

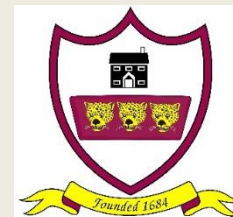
Science Policy

“Equipped with his 5 senses, man explores the world around him and calls his adventure Science”- Edwin Hubble.

*“Science is constantly changes the way people work and help us to save our planet.”
Y6 pupil – March 2021*

*“I love to learn about Science as it will allow me to have an impact on people’s lives in the future.”
Y5 pupil – March 2021*

Aims of the Science Curriculum



At Brabin’s Endowed, we believe that a high-quality science education provides the basis for understanding the world. Science has changed our lives and provided many inspirational people that we will introduce to our learners.

What we intend to do

At Brabin’s Endowed, we encourage children to be inquisitive throughout their time at school and beyond. Following the National Curriculum for science we aim to ensure that all pupils develop scientific knowledge and conceptual understanding through biology, chemistry and physics. They will develop an understanding of the nature and processes of science by the school providing lots of opportunities for scientific enquiry and making sure children are equipped with and are able to use various scientific skills that are required to understand the uses and implications of science, today and for the future. Science is a skill based subject and knowledge will be taught through skills. We aim to use the science curriculum to foster a healthy curiosity in children about our universe. We believe that science encompasses the acquisition of knowledge, concepts, skills and positive attitudes. Using our programmes of study, the children will gain the key knowledge that has been specified in each unit, including the key scientific skills. We will ensure that Working scientifically skills will be built on and developed throughout the children’s time at Brabin’s Endowed so they can apply their knowledge of science when using equipment, conducting experiments, building arguments, drawing conclusions and explaining concepts confidently whilst still being curious about their surrounds and continuing to ask questions.

More Able Learners in Science

HOW LEARNERS ARE CHALLENGED

All children are challenged through quality first teaching within every Science lesson. Children will be encouraged to ‘aim high’ and be the best they can be.

We encourage children to ask questions and think critically about the answers and conclusions reached, thinking that they might lead to further questions rather than just be accepted. They will be encouraged to use both prior knowledge and new knowledge to draw conclusions of their own and think scientifically. We will incorporate the use of higher order questioning applied to scientific thinking to extend learners within science.

Opportunities will be given for all children to have their work praised and encouraged using the Science display outside the Sycamore classroom and ‘Science work of the Half Term’ for each class, based on the work they have completed in that term’s unit.

Supporting Learners in Science

HOW ALL LEARNERS ARE INCLUDED

At Brabin’s Endowed, we recognise the fact that in all classes there are numerous learners, each with individual needs. We ensure all pupils have access to the full range of activities involved in learning Science and are given the opportunity to showcase their skills and knowledge. If progress falls significantly outside the expected range, the child may have Special Educational Needs. Where needed, children may have an Individual Support Plan to target specific areas. This may include additional support from a teaching assistant or access to a tailored intervention programme designed to meet their needs. Learning in Science may be differentiated by outcome, by support, by task or by resources. This will include:

- Setting open-ended tasks which have a variety of responses
- Incorporating gradual increases in difficulty of tasks across the curriculum
- Taking ability into account when grouping children for activities – either setting mixed ability groups or, differentiating work.
- Providing resources of different complexity with scaffolding to best meet the individual’s needs.
- Delivering a differentiated curriculum that allows students to access science in the most preferable or suitable way for each individual.

All children will access...

- The school has many science resources which cover all units of work within the science curriculum.
- Clearly labelled and high quality science resources to aid and support the teaching of all units and topics taught from EYFS to Year 6 which are easily accessible to all staff.
- A library that is well resourced including multiple books linked to science projects and units to support research.
- The ability to access iPads and computers within the classroom to aid with scientific research.
- A science club (one for each Key stage) for the children who would like to further advance their scientific skills.
- Trips or visitors to linked to their science topics or units.

PARENTAL INVOLVEMENT

Opportunities to share children's work will be taken. There are numerous ways that we share children's work with parents and opportunities are planned for and arranged throughout the year. This may include:

- Assemblies where the parents are invited in so the children can share their work.
- Sharing images and video on the school's website and social media channels.
- Class presentations and performances during Open Evenings.
- Sharing science work through the science display outside Sycamore Classroom.



Implementation

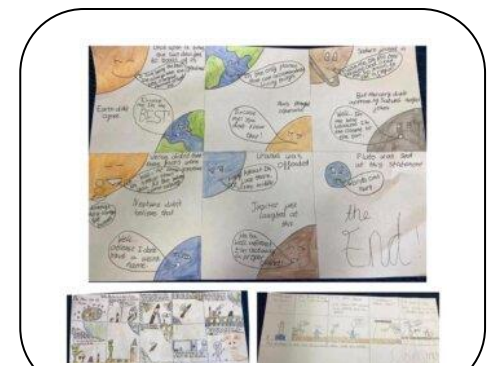
What Science will look like

Science at Brabin's Endowed is taught in units throughout the year, so that children can achieve depth in their learning and aid a project-based approach. Through our planning, we involve problem solving opportunities that allow children to apply their knowledge and find out answers for themselves. Children are encouraged to ask their own questions and be given opportunities to use their scientific skills and research to discover the answers. This curiosity is celebrated within the classroom. Planning involves teachers creating engaging lessons, often involving high-quality resources to aid understanding of conceptual knowledge. Teachers use precise questioning in class to test conceptual knowledge and skills and assess pupils regularly to identify those children with gaps in learning, so that all pupils' needs are met. At the beginning of each topic, children are able to convey what they know already as well as what they would like to find out. This informs the programme of study and also ensures that lessons are relevant and take account of children's different starting points. With this in mind, teaching also builds upon the knowledge and skills developed in the previous years. Working Scientifically skills are embedded in lessons and have been carefully planned to be developed throughout the children's school career, and new vocabulary is developed and embedded through direct teaching. The use of our 'Science Labcoats' makes vocabulary ever present in the classroom. Teachers demonstrate how to use scientific equipment carefully and safely and the various working scientifically skills to embed understanding. Consideration is given to how greater depth will be taught, learnt and demonstrated within each lesson, as well as how learners will be supported in line with the school's commitment to inclusion.

Science Scheme of Work:

Cycle A	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1/2	Animals including humans (Humans)	Senses	Plants (Identify and describe)	Being Scientists (We are Scientists)	Animals including humans (Exercise and hygiene)	Everyday materials
Year 3/4	Teeth and the Digestive system	Rocks and Fossils	Electricity-series circuits, switches, conductors and insulators	Plants-functions or parts and plant growth	Light and Shadows	Famous European Scientist Investigations
Year 5/6	Electricity	Life Cycles: animals and plants	Reversible and Irreversible Changes	Investigation week and Famous Scientists	Earth and Space	Human Body: exercise, nutrition and the heart Human Life Cycles
Cycle B	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1/2	Animals including humans (Classification of animals)	Seasonal change (ongoing throughout the year)	Living things and their habitats	Plants (Growth)	Uses of Everyday Materials	
Year 3/4	Sound	States of Matter	Healthy Lifestyles and Nutrition	Investigations/ Enrichment	Habits and animals	Forces
Year 5/6	Forces	Light reflection and shadows	Evolution and Inheritance	Material properties	Investigations/ Enrichment	Animal Classification

**“The scientist is not a person who gives the right answers. They are someone who ask the right questions”
Claude Levi-Strauss.**



Subject Organisation

Science is taught following the National Curriculum Programmes of Study for Key Stages 1 and 2 (National Curriculum 2014). Due to our mixed age setting, the scheme of work runs on a two year cycle. Science is taught as a discrete subject generally every half term, however, where possible natural cross-curricular links are made with other core and foundation subjects to enhance learning opportunities e.g writing Non- chronological reports in English and using our Science knowledge to accompany this. Additional enrichment opportunities will also be planned at both a class and whole school level which may reflect: the children’s interests. Each class follows units of work which are blocked. The teaching of each unit at Brabin’s must always have a purpose. Enrichments days will be used each year (whether whole school or, in a particular class) to immerse the children within a subject to help nurture the love and enjoyment of Science.

Professional Development in Science

At Brabin's, we intend to keep the subject of Science current and intriguing, so it is reflective of pedagogical research and is ambitious in its aims. To do this, we invest significantly in Continued Professional Development in Science for all our staff. The Year 3/4 teacher (Mr Pearse) is Science subject leader. Although new to subject leadership, training opportunities have already been undertaken and completed by the subject leader and resources shared with staff. Locally, subject networks for Science are attended. Training for staff is provided during staff meetings to cascade training and research and where required, class teachers may also attend externally led courses and training. As a small team of teachers, we have regular communication and find that this is a key strength as we regularly shar good practice with one another.

SPIRITUAL, MORAL, SOCIAL AND CULTURAL DEVELOPMENT WITHIN SCIENCE

	We promote spiritual development	We promote moral development	We promote social development	We promote cultural development
Science	<ul style="list-style-type: none"> - Looking at the process of growing and changing. - Creating opportunities to ask questions which Science cannot always answer. - Learning about ourselves. - Reflecting on the living world (living things and habitats_ - Wondering at outcomes of investigations - Sharing awe and wonder 	<ul style="list-style-type: none"> -Appreciating that, in order to investigate fairly, commitment and honest observation are crucial. - Considering the ethical implications of environmental problems e.g. pollution, destruction of the rainforest. -Discussing the ethical implications of investigations 	<ul style="list-style-type: none"> -Taking responsibility for your own and others safety when completing practical work. -Learning about personal hygiene and staying healthy. -Caring for plants and animals. -Respecting/ Listening to each other when completing tasks. -Working together when carrying out investigations. -Taking onboard different viewpoints when talking about someones theories. -Sharing ideas and results. -Respecting and looking after Scientific equipment. 	<ul style="list-style-type: none"> - Be aware of how we need to care for the world in which we live. - Asking questions about the way in which scientific discoveries from around the world have affected our lives. - Looking at male and female scientists from around the world.

CULTURAL CAPITAL

Science presents opportunities to explore the relevance to real life and by introducing learners to a varied number of famous scientists of both genders-aiming to challenge attitudes around science. By increasing our pupils’ science literacy, we aim to increase their confidence within science and enable them to see the transferability of science across life. Through a in depth provision of high- quality science experiences and resources, children will become more confident and familiar with science and are more likely to continue to develop their scientific skills and knowledge which is vital for their future.

DEVELOPING BRITISH VALUES WITHIN THE SCIENCE CURRICULUM

Science at Brabin’s Endowed encourages children to respect their British Values by taking the views and opinions of others into account, take turns whilst giving instructions and acting on others instruction, understanding the importance of safety rules when working scientifically, make choices when planning an investigation, understanding that often religious beliefs can compete with scientific understanding and being tolerant of this.



SCIENCE IN THE EARLY YEARS

In Early years', pupils investigate science as part of Understanding of the World, The Natural World. Children are encouraged to investigate through practical experience; teachers guide the children and plan opportunities that allow the children to experience and learn whilst experimenting for themselves.

The most relevant areas of the EYFS curriculum to science are listed below along with the opportunities for meeting the Early Learning Goals.

Communication and language (including Listening, Attention and Understanding).

- Make comments about what they have heard and ask questions to clarify their understanding (ELG)
- Learn new vocabulary
- Ask questions to find out more and to check what has been said to them
- Articulate their ideas and thoughts in well-formed sentences
- Describe events in some detail
- Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen.
- Use new vocabulary in different contexts

Personal, Social and Emotional Development (including Managing Self Early Learning Goal)

- Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices (ELG)
- Know and talk about the different factors that support their over health and well-being (physical activity, healthy eating, tooth brushing, screen time, sleep, safe pedestrian)

Understanding the world (including The Natural World Early Learning Goal)

- Explore the natural world around them, making observations and drawing pictures of animals and plants (ELG)
- Know some similarities and differences within the natural world around them and contrasting environments, drawing on their experiences and what they have read in class (ELG).
- Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter (ELG)

All learning is scaffolded through high quality questioning and language. Play is facilitated so it maximises opportunities for creativity and exploration, both indoors and outdoors.

ASSESSMENT

All children are encouraged to be involved in the process of learning. In lessons across the school, teachers will strive to provide instant oral feedback.

Assessment within Science will involve observations, discussions with children, samples of work and recorded evidence. At the end of a unit of work, the teacher will make a summary judgement about the work of each pupil in relation to the National Curriculum expectations using the school assessment format. Individual children's progress will be monitored and tracked through each year group. Pupil attainment data is shared with the Subject Leader on a termly basis. This data is then analysed by the Subject Leader focusing on trends across the school, the proportion of pupils meeting age related expectations and those pupils working at a deeper level within the standard. Parents are informed of their child's achievement within science in the end of year report and where appropriate, during parents' evenings.

In the EYFS, formative assessments are carried out on a daily basis. This type of assessment informs planning, the children's next steps and demonstrates progress. At the end of EYFS, the teacher completes an end of year report and makes a judgment for each of the 17 Early Learning Goals including reading and writing, this document is shared with parents.

IMPACT

Pupil Voice will show:

- An understanding of the methods and skills of scientists at an age appropriate level
- An understanding of the key techniques and methods for each key area of the curriculum: field work, place and location knowledge, and human and physical knowledge.
- A progression of understanding, with appropriate vocabulary which supports and extends understanding
- Confidence and enjoyment in discussing science, their own work and identifying their own strengths and areas for development

Displays around school and books will show:

- Pupils have had opportunities for practice and refinement of skills.
- A varied and engaging curriculum which develops a range of scientific understanding and skills.
- Developed and final pieces of work which showcase the skills learned.
- Clear progression of skills in line with expectations set out in the progression grids.
- That pupils, over time, develop a range of skills and techniques across all of the areas of the scientific curriculum.
- Opportunities to see science outside of school through competitions and trips.

The subject leader will:

- Celebrate the successes of pupils through planned displays.
- Collate appropriate evidence over time which evidences that pupils know more and remember more.
- Monitor the standards in the subject to ensure the outcomes are at expected levels.
- Provide ongoing CPD support based on the outcomes of subject monitoring to ensure that the impact of the curriculum is wide reaching and positive.

Children will leave Brabin's having experienced a fun, engaging, high-quality science education that provided the foundations and knowledge for understanding the world and continuing their journey in Science. Children will learn the wide possibilities for careers in science, as a result of community links with experts. Children will feel they are scientists or on the way to being scientists and capable of achieving. They will continue to ask questions about the world and be inquisitive.

MONITORING

Monitoring is undertaken by the Subject Leader. This is conducted regularly and includes: -

- Monitoring of planning
- Book Scrutiny
- Learning Environment Walk-throughs
- Talking to children
- Hearing children read
- Data analysis
- Lesson Observation

Information will be shared with all governors through the Curriculum Committee. The Subject Lead will work closely with the nominated Science governor. 3