

# Science Policy



*'We can and we will'*  
**GLEBE PRIMARY SCHOOL**

## **SCIENCE POLICY**

### **Mission Statement**

At Glebe School, we believe in an ethos that values the whole child. We strive to enable all children to achieve their full potential academically, socially and emotionally.

### **The Importance of Science**

Science is a systematic investigation of the physical, chemical and biological aspects of the world, which relies on first hand experiences and on other sources of information. The scientific process and pupils' problem-solving activities will be used to deepen their understanding of the concepts involved. The main aspects of science to be studied will be determined by the programmes of study of the National Curriculum 2014.

Through science, pupils at Glebe Primary School will continue to deepen their respect, care and appreciation for the natural world and all its phenomena.

### **Aims**

We aim to foster an enquiring mind and a positive attitude towards science through giving the children the opportunity to raise their own questions, devise their own investigations and reflect critically on their findings. Particular attention will be given to planning the science curriculum to make it equally relevant to all children in our school, regardless of race, creed or gender. Science is not always taught in isolation but may naturally draw from and contribute towards other areas of the curriculum. Science teaching will be made relevant by building on pupils' own experience and using contexts from the local environment and wider world.

At Glebe School, we aim to provide the following experiences:

- Investigations
- Problem solving
- Illustrations
- Use of scientific vocabulary
- Correct use of scientific equipment

We aim to develop the following attitudes: -

- An enjoyment of discovery
- Creativity and inventiveness
- A respect for evidence
- A willingness to tolerate uncertainty
- An awareness of health and safety

## Science Policy

- A sensitivity to living and non-living things in the environment.
- Critical reflection
- Open mindedness
- Curiosity
- Perseverance
- Co-operation

We aim to develop the following skills:

- Enquiry
- Discussion and questioning
- Planning
- Fair testing
- Ideas and evidence
- Problem solving
- Observing and measuring
- Recording
- Interpreting evidence
- Data analysis
- Evaluating
- Use of correct scientific vocabulary
- Correct use of scientific equipment

### **Teaching and Learning**

We will endeavour to achieve this by giving the pupils the opportunity to:

- Develop their understanding through systematic enquiry, using both first hand and secondary sources as appropriate e.g. a planned investigation into melting is followed up by looking in texts for examples of other materials in a liquid state such as metal which cannot be melted in the classroom.
- Relate their work to everyday life.
- Consider simple scientific ideas and the evidence for them and where possible collect evidence to test scientific ideas in a variety of ways. e.g. setting up a wormery to prove worms mix soils.
- Communicate scientific ideas and observations using appropriate scientific vocabulary e.g. labelling parts of a plant and process of seed dispersal.
- Present information in a variety of ways e.g. drawings, diagrams, tables or charts, oral feedback, drama presentation, visual recording, display, different writing genre e.g. accounts, reports, explanations etc.
- Use I.C.T. as appropriate to collect, store, retrieve and present scientific information using data loggers where appropriate.
- Consider health and safety in the context of their science work and take appropriate action to control risks e.g. when using candles, clear table, tie back hair, candles firmly secured in a bed of sand, code and conduct observed.

### **Curriculum**

**Foundation Stage** - Science work is planned from the early years foundation stage curriculum and is taught through the 'Understanding the world' aspect. The children have lots of opportunities to explore the world around them.

**KS1** – See appendix 1 for overview and topics to be covered.

Teaching time 1 ½ hours per week.

**KS2** – See appendix 1 for overview and topics to be covered.

Teaching time 2 ½ hours per week

## Science Policy

### **Values, Attitudes and Equal Opportunities**

Pupils should learn to work with others, listen to each other's ideas and treat them with respect. They should have opportunities to consider their own attitudes and values and those of other people.

All pupils will have equal opportunities to reach their full potential across the history curriculum and be given equal access irrespective of race, gender, cultural background, level of ability, or of any physical or sensory disability. Mutual respect and tolerance for all cultures will be promoted through the study of science.

### **Planning**

We carry out curriculum planning in science in three phases (long-term, medium-term and short-term). The long-term plan maps the science topics studied in each term during each Key Stage; the science subject leader decides this out in conjunction with teaching colleagues in each year group and the children study science topics in conjunction with other subjects, especially at Key Stage 1. We teach the knowledge, skills and understanding set out in the National Curriculum through the corresponding programme of study.

Teachers write medium term plans for each topic using the statements from the national curriculum and include key questions and then adjust this accordingly, in the short term, if needed as they progress through the term.

In KS2, each subject is taught for an afternoon, each fortnight to help the teachers and children to have a more of in depth look at the subject matter. Many of which follow a learning journey and also allow for student lead/inspired activities.

In KS1, each subject is taught weekly. The lessons are sequenced to show progression in skills and thinking.

In EYFS, topic lessons are taught in the afternoon, which, due to the timings of the school day, allow for extended lessons. Planning is driven by the children's interests and their views are sort before each topic is planned.

Planning also reflect trips booked by the teachers in advance which aim to support/inspire the children in their learning journey. These are not uniform across the school in terms of when they take place, they can happen at the beginning as a hook, part way through to continue the engagement or at the end to sum up and contextualised their learning.

Cross-curricular links with other subjects will reinforce and enhance science skills, e.g. using reports and explanation texts and writing instructions in English, and interpreting data in maths.

Knowledge organisers are given to all children at the beginning of each topic throughout the School with appropriate vocabulary and information. An example can be seen in Appendix 2.

### **Progression**

Planning for science should ensure continuity and progression in the five key elements of chronological understanding, knowledge and understanding of events, enquiry, interpretations, organisation and communication. Teachers should refer to the school's progression documents and each year groups' knowledge organisers, to ensure that they are teaching the knowledge required for each unit of work and also that there is a progression of historical skills building from the year before.

## Science Policy

### **Health and Safety**

The safe use of equipment is promoted at all times and safety issues are highlighted in medium term plans. Children are encouraged to consider safety for themselves when working with science equipment and therefore develop a responsibility for their own safety. The staff has adopted the ASE safety policy and a spare copy is available in the staffroom. We also follow the safety regulations produced by the London Borough of Hillingdon.

### **Differentiation and Inclusion**

Science forms part of the school's curriculum policy to provide a broad and balance education to all children. We provide learning opportunities matched to the needs of children with learning difficulties and we take into account the targets set for individual children in their Individual Education Plans Maps (IEPs).

Teachers take account of the three principles of inclusion that are set out in the National Curriculum:

- Setting suitable learning challenges.
- Responding to the diverse learning needs of pupils.
- Overcoming potential barriers to learning and assessment for individuals and groups of pupils.

We recognise the fact that in all classes, there are children of widely different abilities in science and we seek to provide suitable learning opportunities for all children by matching the challenge of the task to the ability of the child.

We achieve this by:

- Setting common learning opportunities, which are open-ended and can have a variety of responses.
- Setting tasks of increasing difficulty and directing these at different children.
- Differentiating expectations of learning outcomes through scientific skills, depth of conclusions and analysis.
- The use of equipment/ physical resources- large batteries and thermometers.
- Grouping children by ability in the room and setting different tasks to each ability group.
- Using Blooms Taxonomy as a basis for our questioning allowing there to be a progression of thinking skills within the classroom.
- Providing opportunities for mixed ability learning and discussions.
- Providing resources of different complexity according to the ability of the child.
- Using classroom assistants to support the work of individual children or groups of children.

### **Cross Curricular Links**

Pupils should draw on their knowledge and skills in other subjects to support their science work. Science activities form an essential part of our themed weeks. Stories can often provide a strong starting point for scientific investigations.

Real life problems often form an exciting starting point for scientific enquiry.

Science is closely allied to mathematics and D.T. but links can also be formed with other subjects, most obviously, English, history and geography. In this way, it can be easily seen that science lends itself naturally to a cross-curricular topic approach.

science can be used to develop children's writing skills.

## Science Policy

### **Resources**

Science equipment, in clearly labelled trays, is stored in a central resource room along with the maths equipment.

The school building and grounds are a resource capable of considerable exploitation, as is the environment beyond the school boundary. Glebe school is fortunate to have such a wealth of local resources immediately available, providing opportunities to study all aspects of science. See appendix 3.

### **Roles and Responsibilities**

The **subject leader's** role is to:

- Support colleagues in teaching the subject content and developing the detail within each unit;
- Renew, update and complement resources needed to deliver the curriculum, within budget restraints;
- Audit current practice;
- Develop assessment and record keeping to ensure progression and continuity.
- Keep abreast of developments in science education and media usage;
- Prepare and review policy documents, curriculum plans and schemes of work for the subject;
- Encourage staff to provide effective learning opportunities for all pupils, to develop valid activities appropriate for all pupils at different stages of development and which enables pupils to progress in the subject;
- Help colleagues develop their subject expertise and organise and monitor their professional development;
- Collect, evaluate and inform staff of all resources
- Ensure standard formats for assessment and monitoring are being used;
- Provide annual subject action plans including costings and priorities which help inform the school development plan;
- Organise and advise on the contribution of science to other curriculum areas including cross curricular;
- Help with the monitoring and evaluation of the effectiveness of the subject within the school.
- Analyse class, year group and whole school data and report findings to SLT.
- Attend and deliver insets.
- Work with other schools, including local secondary schools.
- Ensure that science experiments are carried out safely across the school.

The **class teacher's** role is to:

- Ensure coverage of science for their year group/Key Stage.
- Inform the subject leader of any resources needed to deliver the units before they arise in the curriculum.
- Plan and deliver lessons to appeal to all learners to enthuse as well as educate the children in their class.

### **Assessment**

This will be in accordance with the school's assessment policy, which is followed throughout the school. The assessment of pupils' work can provide information for pupils, teachers and parents:

- To enable pupils to reflect upon and celebrate achievement.
- To help plan for progression, continuity and target setting for pupils and to inform planning for future work of whole classes and individual pupils.

## Science Policy

- To communicate achievement and identify areas for future development to pupils, parents and teachers.
- To evaluate the effectiveness of teaching and learning assessment is an integral part of teaching and learning and based upon teachers' judgements of pupil attainment and progress.

Teachers monitor children's progress and adjust their teaching accordingly. Assessment of the children's work is ongoing to check understanding and ensure that progress is being made. Assessment is based on the national curriculum. The planning and questioning / verbal discussion can be used alongside marking work to ascertain if the children are making good progress.

Topic records are also used to assess the children's learning. At the start of the unit, a topic record with the learning objectives from the national curriculum, is stuck into the children's books. As the children meet an objective, it is then dated. This is then used at the end of each term to look at how the children have progressed and to assess whether they have met age related expectations.

In EYFS, children are assessed against the ELGs using the 2Simple profile. Reports of the children's progress in each area are sent to the parents on a weekly basis.

Other assessment evidence should be apparent when teachers complete a unit of work and record relevant progression information at the bottom of subjects planning document.

### **Monitoring and Data**

The science policy of the school is reflected in our practice. This is monitored regularly by the Science co-ordinators through the scrutiny of planning, pupil interviews, staff surveys and children's work. Levels of attainment collected from each half term's assessment is recorded on a tracking sheet. The final level is recorded on the end of term report sent out to parents. The Science co-ordinators use the tracking sheets to assess the progress of classes, year groups and the school as a whole. An end of year analysis of levels enables us to gain an overview of the standard of Science teaching at Glebe and helps us to plan future priorities. The general findings are then discussed with the head teacher and staff.

Further action is included in our school development plan and relevant INSET organised. New members of staff will be introduced to the policy by the co-ordinators. We will judge the success of our science teaching and know the aims of this policy have been fulfilled by the following key indicators: -

- The motivation and the interest displayed by our pupils.
- The development, over time of pupils understanding of science skills, attitudes and concepts.
- The pupils' ability to apply their understanding in a variety of new situations.
- The data will reflect that the majority of children are on track and where there are anomalies, these will have been addressed.

The policy to be reviewed every two years or in the light of new initiatives.

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**July 2022**

**To be reviewed 2024**

**Appendix 1  
Science Overview**

	<u>Autumn1</u>	<u>Autumn2</u>	<u>Spring1</u>	<u>Spring 2</u>	<u>Summer1</u>	<u>Summer2</u>
<b>Nursery</b>	Ourselfs Senses Seasons	Materials Seasons	Nursery rhyme Science	Plants/ Growth Seasons	Minibeasts Seasons	Animals
<b>R</b>	All about me Materials	Space	Technology week	Healthy eating	Plants And growing	Science week Problem pup investigations
			Ocean and exotic animals (land and Sea)			
<b>1 Science</b>	Human Body Senses	Animals	Plants		Seasons- ongoing across year Materials	
<b>2 Science</b>	Animals & Humans		Materials	Plants	Living Things and their Habitats	
<b>3 Science</b>	Light	Animals including humans	Rocks	Plants		Forces & Magnets
<b>4 Science</b>	Animals	Electricity	Sound	States of Matter	Habitats	
<b>5 Science</b>	Plants & Life Cycles		Forces	Materials	Space	
<b>6 Science</b>	Light	Electricity	Evolution, Genetics & Inheritance		Keeping Healthy	

## Appendix 2

	Key vocabulary
<b>classification</b>	Grouping things based on their characteristics so that they can be identified.
<b>classification key</b>	A series of yes/no questions that help identify or classify things.
<b>environment</b>	The conditions in which a living thing exists. Soil, climate and other living things all count as part of the environment.
<b>habitat</b>	The place where an animal or plant lives.
<b>migrate</b>	The long-distance movement of animals, usually due to a change in the seasons.
<b>hibernate</b>	An animal or plant that spends the winter in a dormant state.
<b>vertebrates</b>	Animals that have a backbone. Fish, amphibians, reptiles, birds and mammals.
<b>invertebrates</b>	Animals that do not have a backbone. Examples are snails, worms, spiders and insects.

How can environments change?	
<b>Natural changes</b>	This could be caused by flooding, fire, earthquakes etc
<b>Human have an impact on the environment:</b>	
<b>Positive impact</b> This could be:	<b>Negative impact</b> This could be:
<ul style="list-style-type: none"> <li>setting up a nature reserve</li> <li>tree planting</li> <li>creating a garden pond.</li> </ul>	<ul style="list-style-type: none"> <li>littering</li> <li>deforestation</li> <li>air pollution</li> <li>plastics in the oceans</li> </ul>

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## Living things and their habitats – Year 4

Significant scientists	
<b>Jane Goodall</b> (Born 1934) 	Jane Goodall is an expert on wild chimpanzees. She is known for her ground breaking discoveries about their behaviour. She has shown us the urgent need to protect chimpanzees from extinction.
<b>Seirian Sumner</b> 	Dr Seirian Sumner is an evolutionary biologist and behavioural ecologist. She specialises in social evolution and behaviour in insects (bees, wasps and ants).

### Environments can change with the seasons:



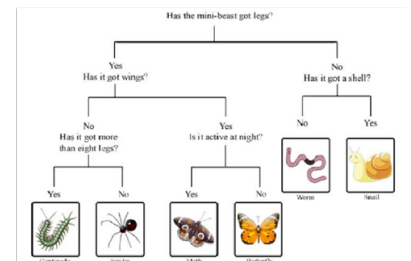
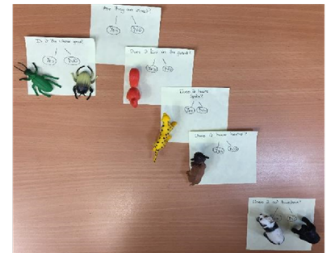
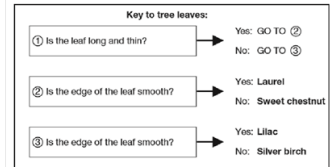
Arctic tern migrates from the Arctic to Antarctica.

Hedgehogs hibernate in the winter in small, dry, sheltered places, like tree roots.



### Classification keys

#### A key to sort leaves



## Appendix 3

### Glebe Primary School

At Glebe we are lucky to have a large field and a fantastic science garden.

Vegetable plot and greenhouse used by the Gardening club

A great range of trees ideal for looking at seasonal changes.





### **Science Garden**

Bird boxes  
Pond area  
Sensory Garden  
Bug Hotel  
Wild area  
Log seats  
Flowerbeds

Large field with abundance of different trees



### **Local Environment**

Just a short distance away are Ickenham Marshes and many fields which gives us an opportunity to observe and study the huge biodiversity in our surrounding area.

For more information go to:

<https://ickenhammarshes.wordpress.com/>

