



### **Definition**

Science is a process of systematic enquiry and development of knowledge that aims through observation, experiment and deduction to seek to produce reliable explanations of natural phenomena. Science offers one fundamentally important way of viewing our world.

### **Philosophy**

Today's children are growing up in an increasingly scientific and technological age. Here at Bincombe Valley School we encourage our pupils to view the world with a sense of wonder, to ask questions and seek the answers while developing a scientific approach to understanding what is going on. Science is challenging, exciting and fun.

### **Aims**

At Foundation Stage we use the EYFS curriculum with particular reference to knowledge and understanding of the world and physical development. National Curriculum Years 1 -6 use the QCA Scheme of Work to build upon children's natural curiosity:

- To develop an enquiring, open mind and a scientific approach to solving problems.
- To develop the skills and motivation to enable the children to explore and interpret the environment and to participate in an increasingly technological and scientific society.
- To involve the children in a wide variety of activities enabling them to acquire a range of skills and attitudes appropriate to science.
- To develop the use and understanding of technical scientific vocabulary.
- To apply scientific knowledge and processes in other areas of the curriculum.
- To be aware of safety and apply their knowledge of it in their work.
- To develop positive attitudes to learning.

### **Learning Outcomes**

The children should be able to:

- Observe, handle and experiment with things living and non-living.
- Recognise the characteristics, similarities and differences between things (living and non-living).
- Undertake scientific investigation using the 'Appropriate Scientific Methods'. (See Appendix 1).
- Discuss and record information in a variety of ways, including the use of computers.
- Predict an outcome to experiments and to realise that the results may not be what are expected.

## **Scheme of Work**

At Bincombe Valley we have adopted the EYFS Curriculum at Foundation and QCA (Qualifications and Curriculum Authority) scheme of work for Science for both KS1 and KS2. The scheme has been extremely carefully devised to ensure continuity and progression. The work to be covered is organised into units – 12 for KS1 and 24 for KS2. Scientific Enquiry underpins all the units.

These units have well defined guidelines on resources required, the vocabulary which the children should have opportunities to use, time allocation, the learning objectives and differentiated expectations of the children at the end of each unit.

These units are organised in such a way that the children cover the National Curriculum Programmes of Study in three, two-year cycles, thus ensuring that the key ideas are revisited, extended and consolidated. See Appendix 2 for an overview of the whole school scheme of work.

## **Concepts**

In using this scheme of work, we aim to include the concepts of:

- investigation
- prediction
- variables
- fair testing
- comparison
- conclusion related to prediction
- change and reversal
- life and physical processes
- set theory
- energy –electricity – particle theory.

## **Skills**

The children at Bincombe Valley are encouraged to develop a variety of skills through science. These include:

- Careful observation
- Accurate recording of data using all their senses.
- The acquisition of scientific language.
- Communication and co-operation within a group.
- Making sense of related observations.
- Recording observations in a variety of ways.
- Being inquisitive and asking how? why? why not?
- Making predictions, leading to simple hypothesising and testable ideas.
- Selecting the apparatus needed to perform various tasks and using it correctly and safely.
- Planning investigations.
- Clearing away.
- Evaluating work.

## **Attitudes**

The attitudes, which the children are encouraged to develop, include:

- Independence/confidence
- Honesty
- Open mindedness – to be willing to learn from their mistakes and to change their mind in the light of others opinions, results etc.
- Tolerance of uncertainty.
- Respect - for others, for self, for living things.
- Awareness of the need for safety.
- Co-operation
- Sense and social awareness.
- Curiosity
- Responsibility – care of equipment, towards others.
- Perseverance
- Originality.

## **Assessment**

Assessment in Science may be made in a variety of ways:

- Continuous assessment in the form of teacher observations, observing, listening and talking to pupils, asking questions and marking work.
- Individual Cover sheets – At the beginning of every Science unit, each child will have a cover sheet outlining learning objectives for that unit. It will also list the targets the child is aiming to achieve. Through discussion with the teacher the child can demonstrate which of these targets have been achieved and tick them off throughout the course of the unit. This provides the teacher with an assessment tool (see assessment) as well as addressing the issue of individual target setting.
- Teacher Assessments at end of each year group.
- Planned Assessment Activities – these are derived from the work the pupils have been doing. The activities target aspects of work covered within individual science units from the Bincombe Valley Scheme of Work. They are then assessed against the programmes of study and national curriculum level descriptors and annotated accordingly.

## **Target Setting**

Target Levels are set in the Orange Files for KS2 pupils, using the Teacher Assessment at the end of KS1 (Year 2)

## **Resources**

- We have a central resource area at Bincombe Valley, with a wide range of resources available for practical activities to which staff have access.
- We have a school library to which both children and staff have access. These books provide a good secondary resource.
- The school project loan is an excellent source of information for display purposes and reference material.
- We have various videos packs that relate to many of the Science units at both Key Stages.
- Each class has an Interactive Whiteboard and access to ActivPrimary.

- The school grounds offer an excellent resource for environmental work. Within the grounds there is: These provide the children with the opportunities to:
  - compare habitats
  - develop an appreciation of the beauty surrounding the school
  - learn about the school environment
  - develop positive attitudes and commitment to the environment.

School visits locally are planned with environmental considerations in mind e.g. Radipole RSPB Nature Reserve, Lodmoor Country Park and DWT Lorton Meadows.

At Key Stage 2 the annual residential visits to Carey Camp and Springhead provide further opportunities for science activity including mini-beast study, pond study and work on forces and structures.

An annual budget is allocated for science to include the replacement of expendable science resources Staff are expected to be responsible for returning any equipment borrowed, informing the co-ordinator of any damage or breakage or if there is a lack of any equipment for any area of study.

### **Technical Vocabulary**

Continuity and progression in Science includes the development of the children's use and understanding of technical vocabulary. Differing backgrounds in the children's scientific learning will result in varying levels of vocabulary. The QCA Scheme of Work offers examples of vocabulary that the children will have opportunities to use within each unit. This vocabulary is to be displayed within each classroom to encourage and promote its use. This also addresses cross-curricular issues such as the learning of topic related vocabulary during literacy (including spelling). A list of appropriate scientific vocabulary for the children to learn and use forms part of the science curriculum

### **Safety**

Practical Science work can involve using a variety of materials, processes and equipment, which may be potentially dangerous. Staff must be alert to possible hazards to ensure the safety of children as far as possible through careful organisation and close attention to the correct use of materials and equipment. A risk assessment of safety issues is considered.

### **Cross Curricular Links**

By the nature of the subject, science has many cross-curricular links which staff include in their planning. Specific links with Art, ICT, Maths and Geography are easily identified in terms of recording, measuring, illustrating and environmental work both within the school grounds and further afield on school visits.

Updated March 2010.



**Appendix 1**

**The ‘Scientific Method’**

- 1) **Observation** careful and accurate observation using the appropriate senses
- 2) **Prediction/ Hypothesis** children should make a guess as to the answer to the question and refine their guesswork as they progress.
- 3) **Experimentation** children should design and run (fair) tests in order to check their hypotheses, practising investigation leads on to better processes.
- 4) **Results** observation and measurement of the results of an experiment with increasingly more accurate and sophisticated equipment.
- 5) **Recording/ Communicating** of their findings by drawing, writing, tape recording, model making, graphs, discussion – presentation – letters, postcards, posters, poems.
- 6) **Questioning** scientific method requires dialogue between peers – questions are used to probe thinking and results. Questions (and answers) lead to better science.

**BINCOMBE VALLEY PRIMARY SCHOOL  
SCIENCE POLICY**



**OVERVIEW OF THE SCIENCE CURRICULUM**



<b>Year</b>	<b>Term 1</b>	<b>Term 2</b>	<b>Term 3</b>
<b>Nursery and Year R</b>	Following EYFS – Knowledge and understanding of the World - Physical development – their bodies Themes in Cycle A and B		
<b>KS1 Cycle A</b>	<b>Ourselves</b> 1A Ourselves 2A Health and growth <b>Toys</b> 2E Forces and movement	<b>Traditional Tales</b> 1C Sorting and using materials 2D Grouping and changing materials <b>The Living World</b> 1B Growing plants 2B Plants and animals in the local environment	<b>Water</b> 2F Using electricity (lighthouse) 1F sound and hearing (foghorn) <b>Transport</b> 1E Pushes and pulls 2E Forces and movement
<b>KS1 Cycle B</b>	<b>Our Wonderful World</b> 2B Plants and animals in the local environment <b>Colour &amp; Light</b> 1D Light and dark 2F Using electricity	<b>Houses &amp; Homes</b> 1C Sorting and using materials 2D Grouping and changing materials <b>Minibeasts</b> 2C Variation (of living things within the environment)	<b>Journeys</b> 1E Pushes and pulls 2E Forces and movement <b>Beside the Seaside</b> 2C Variation (of Sea creatures)
<b>3</b>	3C Characteristics of materials 3E Magnets and springs	3A Teeth and eating 3D Rocks and soils	3B Helping plants grow well 3F Light and shadow
<b>4</b>	4A Moving and growing 4E Friction	4C Keeping warm 4D Solids, liquids and how they can be separated	4B Habitats 4F Circuits and conductors
<b>5</b>	5A Keeping healthy 5B Life cycles	5C Gases around us 5D Changing state	5F Changing sounds 5E Earth, sun and moon
<b>6</b>	6C More about dissolving 6G Changing circuits (short unit)	6B Micro-organisms (short unit) 6D Reversible and irreversible changes (short unit) BBC Revise wise	6A Interdependence and adaptation Springhead – pond and stream dipping, nature study. 6E Forces in Action

Updated March 2010