



# TUNBURY PRIMARY SCHOOL

## **SCIENCE POLICY**

This policy reflects Tunbury Primary School's values and philosophy to the teaching and learning of Science.

### **Purpose of study**

A high-quality science education should inspire in pupils a curiosity and fascination about the world and natural phenomena that will remain with them for the rest of their lives. It is an enquiry-led subject, which is concerned with the pursuit of better investigative strategies to deepen knowledge and understanding of the world around us.

At Tunbury Primary School we want our pupils to ask questions about the world in which they live and make predictions, form hypothesis, carry out fair tests and formulate conclusions. We strive to develop their knowledge and understanding of important scientific ideas, processes and skills and encourage them to relate these to their everyday experiences.

Teaching equips pupils with knowledge in the four strands of:

- scientific enquiry
- life processes and living things
- materials and their properties
- physical processes

We strive to make the children confident learners, to explore values and ideas through Science. The lessons are practical, using a range of activities that will take the pupils on a learning journey that supports the progression in key scientific knowledge and concepts, from the Early Learning Goals in Reception through to Year 6.

### **Aims**

At Tunbury we follow Focus Education for Science which aims to ensure that all pupils by the end of each key stage, know, can apply and understand the matters, skills and processes specified in the relevant programmes of study with the emphasis being on working scientifically.

### **Working Scientifically in KS1**

- Asking simple questions and recognising that they can be answered in different ways.
- Observing closely using simple equipment.
- Performing simple tests.
- Identifying and classifying.
- Using their observations and ideas to suggest answers to questions.
- Gathering and recording data to help in answering questions.

### **Working Scientifically in Lower KS2**

- Asking relevant questions and using different types of scientific enquiries to answer them.
- Setting up simple practical enquiries, comparative and fair tests.
- Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, a range of equipment including thermometers and data loggers.

- Gathering, recording, classifying and presenting data in a variety of ways to help n answering questions.
- Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.
- Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.
- Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.
- Identifying differences, similarities or changes related to simple scientific ideas or processes.
- Using straightforward scientific evidence to answer questions or to support their findings.

### **Working Scientifically in Upper KS2**

- Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.
- Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings where appropriate.
- Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
- Using test results to make predictions to set up further comparative and fair tests.
- Reporting and presenting findings from enquiries, including conclusions, casual relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.
- Identifying scientific evidence that has been used to support or refute ideas or arguments.

### ➤ **Reception: The World**

- 1) Show an understanding of growth, decay and changes over time. Observations of animals and the natural world.
- 2) Comments and ask questions about the natural world. Shows care and concern for living things and the environment. Occupations.
- 3) Materials and their properties. Similarities and differences. Why things happen and how things work.
- 4) Observations of a spring plant. Reversible and non-reversible changes.
- 5) Observations of plants (diaries). Growth and change (plant and animal).
- 6) Where animals live and different sea landscapes. Floating and sinking.

### ➤ **Year 1:**

- 1) Plants. (Which plants would Little Red Riding Hood find at our school?)
- 2) Seasonal changes. (Why does it get dark earlier in the winter? How do the seasons impact on what we do?)
- 3) Alien investigations. (What do aliens think of life on Planet Earth?)
- 4) Types of animals including humans. (Why are humans not like tigers?)
- 5) Parts of animals. (Why aren't all animals the same?)
- 6) Materials. (Which materials should the Three Little Pigs have used to build their homes?)

➤ **Year 2:**

- 1) Animals including Humans. (How could you be the next...? How will 5 a day help me to be healthy?)
- 2) Living things and their habitats. (Why would a dinosaur not make a good pet?)
- 3) Everyday use of materials. (What is our school made of?)
- 4) Sound.
- 5) Plants. (How can we grow our own salad?)
- 6) What can you find in rock pools? Investigations linked to Lighthouse Keepers Lunch.

➤ **Year 3:**

- 1) How can Usain Bolt move so quickly?
- 2) Rocks & Soils (What do rocks tell us about the way the earth was formed?)
- 3) Forces
- 4) Magnets
- 5) Light and Shadows
- 6) How does a blossom turn into a fruit?

➤ **Year 4:**

- 1) Habitats and dangers to living things. (Which wild animals and plants thrive in our locality?)
- 2) The Water Cycle How would we survive without water?)
- 3) What can we find out? How can we find out?
- 4) Sound. (Why is the sound that\_\_\_\_\_ make enjoyed by so many?)
- 5) What happens to the food we eat?
- 6) How could we cope without electricity?

➤ **Year 5:**

- 1) Materials
- 2) Space. (Will we ever send another man to the moon?)
- 3) Separating mixtures. Types of Change. (Could you be the next CSI investigator?)
- 4) Forces
- 5) Lifecycles
- 6) Investigations - STEM project.

➤ **Year 6:**

- 1) Investigations – Prep for 11+ Linked to WW2
- 2) Living things including humans. (What would a journey through our body look like?)
- 3) Evolution and inheritance. (Have we always looked like this?)
- 4) Classifying living things. Could Spiderman really exist?)
- 5) Changing circuits. (Could you be the next Nintendo apprentice?)
- 6) Lights and Sights. How can you light up your life?)

**Teaching and Learning Styles:**

The expectations are that Learning and teaching styles will differ from each lesson and will address the needs and wants of the children and of the subject being taught. At Tunbury Primary School we utilise many learning and teaching styles. Science will be taught through themed based lessons alongside and within other curriculum subjects, e.g, Literacy, Mathematics, Computing, as well as in discrete science lessons.

Throughout each and every unit of study the emphasis is on the children learning by doing, therefore investigations are carried out by the children whenever possible. In accordance with the constructivist theory of learning, the units encourage the teachers to provide activities that will enable the children to test their previously held ideas. In doing so, they will also be encouraged to develop a bank of skills and an understanding of the processes required to be able to do good science. In every unit of work the most suitable aspects of the statutory requirements for Working Scientifically have been selected. Each of these requirements will be thoroughly covered throughout both of the Key Stages.

Each unit of study contains a section outlining the most appropriate scientific vocabulary to be used when studying that particular area of science. This will help children to become familiar with, and use, technical terminology accurately and precisely.

### **Science planning:**

Science is planned for in year group teams and is cross curricular where appropriate. Termly planning should follow the long term overview for the year group and should ensure that the *Focus scheme of work* is followed. Short term planning should be maintained in planning folders, with annotations to identify progress on individual lesson plans.

### **Assessment and recording:**

Formative assessment is the basis for assessment in science. Work, where appropriate, will be recorded in science books but evidence will also be photographic and on classroom displays. When marking, it is important to assess the piece of work according to the Learning Question and to indicate to the child whether they have used the Success Criteria to achieve this. A follow on/next steps question or comment should be given to children where appropriate and time allocated for these to be answered.

For each of the units covered a record sheet has been created. Each of these sheets will allow teachers to record children's achievements during their studies for both the knowledge aspects within a particular unit, and some of the requirements from Working Scientifically. These record sheets, and the intended learning objectives included in the units of study will enable the teachers to identify what the children need to know or be able to do next, as well as support them at different times in the year to make summative judgements as to the children's attainment.

On top of this, Teacher Assessment is carried in terms 1, 3 and 5 based on the investigational skills and work carried out during investigations in class whilst written assessments are completed in terms 2, 4 and 6. These written assessments are a combination of questions taken from Test Base and Rising Stars in KS2 and in house paper in KS1. *See appendix sheet.*

### **Resources:**

Resources are held in the science cupboard found in the computing suite corridor and in the inside stockroom. When finished with, resources should be placed back here to allow other year groups access to them.

### **Equal opportunities:**

All children must have regular access to science appropriate to their stage of development. Challenge for all is integral to our teaching and we aim to encourage all pupils to reach their full potential through the provision of varied opportunities.

Work must be differentiated to aid children's learning. We use a range of strategies to support pupils. A few of these, particularly relevant to Science are:

- An adult to accompany pupils with aural or visual impairment on visits

- The use of large scale formats, always colour highlighted, for pupils with particular special needs
- Awareness of the problems colour keys provide for colour-blind pupils
- Provision of key vocabulary specific to the learning
- 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, axes provided and labeled
- Written frameworks to be provided to help the child scaffold their answers.

In addition, children should be given open-ended tasks to allow them to form scientific questions of their own and search out the answers.

We recognise that our curriculum planning must allow pupils to gain a progressively deeper understanding and competency as they move through our school.

**Monitoring and review:**

The Science subject leader and class teacher is responsible for monitoring the standards of the children's work and the quality of teaching in science.

The subject leader is responsible for supporting colleagues in the teaching of science, for being informed about current developments in the subject and for providing a strategic lead and direction for the subject in the school. The Science subject leader will maintain a monitoring programme to assess science standards across the school, for all year groups and will relay findings back in writing where appropriate.

Policy written October 2017