



Dolphinholme CE Primary School

Science Policy

2021

MISSION STATEMENT

‘With God at the heart of everything we do,
We educate by encouraging a sense of wonder, praise and mutual respect.
We offer every child opportunities for success,
Making them confidently equipped for life’s journey.’

Intent:

Aims and Objectives

Science teaches an understanding of natural phenomena. It aims to stimulate a child’s curiosity in finding out why things happen in the way that they do. It teaches methods of enquiry and investigation to stimulate creative thought. Children learn to ask scientific questions and begin to appreciate the way in which science will affect the future on a personal, national and global level.

Our objectives in the teaching of science is 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.

Implementation

Teaching and learning style.

We will use a variety of teaching and learning styles in science lessons. Our principal aim is to develop children’s knowledge, skills, and understanding. Sometimes, we will do this through whole-class teaching, while at other times, we will engage the children in an enquiry-based research activity. We will encourage the children to ask, as well as answer, scientific questions.

They will have the opportunity to use a variety of data, such as statistics, graphs, pictures and photographs. ICT will be used in science lessons because it enhances learning. Pupils will take part in role-play and discussions, and they will present reports to the rest of the class. They will engage in a wide variety of problem-solving activities.

Wherever possible, we will involve the pupils in real scientific activities, e.g. investigating a local environmental problem, or carrying out a practical experiment, discussing and analysing the results.

We recognise that in all classes, children have a wide range of scientific abilities, and we will ensure that we provide suitable learning opportunities for all children by matching the challenge of the task to the ability of the child. We will achieve this in a variety of ways:

- grouping children in mixed ability groups to share skills setting tasks which are open-ended and can have a variety of responses;
- setting tasks of increasing difficulty (we do not expect all children to complete all tasks);
- grouping children by ability in the room, and setting different tasks for each ability group;
- providing resources of different complexity, matched to the ability of the child; using classroom assistants to support the work of individual children or groups of children.

Science curriculum planning.

Science is a core subject in the National Curriculum. We will make use of the local environment in our fieldwork, although we will also choose a locality where the environment differs from that of our own.

We will carry out our curriculum planning in science in three phases (long-term, medium-term and short-term).

The long-term plan maps the scientific topics studied in each term over the year.

Medium term planning will be the overall plan of each unit in the weeks and lesson time available. This will use the National Curriculum to ensure the statutory objectives are covered and guidance on the non-statutory objectives and possible extensions to the topic and shaping the NC to be specific for our own school.

Short term plan will be personal planning for the teachers' own use and monitoring of this will only occur through book scrutiny. These will include the specific learning objectives, individual children's needs and any necessary evaluation. These plans will often be discussed with SL, on an informal basis, for ideas and support.

Parental involvement and tapping into the specific skills of some parents will be planned in to maximise subject knowledge, cultural capital and subject enthusiasm.

Other visitors and speakers will be invited into School.

A key focus will be on planning science through investigation activities. All classes will have a Lancashire Planner on a display board with post-its from the ongoing investigation, still visible to allow children to remember broad discussions, varying ideas and possibilities.

As a whole school, we will plan the topics in science so that they build on prior learning. Skills progression will be fundamental to the planning process. We will ensure that there are opportunities for children of all abilities to develop their skills and knowledge in each unit, and we will also build progression into the science scheme of work, so that the children are increasingly challenged as they move up through the school. All staff will have a skills progression document produced by the SL which highlights the progression of skills in each topic area throughout the journey through the school.

Staff will also have another document (produced by the SL) which outlines possible links with other science topics, for example how plants grow, food chains and light. We will ensure that there are opportunities for children of all abilities to develop their skills and knowledge in each unit, and we will also build progression into the science scheme of work, so that the children are increasingly challenged as they move up through the school.

The Foundation Stage

In the EYFS the most relevant statements for science will be taken from three different areas of learning: Communication and Language, Personal, Social and Emotional Development and Understanding the World. By the end of reception children will be expected to reach these early learning goals: make comments about what they have heard and ask questions to clarify their understanding; manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices; explore the natural world around them, making observations and drawing pictures of animals and plants; know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class; understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.

We will focus science discovery to the three Characteristics of Learning: Playing and Exploring; Creative and Thinking Critically; Active Learning. Science will provide an ideal opportunity for these to be observed by staff. Children will explore the natural world around them, use their senses to observe, describe and ask questions to deepen their knowledge. Children will be active in their learning and show motivation, involvement and concentration.

Within the Early Years, children make positive links with science to other areas of learning therefore embedding knowledge and understanding across the curriculum.

In all topics, we will combine the scientific study with work in other subject areas; at other times, the children will study science as a discrete subject. Regular staff meetings will focus on discussing the links between the science topics and other subjects across the curriculum.

The contribution of science to teaching in other curriculum areas.

English - Science will contribute significantly to the teaching of English in our school by actively promoting the skills of reading, writing, speaking and listening. The children will develop oral skills in science lessons through discussions (e.g. of the environment) and through recounting their observations of scientific experiments. They will develop their writing skills through writing reports, explanatory writing, projects and by recording information.

Mathematics - Science will contribute to the teaching of mathematics in a number of ways. When the children use weights and measures, they are learning to use and apply numbers. Through working on investigations, they will learn to estimate and predict. They will develop accuracy in their observation and recording of events. Many of their answers and conclusions will include numbers.

Constructing and interpreting data through tables and graphs.

PSHE - Science will make a significant contribution to the teaching of PSHE and citizenship. Science will promote the concept of positive citizenship. This will be mainly in the following three areas:

Firstly, the subject matter lends itself to raising matters of citizenship and social welfare. For example, children will study the way in which people recycle material and how environments are changed for better or worse.

Secondly, the subject gives children numerous opportunities to debate and discuss. They can organise campaigns on matters of concern to them.

Thirdly, working in groups and understanding the need to listen to others' ideas and observations as well as feeling confident in contributing.

Spiritual, moral, social and cultural development - Science teaching will offer children many opportunities to examine some of the fundamental questions in life, e.g. the evolution of living things and how the world was created. Through many of the amazing processes that affect living things, children will develop a sense of awe and wonder regarding the nature of our world. Science raises many social and moral questions. Through the teaching of science, children will have the opportunity to discuss, for example, the effects of taking drugs, and the moral questions involved in this issue. Pupils will be given the chance to reflect on the way people care for the planet, and how science can contribute to the way in which we manage the Earth's resources.

Science teaches children about the reasons why people are different and, by developing the children's knowledge and understanding of physical and environmental factors, it promotes respect for other people.

Art and DT - Science is a key factor in the art and DT curriculum planning. Most topics lend themselves to art work using a variety of mediums.

Computing - Computing will enhance the teaching of science in our school because there are some tasks such as measuring sound and light, for which IT equipment is more accurate and precise. It also offers ways of impacting on learning which are not possible with conventional methods. Software will be used to animate and model scientific concepts, and to allow children to investigate processes which it would be impracticable to do directly in the classroom. Data loggers will be used to assist in the collection of data and in producing tables and graphs. Children will use IT to record, present and interpret data, to review, modify and evaluate their work, and to improve its presentation. Children will learn how to find, select, and analyse information on the Internet and on other media.

PE - Whole school focus every September will be on healthy eating and keeping healthy through exercise. Eat Like a Champ will be the chosen scheme with related resources. Children will begin to recognise the links between keeping healthy and exercise, heart, muscles. Through all PE lessons, children will understand the impact of the activities on their body.

Assessment for learning

Teachers will assess children's work in science by making formative judgements during lessons. On completion of a piece of work, the teacher will assess it, and use this assessment to plan for future learning. Written or verbal feedback will be given to the child, in accordance with the Marking and Feedback Policy to help guide his/her progress. Older children will be encouraged to make judgments about how they can improve their own work.

The children will be assessed in scientific enquiry skills as well as knowledge gained.

At the end of a unit of work, the children will take a **topic test, for example, Twinkle/Rising Stars**, which tests knowledge as well as the ability to plan an investigation, read data and form conclusions. The teacher will also make a summary judgement about the work of each pupil in relation to the National Curriculum Age Related Expectations. The teacher will record the attainment levels in class tracking documents. We will use these levels as the basis for assessing the progress of each child at the end of the school year and we will pass this information on to the next teacher as well as the SL, head teacher and Governors.

Science and inclusion

At our school, we will teach science to all children, whatever their ability and individual needs. Science will form part of the school curriculum policy providing a broad and balanced education for all children. Through our science teaching, we will provide learning opportunities which will enable all pupils to make good progress. We will strive hard to meet the needs of those pupils with special educational needs, those with disadvantages, those with special gifts and talents, and those learning English as an additional language, and we will take all reasonable steps to achieve this.

When progress falls significantly outside the expected range, the child may have special educational needs. Our assessment process will look at a range of factors – classroom organisation, teaching materials, teaching style, differentiation – so that we can take some additional or different action to enable the child to learn more effectively. Assessment against the National Curriculum will allow us to consider each child's attainment and progress against expected levels. This will ensure that our teaching is matched to the child's needs.

Intervention through School Action and School Action Plus will lead to the creation of an Individual learning plan for children with special educational needs. This may include, as appropriate, specific targets relating to science or developing fundamental skills needed in maths or literacy to enable a child to access the science curriculum more effectively.

We will enable all pupils to have access to the full range of activities involved in learning science. Where children are to participate in activities outside the classroom (a trip to a science museum, for example), we will carry out a risk assessment prior to the activity, to ensure that the activity is safe and appropriate for all pupils.

Monitoring and Evaluation

The coordination and planning of the science curriculum will be the responsibility of the subject leader. This will be addressed through a series of planned staff meetings where science progression will be the focus and book scrutinies will be done as a whole staff in order to develop an understanding of the skills progression through all the phases.

Science will be monitored and evaluated in the following ways:

- The monitoring of teaching and learning by the SLT and Science Leader through observations, learning walks, monitoring of planning, monitoring of displays, pupil progress etc
- Sampling of pupil work and assessments by the Science Leader/SLT
- In school and local cluster moderation sessions

- Analysis of data
- Children's voice - science ambassadors
- Parent and pupil questionnaires - SL to talk to children
- Curriculum Governors to join in some lessons, talk to the children.

Having identified priorities, the Science Leader will construct an action plan. This will form the basis for any monitoring activities and will clearly identify when, who and what is to be monitored and how this will take place e.g. classroom observation, curriculum coverage, work sampling etc.

Staff Development

Supported by the Science Leader, teachers will be expected to keep up to date with subject knowledge and use current materials that are available in school. Training needs will be identified as a result of whole school monitoring and evaluation, appraisal and through induction programmes. These will be reflected in the School Development Plan and the Science Action Plan. Additional adults who are involved with support programmes will receive appropriate training as required.

Resources

We have extensive resources for all science topics areas taught in our school. This includes a wildlife area and garden where Forest School can be delivered.

We will keep general resources in a central store, where there are labelled boxes of equipment for each unit of work.

There will also be a collection of science equipment which the children use to gather weather data.

The library will contain a good supply of science topic books to support children's individual research.

Individual Chrome books will allow children to research topics and record results of an investigation.

We are building on our IT science equipment.

Health and Safety

All practical science lessons will be risk assessed by using CLEAPS risk assessments. These will be annotated to fit the specific children and environment in each class.

All staff will be advised of this resource and all will have the link to the CLEAPS website with our school username and password.

IMPACT

The impact on our children is clear: progress, sustained learning and transferable skills. With the implementation of the investigation focus being well established and taught thoroughly in both key stages, children are confident scientists by the time they leave Primary School.

Termly assessment shows that most children meet age-related expectations. As all aspects of Science are an integral part of the curriculum, cross curricular links are highlighted and developed; children are consolidating their skills and are developing a deeper understanding of Science in everyday life and the awe and wonder of the world around them; God's fingerprint on the world.

As children move on to further their education and learning, their thinking skills, passion for Science, and high aspirations travel with them and continue to grow and develop as they do.

This policy will be reviewed at least every two years.

Subject Leader: Karen Baines

Reviewed: April 2021

Policy to be reviewed at least every three years, unless changes in NC or school environment change.