



Science

Philosophy, Intent, Implementation and Policy.

September 2023



Philosophy

We believe in giving all pupils, irrespective of gender identity, sexual orientation, race, religion, disability, socioeconomic status or academic ability, the opportunity to discover and develop their potential through a balanced and developmental programme of scientific activities.

Our aim at Tonacliffe is to develop children's curiosity, enjoyment, skills and growing understanding of science through an approach in which pupils raise questions and investigate the world in which they live. We particularly want our children to have the ability to talk confidently about their ideas, observations and conclusions and to enable this we place importance on the teaching of specific scientific vocabulary and provide opportunities throughout school for them to report their science to other children and adults.

Using the 2014 National Curriculum together with the PLAN matrices from The Association for Science Education, we carefully design lessons to ensure progression in both knowledge and skills as our children move through the school.

Science teaching can be divided into two main areas of study:

- *Working scientifically* — developing the skills we need for investigation.
- *Scientific Knowledge and Conceptual Understanding* — topic dependent knowledge.

Within each topic we utilise the opportunities to develop particular, relevant skills. Through school, scientific skills are modelled and taught gradually to enable children to finally use them independently.

We use 'wow' science to engage and develop curiosity, creating an imaginative and stimulating curriculum. Where appropriate, we link science with other subjects and ensure that there is a focus, as much as possible, upon practical activities. Our science is enhanced by links with the local community and we make use of our outdoor space to bring science to life.

EYFS

Science teaching and learning begins in our nursery and reception classes. Our classrooms have focused 'curiosity corners' which are enhanced weekly to inspire our children to explore, question and talk about the world around them. Our Early Years children spend a great deal of time outside and make use of the school field and our 'forest area' to interact with nature for real! In daily, continuous provision, we have an exciting range of resources, always available, with which to explore the whole range of science topics both independently and with additional support from teaching staff.

Planning

The 2014 National Curriculum programmes of study will create the base for planning teaching and learning in science in our school, supported by PLAN from the ASE which staff will use to plan Key Learning and promote the use of scientific vocabulary. In addition to this we will use opportunities of child-led interests to deepen and widen our scientific knowledge and understanding and encourage individual enquiry. Key stages will follow a curriculum map, sub-divided into years A and B, which has been carefully planned to ensure progression for all children.

Learning

Science lessons will be creative and exciting; carefully planned to engage and meet the needs of all our children in practical science. Opportunities will be taken to utilise our local environment in science lessons and expertise from teachers, parents and local 'scientists' will be sought when appropriate.

Recording

The majority of recording shall take place in class 'big books' when appropriate and emphasis will be placed on questioning, observation and discussion; we want to build enquiry and to challenge our children to question the things they see and hear.

There will be at least one piece of individual science written work each half-term and this will be carefully planned to teach specific skills.

Time management

Time must be carefully managed to enable topics to be taught in greater depth so that children may have the opportunity to engage effectively and gain a secure knowledge and understanding.

Rationale

We want to develop curiosity, enjoyment, skills, and a growing understanding of scientific knowledge, through an approach in which pupils raise questions and investigate the world in which they live. We believe that a broad and balanced science education is the entitlement of all children, regardless of ethnic origin, gender, class, aptitude or disability.

Aims:

- Preparing our children for life in an increasingly scientific and technological world.
- Fostering concern about, and active care for, our environment.
- Helping our children acquire a growing understanding of scientific ideas.
- Helping develop and extend our children's scientific concept of their world.
- Developing our children's understanding of the international and collaborative nature of science.
- Creating an interest in science as a subject and potentially inspire our next generation of scientists.

Attitudes:

- Encouraging the development of positive attitudes to science.
- Building on our children's natural curiosity and developing a scientific approach to problems.
- Encouraging open-mindedness, self-assessment, perseverance and responsibility.
- Building our children's self-confidence to enable them to work independently.
- Developing our children's social skills to work cooperatively with others.
- Providing our children with an enjoyable experience of science, so that they will develop a deep and lasting interest and may be motivated to study science further.

Skills:

- Giving our children an understanding of scientific processes.
- Helping our children to acquire practical scientific skills.
- Developing the skills of investigation - including observing, measuring, predicting, hypothesising, experimenting, communicating, interpreting, explaining and evaluating.
- Developing the use of scientific language, recording and techniques.
- Developing the use of ICT in investigating and recording.
- Enabling our children to become effective communicators of scientific ideas, facts and data.

Science is a core subject in the National Curriculum

In England the curriculum for science is divided into:

- Working Scientifically – skills
- Scientific Knowledge and Conceptual Understanding – topic dependent knowledge
- Knowledge is organised by year group (topics) but the skill targets are organised by phase (KS1, LKS2, UKS2)

Early Years Foundation Stage

Children in the Foundation Stage follow the Early Years Foundation Stage curriculum and Science is taught under the banner of Understanding the World.

Children in our nursery and reception class have continuous opportunities to explore, investigate and discover through play, both indoors and outdoors all the specific disciplines of biology, chemistry and physics. Use is made of our beautiful, rural setting and opportunities are taken regularly to explore the seasonal changes that take place around us throughout the year. Class 'big books' of annotated photographs and children's own writing are used to record science learning and placed where children can revisit and discuss freely.

How science is structured through the years

Children in KS1 will have at least the equivalent of 3/4 hour of science teaching each week.

Children in KS2 will have the equivalent of 1 hour of science teaching each week.

However, science teaching should be taught in longer blocks if this is more appropriate to provide relevance and continuity with other areas of the curriculum.

Assessment and recording in science

We use assessment to inform and develop our teaching. Marking is in line with the school marking policy and assessment is completed in line with AfL guidelines. We use Key Learning documentation to assess the children on a half-termly basis. The children are recorded as below, working towards, on track or greater depth within a year group at the end of each term. Assessment is based upon achievements in individual topics.

Teachers use a range of assessment methods including listening and observation, reference to whole- class recorded work, individual written work and end of topic test data.

We are consciously promoting increased opportunities for recording science as a whole class and limiting the amount of time spent in lessons recording individually in science books. This provides more time for creative and quality, in-depth teaching and learning.

School tracking documents are completed termly on the school server and reviewed by the science subject leader. An analysis of assessment data is made by the subject leader at the end of each term. The school now has access to the Lancashire Tracker for recording science data. This should support ongoing monitoring and analysis of data across the school.

A report is made to Governors on a termly basis. Parents receive verbal reports twice per year and a written report once a year.

Policy reviewed September 2023 by L Sutcliffe (Science Coordinator)

