Science Policy

17th May 2023
Next review date: 16th May 2025

CONTENTS

This policy should be read in conjunction with the *Quality of Education Policy*, any related subject policies and the following:

Assessment Policy
Behaviour Policy
Early Years Foundation Stage Policy
Equality and Community Cohesion Policy
Able Pupils Policy
Health and Safety Policy
SRE Policy
Home learning Policy
Safeguarding and Child Protection Policy
Special Educational Needs and Disability Policy
E-Safety Handbook
Home School Agreement
Marking guidelines

Other documents that support the teaching and learning of Science:

National Curriculum for Science
Knowledge and Understanding of the World for the Early Years Foundation Stage

Throughout this policy 'parents' denotes those with parental responsibility.

1.Mission Statement

We aim to produce curious learners who develop their understanding of the nature and processes of the world around them by asking questions and investigating to find answers. Belmont children will be equipped with the scientific knowledge and skills required to continue their science learning journey into secondary school and beyond.

Intent for Belmont Children

- To learn the National Curriculum Science content through high quality teaching, increasing their **substantive knowledge** (facts) and **disciplinary knowledge** (skills, methods and use of equipment)**.**
- To have the opportunity to use and develop **disciplinary knowledge** (skills, methods and equipment) during a wide range of practical investigations.
- To develop their understanding and use of scientific **vocabulary**.
- To demonstrate and be aware of their own progression of **substantive and disciplinary knowledge** as they revisit themes of learning (at different levels of difficulty) in their learning journey.
- To provide a science curriculum accessible to all children at Belmont.
- To be aware of ***real life links*** and ***scientists*** who have contributed/work in the areas of science they are learning about. This will also raise awareness of **diversity** in science based jobs.
- To be able to ask appropriate questions and use their science learning to solve problems.
- To make links between their science learning and other curriculum areas.

Implementation

- A science curriculum which is mapped across the year groups, according to the National *Curriculum. **Substantive** knowledge, **disciplinary** knowledge and **vocabulary** progress from* EYFS to Y6.
- Each science lesson includes a substantive knowledge and disciplinary knowledge (working scientifically) LI, to focus the learning. Working scientifically skills in the 5 areas (**observation over time**, **pattern seeking**, **identifying, classifying and grouping**, **comparative and fair testing**, **research using secondary sources**) are mapped out across the year groups to provide progression from KS1 to LKS2 and finally into UKS2.
- Learning is **differentiated** according to children's learning needs. (This is continuously being developed).
- Children are made aware of **links to a real life** application and relevance of the science through problems solved during lesson investigations and learning about scientists from past to present linked to the unit of study.
- **STEM week** provides opportunities for extra science, not included in the NC to be included. Parents, STEM ambassadors and external providers are involved to provide exciting extra-curricular experiences. *Diversity and the importance of science* in everyday life is a big feature of this week.
  Subject leads work together to provide cross-*curricular links*. Science and scientific activities are promoted for parents during this exciting time to help increase the science capital of Belmont children.
- **Outdoor learning** in the grounds (wilderness area and kitchen garden), visits, school trips and the opportunity to join a science club provide scientific experiences in a range of settings.
- Subject display boards, Belmont Science Team newsletters and assemblies enable important messages/ focus areas eg careers in science to be promoted to the whole school.
- The children are encouraged to assess about their own learning using '**rate my knowledge'** grids at the beginning and end of each unit, this includes understanding of key vocabulary.
- **Knowledge organisers** for each unit are used by teachers to introduce new units of learning, knowledge and vocabulary from previous years are revisited and built upon.
- Staff inset occurs when necessary to introduce new initiatives, feedback important information and resource updates.

Impact Observed

- **Medium term planning** from each year group is saved centrally, these correspond with the **curriculum map** for science and the **Previous, Current and Future** (PCF) document for substantive knowledge.
- **Book looks** provide evidence of attainment, coverage and differentiation-the subject lead and senior leadership team are involved.
- At the end of each unit of study teachers complete **assessment grids** to record if children are working towards, expected or greater depth for substantive knowledge and disciplinary knowledge (working scientifically)-subject lead monitors. (KS1 and KS2 use Quizics multiple choice and KS2 can use Switched on science assessments when appropriate to assist their judgements).
- **Pupil voice** questionnaires provide information about key aspects of the children's viewpoint of science, their learning and events they have experienced. The subject lead uses this information for the future development of the subject.
- **Science** is a high profile subject at Belmont. STEM Enrichment week is one of the highlights of the school year. There is a Belmont Science Team, who volunteer to write a Science Newsletter filled with science articles for children to read in their class book corners.

2. Teaching and Learning

Science is taught once a week. Please refer to the Quality of Education Policy. Knowledge organisers for each unit of learning are posted in Google Classroom for access by children and parents.

3. Resources

Pupils use of a variety of scientific materials and equipment. Most resources are stored in the resources room, labelled in drawers, cupboards or boxes. Consumables are replenished each year. Online resources are regularly used in lessons to support learning (a list is saved in science subject folder).

4. Learning Environment

Please refer to the Quality of Education Policy. Science display boards include the vocabulary list relevant for the current learning for pupils to access.

5. Planning

In the Early Years Foundation Stage, objectives linking to science are taught through 'Understanding the World'. In KS1 and KS2, science is taught in units, which take ½ or a complete term to cover. The units have themes- Plants, Animals including Humans, Materials, Living Things and their Habitats, Rocks, Light, Forces, Sound, Electricity, Earth and Space and Evolution and Inheritance. Most of these themes are repeated.

6. Assessment

Formative assessment of science occurs at the end of each topic to establish if individual children are working towards (WTS), expected (EXP) or greater depth (GDS) for the age-related expectations for knowledge (substantive) and the skills of working scientifically (disciplinary). This information is centrally stored as Working Scientifically and Unit Assessments. End of unit tests are used to confirm judgements (Quizics or Switched on Science). A final judgement of the year's attainment is used for the end of year report. This is also stored centrally. Please refer to the Assessment and Quality of Education Policies for further details.

7. Cross Curricular Links

7.1 Reading, writing, communication, maths and Computing

Science provides meaningful contexts for many forms of non-fiction writing and children are expected to apply their English skills and knowledge of these genres to their writing as well as their scientific knowledge and understanding.

Science also provides many practical opportunities for children to apply mathematical skills particularly in the areas of measurement and data handling.

Pupils are also given opportunities to apply and develop their computing capability through the use of computing tools to support their learning in science. Opportunities include:

- developing understanding of science topics using video clips and educational websites;
- virtual experimental work using interactive programs.
- monitoring information using data logging equipment;
- investigating ideas and carrying out research using Espresso and the Internet;

7.2 Spiritual, Moral, Social and Cultural development (SMSC)

At Belmont we recognise the close links between science and environmental education. We provide the opportunity for pupils to:

- use first hand resources, such as the school's outside areas, and real life experiences as a basis for learning;
- engage in field work which links such topics as plant growth, food chains and habitats with environmental education;
- carry out scientific investigations outside the classroom as a natural extension of the working environment;
- develop a sense of responsibility when studying science and the environment;
- link aspects of science to PSHE and RSE curriculum.

8. Enhancing the Curriculum

The school's Wilderness Garden, Kitchen Garden, grounds and outdoor learning areas are key resources for providing first hand experiences. Children also undertake educational visits related to science where appropriate. Some year groups participate in educational workshops on or off-site to support units.

At the present time, children in Years 1-6 have the opportunity to participate in an after school Science Club run by an external company.

A STEM enrichment week occurs annually providing whole school science activities and shows that include areas of science outside the curriculum. The focus is always linked to National Science Week for that year. Belmont families are encouraged to be involved in activities during STEM week (the main one being Do Science With Me). The Belmont Science Team have special responsibilities during the week.

This pupil leadership group also write a Belmont Science Newsletter which contains current science articles for class book corners.

9. Inclusion

Please refer to the Quality of Education Policy.

10. Health and Safety and Safeguarding

Class teachers are aware of the need to follow the Health and Safety Code of Practice issued by the Local Authority. See Health and Safety Policy for further details. Particular care is taken when using chemicals, candles, hot liquids etc. and when plants and animals or decaying material are studied in school.

Pupils are always taught how to use scientific equipment safely and confidently and science equipment is kept in good condition. Broken or unsafe equipment is reported to the Science Subject Leader.

11. Roles and Responsibilities

Roles and responsibilities under this policy are as outlined in the Quality of Education Policy

12. Policy Review

This policy will be reviewed according to the cycle agreed by the Governors' Curriculum and Achievement Committee for curriculum policies.