RISE PARK PRIMARY AND NURSERY SCHOOL

Science Policy

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Signed by Chair of Committee	
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RISE PARK PRIMARY AND NURSERY SCHOOL
SCIENCE POLICY

Introduction

Science is an integral subject within the National Curriculum. This policy outlines the purpose, nature and management of science taught in Rise Park Primary and Nursery School.

The implementation of this policy is the responsibility of all the teaching staff.

The Nature of Science (purpose of study)

A high-quality science education provides the foundations for the understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the worlds future prosperity, and all pupils should be taught essential aspects of 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 school policy follows the National Curriculum for science guidelines and aims 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.

Planning

Strategies for the teaching of science in the Early Years Foundation Stage

In the Early Years Foundation Stage the value of learning through play is recognised and has a high status. The children experience the world around them through practical hands-on activities which are essential if children are to develop appropriate knowledge, understanding and skills necessary for scientific enquiry.

At whatever age children begin nursery or school they will have had a range of different experiences. We recognise that children deepen their knowledge and understanding through play, talking, observing, planning, questioning, experimenting and investigating. Early Years practitioners follow the curriculum guidance for the Early Years Foundation Stage, they use the Early Years Outcomes (Understanding the World) to plan appropriately to meet the diverse needs of all children. In this area of learning children are developing the knowledge, skills and understanding crucial in helping them to make sense of the world. This forms the foundation for later work in science.

Nursery / Reception

- Child Initiated Workshop Areas - Planned activities based on first hand experiences (e.g. sand, water, dough, clay, collage) that stimulate children's interest and curiosity and encourage exploration and observation. These activities are available every day and are linked to the children's interests.
- Enhanced planning - adult intervention when the children are playing and learning. Developing the thinking skills and logical reasoning.
- Focused activities – teacher led activities that develop the children's literacy and mathematics.
- Homework activities – supporting and valuing work carried out in the EYFS and give what has happened in the school an importance and status outside the child's own school hours.

Scientific knowledge and conceptual understanding

The programmes of study describe a sequence of knowledge and concepts. While it is important that all 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.

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 a mathematical knowledge to their understanding of science, including collecting, presenting and analysing data.

Key Stage One and Two – School Curriculum

The programmes of study describe for science are set out year by year for key stages 1 and 2. We are, however, only required to teach the relevant programme of study. In addition, we can introduce key stage content during an earlier key stage if appropriate. Planning will be based on the programmes of study for their relevant year groups.

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.

Spoken Language

The national curriculum for science reflects the importance of spoken language in pupils' development across the whole curriculum – cognitively, socially and linguistically. 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. They must be assisted in making their thinking clear, both to themselves and others, and teachers should ensure that pupils build secure foundations by using discussion to probe and remedy their misconceptions.

Attainment Targets

By the end of each key stage, pupils are expected to know, apply and understand the matter, skills and processes specified in the relevant programme of study.

Key Stage One

The principal focus of science teaching in key stage 1 is to enable pupils to experience is to enable pupils to experience and observe phenomena, looking more closely at the natural and humanly – constructed world around them. They should be encouraged to be curious and ask about what they

notice. They should be helped to develop their understanding of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests, and finding things out using secondary sources of information. They should begin to use simple scientific language to talk about what they have been learning about and communicate their ideas to a range of audiences in a variety of ways. Most of the learning about science should be done through the use of first-hand practical experiences, but there should also be some use of appropriate secondary sources such as books, photographs and videos.

'Working scientifically' must always be taught through and clearly related to the teaching of substantive science content in the programme of study.

Pupils should read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

Lower Key Stage Two – Years Three and Four

The principal focus of science teaching in lower key stage 2 is to enable pupils to broaden their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. They should ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best way of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carry about simple comparative and fair tests and finding things out through secondary sources of information. They should draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out.

'Working scientifically' must always be taught through and clearly related to substantive science content in the programme of study.

Pupils should read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge.

Upper Key Stage 2 – Years Five and Six

The principal focus of science teaching in upper key stage 2 is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. At upper key stage 2, they should encounter more abstract ideas and begin to recognise that scientific ideas change and develop over time. They should select the most appropriate way to answer science questions, using different types of scientific enquiry, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information. Pupils should draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings.

'Working and thing scientifically' must always be taught through and clearly related to substantive science content in the programme of study.

Pupils should read, spell and pronounce scientific vocabulary correctly.

Implementation:

Year Group	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
1	Ourselves	Animal classification	Trees	Materials	Growing plants	Materials
2	Animals including humans Trees Autumn		Trees Spring		Trees Summer	
3	Rocks	Light and shadow	Plants	Nutrition	Magnets and forces	Scientific enquiry
4	Electricity and making circuits	Sound; how does sound travel	States of matter	Scientific enquiry	Animals inc humans, teeth and bones	The natural world; keys and classification
5	Materials properties and changes	Materials properties and changes	Forces	Living things and their habitats	Earth and Space	Animals including humans
6	Animals including humans	Light and electricity	Evolution and inheritance	Living things and their habitats	SAT style revision	

5 Types of Scientific Enquiry

These are taught across each year group and are clearly indicated on planning and in children's books and are the core principals of scientific skills taught alongside knowledge.

Observing changes over time

Observing or measuring changes to living things, materials, physical processes or events over various periods of time.

Grouping and Classifying

Identifying similarities and differences between materials and living things and organise them into groups.

Noticing Patterns

Observe and record, carry out surveys or collect data from secondary sources and then identify relationships between data in their findings.

Research

Using secondary sources of evidence to answer questions.

Comparative and fair testing

Making simple comparisons of one 'thing' or event with another and ranking the results.

Special Educational Needs

The school has a Special Educational Needs policy and science is taught according to its guidelines. Activities are planned in such a way as to encourage full and active participation from all children irrespective of ability or need. Teachers plan work which is appropriately challenging to all abilities.

Equal Opportunities and multi-cultural education

The school has an Equality policy and science is taught according to its guidelines. All children irrespective of gender, ability, cultural background or ethnic background will be given equal access to the knowledge, skills and understanding that form the basis of the science curriculum. Lessons will use a variety of starting points which appeal to both boys and girls.

Assessment

Assessment for learning

Teachers will assess children's work in science by making informal judgements during lessons. On completion of a piece of work, the teacher marks it, and uses this assessment plan for future learning. Written or verbal feedback is given to the child to guide his/her progress. Older children are encouraged to make judgements about how they can improve their work.

School in currently reviewing and developing summative assessment and a tracking system for science across the school.

Monitoring and Review

The science subject leader will monitor science by;

- Observing the teaching of science
- Examining medium term planning
- Examining children's work at science tracking meetings – working below, at or above national level
- Having informal discussions with colleagues
- Having an overview of resources

The scheme of work and policy will be reviewed by all staff at staff meeting.

The science subject development plan contains dates for monitoring and review.

Health and Safety

The school has a Health and Safety policy and science is taught according to its guidelines. Health and Safety issues are an integral part of the national curriculum for science, which the school has implemented.

There is a copy of 'be safe' in school. This book is published by ASE and lays down guidelines for safety in science teaching. It is kept in the science resource area.

Science Resources

All science resources for both KS1 AND KS2 are held in a central resource area. Books and some other resources are kept on shelves in the area. Most resources are kept in resource boxes for ease of movement around the school. The resource boxes are clearly labelled with topic names. It os staff's responsibility to ensure that all resources are well looked after and returned to where they are kept. If resources need replacing /replenishing it is the staff's responsibility to inform the subject leader who will ensure replacements are ordered.

Bibliography

'The National Curriculum for England', 2013, DFE

'Be Safe' Fourth edition 2012, ASE

This policy is reviewed every four years.