

RED ROSE SCHOOL – SCIENCE POLICY

Updated: January 2021

Sec3 Chapter

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All policies are to be read in conjunction with the School's statement of its goals (Sec 1 Chap1), ethos (Sec 1 Chap 3) and curriculum planning (Sec 3 Chap 4). This policy outlines the purpose, nature and management of the Science taught at Red Rose School.

THE IMPORTANCE OF SCIENCE

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 science can be used to explain what is occurring, predict how things will behave, and analyse causes.

Aims

Our aims are to ensure that all pupils:

- 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

Scientific knowledge and conceptual understanding

The programmes of study describe a sequence of knowledge and concepts. While it is important that pupils make progress, it is also vitally important that they develop secure understanding of each key block of knowledge and concepts in order to progress to the next stage. Insecure, superficial understanding will not allow genuine progression: pupils may struggle at key points of transition (such as between primary and secondary school), build up

serious misconceptions, and/or have significant difficulties in understanding higher-order content.

Pupils should be able to describe associated processes and key characteristics in common language, but they should also be familiar with, and use, technical terminology accurately and precisely. They should build up an extended specialist vocabulary. They should also apply their mathematical knowledge to their understanding of science, including collecting, presenting and analysing data. The social and economic implications of science are important but, generally, they are taught most appropriately within the wider school curriculum: teachers will wish to use different contexts to maximise their pupils' engagement with and motivation to study science.

The nature, processes and methods of science

'Working scientifically' specifies the understanding of the nature, processes and methods of science for each year group. It should not be taught as a separate strand. Scientific enquiry should include: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources. Pupils should seek answers to questions through collecting, analysing and presenting data. 'Working scientifically' will be developed further at key stages 3 and 4, once pupils have built up sufficient understanding of science to engage meaningfully in more sophisticated discussion of experimental design and control.

National Curriculum: Science programmes of study

<https://www.gov.uk/government/publications/national-curriculum-in-england-science-programmes-of-study/national-curriculum-in-england-science-programmes-of-study>

LEARNING

Our principal aim is to develop children's knowledge, skills and understanding of science. We do this either through whole-class or small group teaching, while at other times we engage the children in an enquiry based research activity. Within lessons children are encouraged to work collaboratively and independently. We encourage the children to ask as well as answer scientific questions. They have the opportunity to use a variety of data, such as statistics, graphs, pictures and photographs. I.C.T is also used to enhance learning. The children engage in a variety of problem solving activities, and wherever possible, the outdoor classroom is used to create real life situations for the children to research. Field trips are also an important element in developing the child's understanding.

TEACHING

The school uses the national scheme of work for science as the basis of its curriculum planning. The national scheme has been adapted for use in the school. Our medium-term plans give details of the work for each term and make cross curricular links wherever possible. The teaching of science in our school builds upon prior learning and all abilities are given the opportunity to develop their skills, knowledge and understanding. We also build progression into science to ensure that the children are increasingly challenged as they move up through the school. We recognize that there are children of widely different scientific abilities in all classes and we ensure that we provide suitable learning opportunities for all children by matching the challenge of the task to the ability of the child. We achieve this by setting common open ended tasks, setting tasks of increasing difficulty, grouping children by ability, providing resources of different complexity and using teaching assistants to support the work of targeted groups of children.

EMBEDDING PERSONAL LEARNING AND THINKINGS SKILLS - HOW WILL WE KNOW WHEN WE ARE ACHIEVING OUR AIMS?

In planning for progression, it is important to develop a clear picture of how learners demonstrate PLTS in the context of teaching and learning in science and how those skills can raise achievement in this subject. For example, learners may demonstrate that they are:

- ✓ making independent personal choices about their learning through identifying their own questions, planning their own approaches, and finding ways to improve their work
- ✓ transferring and extending their understanding of scientific ideas from one area of science to another, or to a different subject or context
- ✓ increasingly drawing on their own experiences to explore scientific issues that may affect their own lives and the lives of others
- ✓ interpreting situations by exploring new ideas, evidence, opinions and viewpoints in more confident and creative ways.