenced by the use and outcomes of the varied activities. By providing a starting point accessible to all pupils, they can each make their own progress along a geographical journey, some getting further than others. The progression sequence below helps facilitate this as it extends scientific knowledge, understanding and thinking.

Progression

Early Years Foundation Stage (EYFS) Provision

In Reception, science and scientific inquiry are introduced through the Understanding the World area of learning, delivered primarily through Continuous Provision and enhanced learning environments.

Continuous Provision & Child-Led Exploration

- **Inquiry-Rich Environments: Early scientists develop foundational skills by exploring natural materials, observing physical properties, and interacting with hands-on resources in dedicated provision areas (e.g., water/sand play, investigation tables, and outdoor nature zones).**
- **Observation & Pattern Seeking: Children are supported to make predictions, observe seasonal changes, and notice natural processes through guided continuous provision.**
- **Adult Interaction & Vocabulary: Practitioners use high-quality interactions and questioning to model scientific language, prompt deeper thinking, and address early misconceptions during child-initiated play.**

Key Stage 1 and Key Stage 2 Delivery

Science is taught as a discrete timetabled subject at least once a week in Key Stage 1 and Key Stage 2. Working scientifically skills are systematically integrated into eight core inquiry areas:

- Asking questions
- Planning investigations
- Making systematic observations
- Taking accurate measurements
- Gathering, recording, and classifying data
- Presenting findings
- Answering questions and drawing conclusions
- Evaluating investigations (KS2)

Differentiation

White Rose Science is designed so that all pupils can and should receive their entitlement to Science within a broad and balanced curriculum. Those working towards expectations will work on the same tasks but may need greater support and may not complete all levels of an activity. They may choose to demonstrate their knowledge and understanding orally or visually, to avoid limited literacy skills hindering their achievements within the subject. Where possible, pupils will be supported through paired and group work. Questions posed within sessions provide opportunities for all pupils to be able to contribute. Pupils working above expectations are expected to undertake activities with greater independence and to be provided with some opportunities to make choices on how they learn and can communicate their knowledge.

We maintain high expectations for all pupils, including those with SEND, EAL, or from disadvantaged backgrounds.

- Differentiation & Support: Tasks are scaffolded, and pupils may demonstrate knowledge through visual or oral means to prevent literacy barriers. High-attaining pupils are challenged through independent investigation and analytical tasks.
- EAL & Scientific Language: Targeted pre-teaching of vocabulary, visual aids, and practical work are used to support multilingual learners.
- Global Perspective: Topics celebrate international scientific discoveries to reflect diverse cultures and perspectives.
- Having high expectations of every child.

Assessment, Record Keeping & Reporting

As part of the teaching and learning process, ongoing formative assessment will be made by individual teachers for all children to monitor individual progress and to inform future planning.

- **Assessment for Learning (AfL):** Baseline tasks assess prior knowledge before each unit. Ongoing formative feedback, show-me boards, and verbal feedback address misconceptions in real time.
- **Summative Assessment:** End-of-unit assessments, work analysis, and the White Rose online assessment toolkit inform termly tracking entries (Insight).
- **Reporting:** Annual written reports detail progress and attainment against National Curriculum standards.

This can be an opportunity for teachers to observe the skills students have picked up. It should aim to cover all the bullet points in the section of the National Curriculum covered in that half term. This will be used to inform the multi-tick record on Pupil Asset.
Each unit has an online toolkit for assessment which teachers are encouraged to use to support their teacher assessment.

Health and Safety

Practical activities are planned with safety as a priority. Staff conduct risk assessments following advice from Suffolk Local Authority, the **ASE** ***Be Safe!*** manual, and **CLEAPSS** guidance to maintain safe practical environments. www.cleapss.org.uk

Teachers are advised to check both of these for guidance and to risk assess any activity that they feel may pose a danger to either themselves or their pupils.
Children should be shown the correct and safe use of all equipment at their disposal, in accordance with the recommendations of Suffolk County Council / CLEAPSS.