

# Science Policy



# Wheatley Hill Community Primary School

|  |
|--|
| <b>Author:</b> Rebecca Hutton                    |
| <b>Head Teacher:</b> <i>Alan Scarr</i>           |
| <b>Chair Of Governors:</b> <i>Jayne Dinsdale</i> |
| <b>Date Written:</b> November 2022               |
| <b>Adopted by Governing Body:</b> Feb 2022       |
| <b>Date for Review:</b> <i>July 2023</i>         |

## **Wheatley Hill Primary School Science Policy**

At Wheatley Hill Primary school, we aim to provide an engaging curriculum that ensures our children become caring, confident, capable and creative individuals. This policy is a statement of our aims, principles and strategies for the teaching of Science at Wheatley Hill Primary School.

### **Introduction:**

This policy outlines the purpose, nature and management of the Science taught and learnt in our school. Science is a core subject within the National Curriculum. The school policy for Science reflects the consensus of opinion of the whole teaching staff. It has been drawn up as the result of consultation with staff and has the full agreement of the governing body and teachers. The implementation of this policy is the responsibility of all the teaching staff.

### **Rationale for Science Teaching**

**Purpose of Study** - A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science should promote pupil's natural curiosity and encourage them to ask questions about the world around them, as well as teaching essential aspects of the knowledge, methods, processes and uses 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 aims:**

At Wheatley Hill Primary School we aim:

- To provide a range of science experiences, both in and out of the classroom, which encourage children to build interest and enjoyment, knowledge, understanding and confidence, as well as allowing them to achieve to the maximum of their potential in the subject (this includes access to after school clubs and WOW events such as Space Camp).
- To foster a sense of wonder and curiosity about the world in which they live.
- To develop their scientific vocabulary and apply them in an increasing range of situations to carry out scientific enquiry and to interpret scientific data.
- To communicate scientific information in a variety of ways.
- To promote curiosity and provide opportunities for pupils to investigate and explore. Encouraging pupils to ask questions and learn how to investigate and explore these using both first-hand experience and secondary resources.
- To give pupils every opportunity to relate Science to everyday life.
- To develop, through practical work, the skills of observation, prediction, investigation, interpretation, communication, measuring, questioning and hypothesizing.

- To plan and carry out scientific investigations using equipment, such as data loggers, correctly.
- To encourage children to work co-operatively and collaboratively, developing children's confidence in communicating ideas.
- To evaluate evidence and present conclusions clearly and accurately.
- To help pupils to recognize and assess risks and hazards to themselves and to others when working with living things and materials and take actions to control them.

### **Skills:**

Working scientifically skills are an integral part to our Science Curriculum at Wheatley Hill. These skills are taught explicitly through our working scientifically investigations, which are outlined in our year group progression documents. Skills are built on progressively through the key stages.

### **The Role of the Science Co-Ordinator is to:**

- Ensure the Science curriculum meets the aims and objectives of the school.
- Support, guide and motivate teachers and other adults of the subjects.
- Ensure colleagues are aware of current initiatives.
- Evaluate and monitor the effectiveness of teaching and learning within the school.
- Monitor progress towards targets for pupils and staff to inform future priorities and targets for the subject through:
  - Book scrutiny (workbooks and floor books)
  - Scrutiny of planning
  - Lesson observations
  - Looking at displays and photographs
  - Discussions with staff
  - Analysis of assessments
  - Arranging appropriate CPD for staff members
- Review current practice in school, evaluating strengths and areas for development
- Lead staff meetings as appropriate
- Review and revise policy
- Audit resources and order resources when needed
- Keep regular contact with Governors
- Write School development plan and a SEF
- Attend relevant in-service training and prompt others about relevant training
- Representing the school in local cluster groups

### **Foundation Stage:**

Science in the Foundation Stage and Nursery is taught as an integral part of the topic work covered during the year. We relate the science aspects of the children's work to the objectives set out in the EYFS, Understanding the world, which underpin the curriculum planning for Foundation Stage children. Science makes a significant contribution to the objectives of developing a child's knowledge and understanding of the world through a range of different activities. Planning of the subject takes place through use of Floor Books and work is evidenced in Floor Books and the children's individual Learning Journals.

### **Key Stage One:**

The National Curriculum Programmes of Study at Key Stage One focuses on developing children's knowledge, skills and understanding of Science. Children should understand basic subject-specific vocabulary relating to a variety of subject areas in science and begin to use scientific skills, including questioning, observation through talk, simple measuring, explaining and sorting/comparing.

Pupils in KS1 should be taught the following areas of Science:

- Everyday Materials and their Uses
- Rocks
- Properties and Changes of State
- States of Matter
- Plants
- Living things and Habitats
- Animals including Humans
- Evolution and Inheritance
- Light
- Sound
- Forces and Magnets
- Electricity
- Seasonal Change
- Earth & Space

### **Key Stage Two:**

The National Curriculum programme of study at Key Stage Two also focuses on developing children's knowledge, skills and understanding of Science. Pupils should extend their knowledge and understanding of all scientific areas across their time in KS2.

Pupils in KS2 should be taught the following areas of Science:

- Rocks
- Properties and Changes of State
- States of Matter

- Plants
- Living things and Habitats
- Animals including Humans
- Evolution and Inheritance
- Light
- Sound
- Forces
- Forces and Magnets
- Electricity
- Earth & Space

### **Capturing learning within Science:**

Pupils are encouraged to record their work using a variety of methods and therefore communicate their findings to others. These may include written or verbal predictions, conclusions and explanations, practical investigations, charts, models, pictures and role play activities. Science will be captured both in individual Science books and in floor books (Topic Floorbook if related to topic, Practical Learning Floorbook if not). Science books will be used to record the learning which takes place within a 'block' of Science teaching. Floor Books are used to evidence whole class activities, talk based activities, practical investigations, science carried out outdoors (this may be through Outdoor Education) and show learning stories for Science skills and objectives.

### **Outdoor Learning**

Outside investigations are an integral part of our teaching of Science as this allows us the opportunity to observe first hand living things in their environment. In the science progression documents, many opportunities are outlined for pupils across EYFS, KS1 and KS2 to carry out investigations and observations outside (either on the school field or off-site).

Science skills are also taught by way of Outdoor Learning. EYFS classes take part in weekly outdoor learning sessions. Children in Key Stages One and Two are able to organise Outdoor Learning opportunities, both within and outside of school, with the Outdoor Education Coordinator. As part of this day, children take part in activities to promote and develop scientific skills. It is the class teacher's responsibility to share appropriate Science objectives which they would like covering by the Outdoor Ed team before their session. This allows the Outdoor Ed team to prepare any resources they may need to bring to support learning and ensure appropriate scientific skills are taught.

## **Planning of Science:**

### **Long Term Plans:**

The Science curriculum follows the skills outlined by the National curriculum. The skills presented on the school's long-term plans are taken directly from the National curriculum for both Key Stages One and Two, and the BSquared Assessment programme. Science can be taught in block units or in weekly stand-alone sessions.

### **Medium Term Plans:**

Our medium-term plans break down the yearly overview into smaller steps providing clear details of the skills taught within each unit. Each year group has been provided with progression documents for the areas of science they cover, which outlines clearly all of the scientific skills and objectives that need to be taught. The document splits the objectives into two categories: Breadth of Study (subject content that needs to be taught) and Working Scientifically (through investigations). The document also outlines key vocabulary which children need to be taught alongside each unit.

### **Short Term Plans:**

The class teacher is responsible for writing the weekly overview for their class (their short term plan). These weekly plans list the specific learning objectives and expected outcomes for each lesson and give details of how the lessons are to be taught – e.g. if its practical/written knowledge based, whether it'll be indoors/outdoors etc.

## **Through Science we can also:**

- Develop pupils' curiosity about the world around them/questioning skills
- Develop pupils' thinking skills
- Improve pupils' skills in literacy, numeracy and ICT
- Promote pupils' awareness and understanding of the natural world around them
- Develop pupils as active citizens
- Develop independent learning and collaborative skills.

## **Cross-curriculum links in Science:**

### **English:**

Science makes a significant contribution to the teaching of English in our school because it actively promotes the skills of reading, writing, speaking and listening. We focus on the key vocabulary of the subject and use writing frames if appropriate. Children are provided with opportunities to write at length in Science with the aim of showing consistency in writing across all subjects (although when writing at length happens in Science – this needs to be carried out during a morning session).

### **Mathematics:**

Our scientific investigations develop data handling and graphing skills. Sorting and comparing also allows us to group objects/concepts in different ways, using math's skills too.

### **Geography:**

There are similarities between the enquiry approach and scientific investigation. The skill of identifying similarities and differences is also mirrored. Children gain an understanding of different topics that have an underlying scientific concept and therefore need to use their scientific understanding to allow them to develop their knowledge.

### **Computing:**

Pupils will be provided with opportunities to develop and apply their computing capability to support their learning in Science. Computing enhances our teaching of Science, wherever appropriate, in each key stage. Computing is used to enhance skills in data handling and equipment sure as data loggers are also used to increase the accuracy of data collected for investigations. We also use the digital camera for fieldwork and classroom follow up.

### **Assessments:**

Assessment is an integral part of teaching and learning in school. Children's progress should be monitored through observation and worked produced against the teachers planning and learning objectives. A step tracker has been designed for each year group for each term throughout the academic year. Class teachers will assess children using the assessment sheets located at the end of the Science progression document. The Science Co-Ordinator will keep a copy of these levels. The assessment sheets then inform future planning as well as to sustain continuity between classes and progression of pupils learning.

### **Marking and Feedback:**

Feedback to pupils should be provided on their attainment against the objectives of Science. During Science lessons teachers assess the children through observation, questioning, speaking and listening activities and through written tasks. Written or verbal feedback is

provided to all children for every Science task to encourage the children to guide their own progress. All work in the children's books is marked in line with the marking and feedback policy.

### **Monitoring and Evaluating:**

Science will be monitored throughout the school by the Science co-ordinator who will be responsible for gathering samples of curriculum work. The Science Co-ordinator will also monitor Science planning and children's workbooks to ensure that objectives and skills are being effectively taught and match the needs and abilities of the pupils. Lessons will also be monitored to help promote quality of learning and standards of achievement in Science. The Science Co-ordinator will be responsible for evaluating Science within the school and ensuring appropriate strategies are put in place to improve.

### **Equal opportunity:**

In line with our Equal Opportunities Policy, we are committed to providing a teaching environment that promotes learning. Children are given opportunities to work with others, listen to each other and treat everyone with respect:

- We plan our classroom activities to challenge and involve all pupils appropriately, according to age and capability, ethnic diversity, gender and language background.
- We are aware of different learning styles and the need to allow pupils to be able to work in their preferred learning styles for some of the time.
- We use materials for teaching which avoid stereo-typing, and bias, towards race, gender, role or disability.
- We deal with such issues clearly and sensitively when they arise.

### **Equal Opportunity and Inclusion:**

At our school we teach Science to all children, whatever their ability. Science forms part of the school curriculum policy to provide a broad and balanced education to all children. Through our Science teaching we provide learning opportunities that enable all pupils to make progress. We use a range of strategies to support pupils and ensure that pupils' needs are catered for in each aspect of the curriculum. A few of these, particularly relevant to Science are:

- The use of several levels of difficulty of vocabulary in class lessons by the teacher.
- Modified text passages as expected in other curriculum areas.
- Different levels of written or oral questions for pupils investigating photographic or other visual materials.
- Modified graphs, e.g. the use of ICT to graph data, axis provided and labelled.
- Careful use of support for pupils with English as an additional language.
- The use of large-scale maps, always colour highlighted for pupils with particular additional needs.
- Awareness of the problems colour keys provide for colour-blind pupils.



Our assessment process looks at a range of factors: classroom organisation, teaching materials, teaching style, and differentiation, so that we can take some additional or different actions to enable the child to learn more effectively. This ensures that our teaching is matched to the needs of all children.

To ensure all children achieve their full potential, intervention groups may be created. These groups would focus on key objectives identified by the class teacher. Interventions may be taught separately or additionally to the full class Geography lesson. Staff delivering the interventions will use a variety of materials to further support children and where necessary these children may take part in 'pre-teach' sessions to ensure good progress within Geography.

**For our more able pupils we will expect:**

- Teachers to provide teaching and learning experiences that encourage pupils to think creatively, explore and develop ideas, and try different approaches. Pupils should be encouraged to set their own questions, offer ideas, suggest solutions or explanations, and reflect on what they have heard, seen or done in order to clarify their thoughts.
- Greater independence in working, e.g. a pupil to be able to carry out their own simple scientific investigation.
- Avoid giving gifted pupils additional writing tasks and encourage them instead to communicate their understanding in a variety of ways, giving them responsibility for choosing and evaluating the most appropriate method.
- Provide opportunities within Science for pupils to develop their skills in other areas, such as intrapersonal skills (for example, opportunities to use initiative), and interpersonal skills (for example, leadership and group membership). These opportunities also relate to the key skills of working with others and improving own learning and performance.
- Opportunities to make the school more environmentally sustainable.

**Resources:**

Resources are located in the resource cabin. They are available for all teachers to use during their lessons. Resources are separated into boxes, that are labelled according to the topic they are relevant to. There are inventory sheets available for each box, that teachers use to sign in and sign out the resources. The use of science resources will help to support and stimulate children's scientific enquiries as well as their knowledge-based sessions. Available Science resources include: data loggers, measuring equipment such as beakers and cylinders, samples of materials and rocks, magnets, etc.