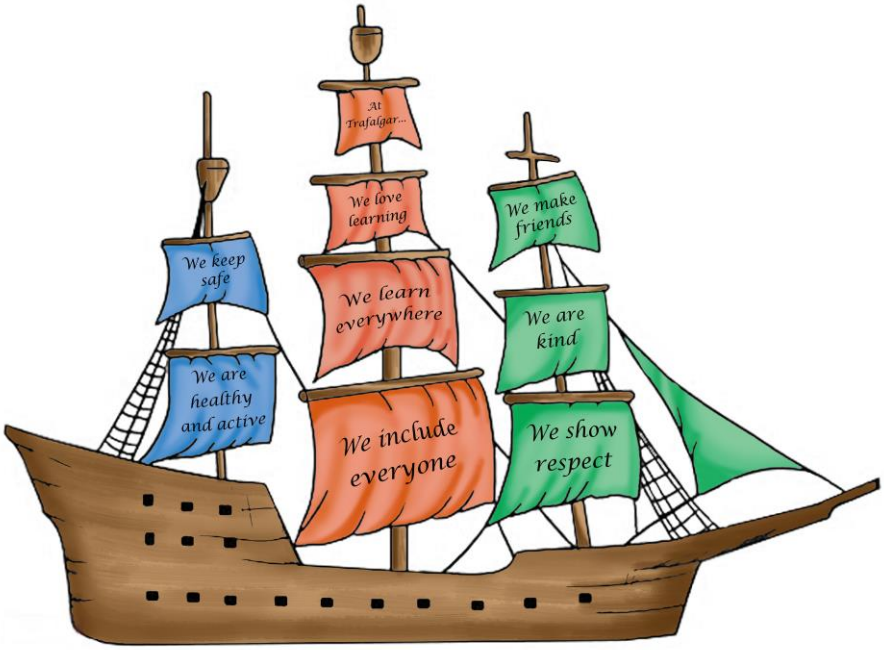
Trafalgar Community Infant School



Policy Document

SCIENCE

REVIEWED: JANUARY 2019
REVIEW: JANUARY 2021

Trafalgar is a rights respecting school. We refer to the UN Convention on the Rights of the Children (UNCRC) throughout this policy. Article 29: 'Education must develop every child's personality, talents and abilities to the full. It must encourage the child's respect for human rights, as well as respect for their parents, their own and other cultures, and the environment.'

This policy reflects the school values and philosophy in relation to the teaching and learning of **Science**. It sets a framework within which staff can operate and gives guidance on planning, teaching and assessment.

This policy should be read in conjunction with the **Health and Safety** policy, the **Relationship Education** policy, the **Assessment** policy, **School Grounds documentation** and **Healthy Schools** documentation. These can be found on the curriculum server: Staff/Policies.

Purpose 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.
Science programme of study, DfE 2013

Aims
- For children to develop their scientific knowledge and conceptual understanding.
- Three main areas identified by the National Curriculum: **Plants, Animals including humans and Everyday materials.**
- For children to develop their investigative skills by 'working scientifically':
    - observing over time;
    - pattern seeking;
    - identifying, classifying and grouping;
    - comparative and fair testing (controlled investigations);
    - researching using secondary sources.
    - Pupils should seek answers to questions through collecting, analysing and presenting data.
- For children to relate their knowledge and apply their skills to everyday experiences confidently and competently, effectively building upon both as they mature.
- To offer experience that will utilise children's natural curiosity, inventiveness, abilities and interests.
- To promote children's awareness of their personal health and well-being.
- To encourage children to have respect for living things and to be aware of their actions and those of others in the environment.
- To encourage the acquisition of the experimental and investigative skills of science by facilitating opportunities to:
    - Explore at first hand the properties of living and non-living materials.
    - Share ideas and information.
    - Ask questions and make predictions about what might happen.
    - Make and record observations and measurements.
    - Communicate their observations about what has happened using scientific vocabulary, including the use of drawings, tables and charts.
    - Draw conclusions and try to use their knowledge and understanding of science to provide explanations for their conclusions.
    - Use secondary sources of information as well as first hand observations.
    - Use ICT to collect, store, retrieve and present scientific information.
- To recognise hazards and to follow instructions to ensure safe working for themselves and others.
- To help children progressively increase their knowledge and understanding of living processes and living things, materials and their properties and physical processes.

- To use science for developing other areas of the curriculum by, for example, providing opportunities for the application of mathematical skills, providing experiences for oral and written work to extend language development, the provision of living things for close observational drawing in art or the application of the knowledge of materials in technology. Children should read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

Objectives

In order to meet the above aims teachers should:

- Create a safe yet stimulating environment which will encourage and allow children to develop their knowledge and understanding of scientific concepts and investigative skills.
- Provide clear planning which shows a range of teaching strategies and learning opportunities designed to provide a range of practical opportunities for the development of knowledge and skills.
- Follow the agreed monitoring, assessment and record keeping guidelines so as to maximise children's progress.
- Demonstrate a positive, enthusiastic approach towards science.

The Science Curriculum

Early Years Foundation Stage

Appropriate work in science education begins in the reception class developing the skills and knowledge that have been acquired naturally and informally in the pre-school years.

'Understanding the World' (EYFS 2012) *"involves guiding children to make sense of their physical world and their community through opportunities to explore, observe and find out about people, places, technology and the environment*."

Science education is made relevant to the child's immediate surroundings, the home and the school.

The world:

30-50 months

- Comments and asks questions about aspects of their familiar world such as the place where they live or the natural world.
- Can talk about some of the things they have observed such as plants, animals, natural and found objects.
- Talks about why things happen and how things work.
- Developing an understanding of growth, decay and changes over time.
- Shows care and concern for living things and the environment.

40-60 months

- Looks closely at similarities, differences, patterns and change.

Early Learning Goal

- Children know about similarities and differences in relation to places, objects, materials and living things.
- They talk about the features of their own immediate environment and how environments might vary from one another.
- They make observations of animals and plants and explain why some things occur, and talk about changes.

Exceeding

- Children know that the environment and living things are influenced by human activity.
- They can describe some actions which people in their own community do that help to maintain the area they live in.
- They know the properties of some materials and can suggest some of the purposes they are used for.
- They are familiar with basic scientific concepts such as floating, sinking, experimentation.

First hand experiences are provided through the child's self-initiated play, structured play and specific teaching activities. For example, Reception children experience the concept of volume by pouring water into various sized bottles and containers. Through a variety of practical experiences, basic knowledge and skills are developed.

Key Stage 1

The National Curriculum divides science into 4 areas of learning.
These are as follows:
1: Working scientifically
2: Plants
3: Animals including humans
4: Everyday materials

The scientific enquiry skills are taught through contexts taken from areas 2, 3 and 4. At Trafalgar these contexts may be incorporated into themes or taught as discreet science topics. These are planned to give a broad and balanced coverage of the three areas, namely plants, animals including humans and everyday materials across each year group. Where appropriate some areas are revisited in different topics to provide reinforcement and extension of the concepts and skills involved.

'Working scientifically' is described separately in the programme of study but are always taught through and clearly related to the teaching of the science content in the programme of study.
The skills are developed through investigative opportunities to explore the knowledge and understanding of science taught in each topic.

Time Allocation
Subject teaching is planned so that each year group allocates a percentage of teaching time per week for science, the minimum being 1 hour per week. This might well be exceeded if the topic demands or if the science teaching is blocked over a number of days.
Each year group has the freedom to allocate blocks of time for science within the term if this suits the method of the delivery of the subject best.

Planning and Differentiation

Planning
Planning is addressed at 3 levels:

- **Long Term** – The curriculum.
- **Medium Term** – Detailed half term plans provide a week by week breakdown to include lesson objectives, activities and evaluations.
- **Short Term** – The weekly plan is discussed during year group planning each week.

Differentiation
Differentiation takes place in a variety of ways:

- By questioning at different levels
- By recording in a manner appropriate to the abilities of the children

- By support (adult/peer/text)
- By task
- By outcome

Every child has equal access to the curriculum and account is taken in short term planning for SEN and more able children. Appropriate support is given to each child so that they can make maximum progress and experience personal success.

Teaching Strategies
A range of teaching strategies are employed by the teacher so that every child has the chance to maximise their learning. Teaching strategies are selected with the ability, interests and learning styles of the children in mind with an emphasis on learning through first hand experience and developing investigative scientific skills. Teaching strategies will include:-

- Demonstration
- Exploration
- Child- led investigation
- Research
- Building upon prior learning experiences through input/investigation.

Continuity and Progression
Planning, monitoring of teaching and learning and regular, ongoing assessment all combine to ensure the continuity and progression within the teaching and learning of Science at Trafalgar.

Monitoring by the Co-ordinator and Year Group Leads:-

- planning, subject knowledge taught, lesson content, resources used and training needs.
- to check for consistency between classes, progression across the year groups, quality of presentation and coverage of the curriculum.

Whole staff moderation of examples of work provides opportunities to ensure consistency when moderating work. Progress is tracked on Target Tracker.

Assessment and Record Keeping
See the school's Teaching and Learning Policy.

Science Investigations
Investigative science is seen as an integral part of the Science curriculum at Trafalgar. The children are provided with regular opportunities to investigate an aspect of the Science curriculum. Investigations support a topic and are always open-ended, children are encouraged to find their own methods of investigating, as well as independent ways of recording their findings. Teachers discuss the investigations in PPA time to ensure a thorough and consistent assessment is being carried out.

Resources
Equipment will be checked and any risk assessments or safety issues will be considered. Topic related and general Science resources are kept centrally in the Resources room. These are in labelled boxes and are renewed and added to as necessary. A range of DVDs are also available.

The school grounds, including the pond areas, are used to support a number of topics. Outside speakers, or demonstrations such as 'Silly Science Workshop' and 'Jungle Jonathan' are invited to school. Interactive displays are sometimes used in classrooms to encourage exploration in Science.

The Role of the Co-ordinator

- Monitor and evaluate the intended development or implementation of all aspects of the current School development Plan relating to this curriculum area.
- Ensure Target Tracker is used to track progress in Science.
- Monitor, support and encourage colleagues in all aspects of teaching and learning relating to this curriculum area.
- Monitor and evaluate the policy statement and scheme of work relating to this curriculum area
  a) By discussion with colleagues, and
  b) Through reflecting on the medium term planning from all year groups.
- Contribute as required to school based in-service training relating to this curriculum area.
- Initiate an annual audit of all resources relating to this area of the curriculum responsibility and prepare a schedule of resource requirements.
- Report as required to the Governing Body or to a meeting of parents on topics relating to this curriculum area.
- Advise and inform the Headteacher of any relevant matters relating to this curriculum area.

Review

As part of the School Improvement Plan evaluations are written which outline achievements for the year and identify action to be taken. The new SIP will then be written which gives the aims for the next academic year.

Health and Safety

All practices in the teaching of Science are subject to the procedures and constraints laid down in our Health and Safety policy.

The following statements regarding health and safety have been taken from the National Curriculum 2000 document:

'When working with tools, equipment and materials, in practical activities and in different environments, including those that are unfamiliar, pupils should be taught:

a) about hazards, risks and risk control
b) to recognise hazards, assess consequent risks and take steps to control the risks to themselves and others
c) to use information to assess the immediate and cumulative risks
d) to manage their environment to ensure the health and safety of themselves and others
e) to explain the steps they take to control risks.'

Relationship Education

The following information is taken from the school Health and Safety and Relationship policy.

The aim of Relationship Education is to provide appropriate information and address issues concerning physical, moral and emotional development within the context of our school. Our Relationship Education programme aims to prepare children for adult life in which they can:

- Be aware of the physical development of their bodies as they grow and change.
- Know the importance of family life.
- Develop positive values, a moral framework, confidence and self esteem to value themselves and others.
- Understand the consequences of their actions and how they affect others.
- Communicate effectively by developing age appropriate terminology.
- Develop awareness of gender similarities and differences.
- Know who to trust and where to go for help.

Date of policy Autumn 2019 Date of review Spring 2021

Scientific and Technological Understanding	Science	Materials **Y1** Name and sort Suitability Describing Investigating waterproof materials Magnetic/non-magnetic Scientific Enquiry Fair testing	Plants and animals **Y1** Recognising and naming Living and non-living Animals in our environment Growing plants Y1 Recognise and name plants and trees and their parts Growing conditions Needs of plants and flowers. Scientific Enquiry Fair testing	Ourselves **Y2** Parts of the body The five senses Growing and changing Differences between humans How we move Healthy eating Exercise Scientific Enquiry Fair testing	Ourselves **Y2**- DT link Food groups Healthy diet Pizza making Materials **Y2** Changes Reversible / non-reversible Properties What material is the best mopper upper? Scientific Enquiry Fair testing	Forces and Motion **Y2**- DT link Investigating wheels and axles Group space buggy Ramps/variables investigations Scientific Enquiry Fair testing	Life Processes and Living Things **Y2** Animals and plants Reproduction Variation Health and growth Similarities and Differences Living Things Diet and Exercise Snails Scientific Enquiry Fair testing