



## ICT in Science at Key Stage 1 & 2

Science activities are intended to stimulate pupils' curiosity about phenomena and events in the world around them and satisfy this curiosity with knowledge. The National Curriculum orders for Science require pupils to discuss, question and understand how science contributes to technological change and its effects on the world. Pupils use scientific method – to develop and evaluate explanations through experimental evidence and modelling, using ICT where appropriate.

### The QCA Schemes of work

The QCA schemes of work identify four main areas of ICT activity that are required to support work in Science.

- Use CD-ROMs and the Internet for research (KS1 & 2)
- Use graphing/spreadsheet programs to record, analyse and interpret data (KS2)
- Use sensors to monitor temperature changes (KS2)
- Use a word processor, desk-top publishing program and/or multimedia software to present findings (KS2)

There are opportunities to use new technology at KS2 to make observations using a computerised microscope.

The following paragraphs identify the Science units where ICT is needed and give a brief description of how it is to be used.

### Unit 1A Ourselves

Use CD-ROMs to research animals moving in different ways.

ICT Units 1C The information around us and 2C Finding information support this unit.

### Unit 1E Pushes and pulls

Use CD-ROMs to research road safety.

ICT Units 1C The information around us and 2C Finding information support this unit.

### Unit 1F Sound and heating

Use CD-ROMs to research musical instruments.

ICT Units 1C The information around us and 2C Finding information support this unit.

### Unit 2B Plants and animals in the local environment

Use CD-ROMs showing adults and young in a range of animals.

ICT Unit 2C Finding information supports this unit.

### Unit 2D Grouping and changing materials

Use CD-ROMs to find out how some materials e.g. glass, paper, earthenware are made from naturally occurring materials.

ICT Unit 2C Finding information supports this unit.

### Unit 3A Teeth and eating

Use CD-ROMs to find out what local/familiar animals eat.

### **Unit 3D Rocks and soils**

Use CD-ROMs to review the uses of different rocks and link these to their characteristics.

### **Unit 3E Magnets and springs**

Use CD-ROMs to find out about everyday uses of magnets e.g. in recycling materials, in the home.

### **Unit 3F Light and shadow**

Use a graphing program to make a bar chart showing the length of the shadow at different times of the day.

Use CD-ROMs to investigate how sundials were used and constructed.

### **Unit 4A Moving and growing**

Use CD-ROMs which show skeletons of animals; give information about how bodies without bony skeletons are supported; illustrate muscles and movement.

### **Unit 4B Habitats**

Use CD-ROMs to investigate the food needs of a chosen animal.

### **Unit 4C Keeping warm**

Use temperature sensors to record classroom temperatures over a 24 hr. period; investigate the insulation properties of different materials.

ICT Unit 5F Monitoring environmental conditions and changes supports this unit.

### **Unit 5A Keeping healthy**

Use CD-ROMs/Internet to find out about foods rich in fats/oils, sugars/starches, needed for growth. To find out heart and lungs location, functions. To find out about the effects of tobacco, alcohol and other drugs. Use ICT to present their findings e.g. word processor, desk-top publishing program and/or multimedia software

Use a graphing/spreadsheet program to record and analyse resting pulse rate, after exercise pulse rates.

ICT Units 5B Analysing data and asking questions: using complex searches, 5C Evaluating information, checking accuracy and questioning plausibility, 5D Introduction to spreadsheets, 6A Multimedia presentation and 6D Using the Internet to search large databases and to interpret information support this unit.

### **Unit 5B Life cycles**

Use a computerised microscope to observe stamen with pollen and pollen grains from a number of sources – (class activity).

### **Unit 5D Changing state**

Using IT sensors to test predicted temperature changes of a container of water being heated; a mixture of ice and water.

Using the Internet to research where our water supply comes from.

ICT Units 5B Analysing data and asking questions: using complex searches, 5C Evaluating information, checking accuracy and questioning plausibility, 5F Monitoring environmental conditions and changes and 6D Using the Internet to search large databases and to interpret information support this unit.

### **Unit 5F Changing sounds**

Using CD-ROMs/Internet to find out about aspects of sound e.g. musical instruments, sound proofing.

ICT Units 5B Analysing data and asking questions: using complex searches, 5C Evaluating information, checking accuracy and questioning plausibility, 5D Introduction to spreadsheets and 6D Using the Internet to search large databases and to interpret information support this unit.

### **Unit 6A Interdependence and adaptation**

Using CD-ROMs to illustrate how plants grow and make new stems, leaves etc; to investigate a contrasting habitat e.g. seashore; to find out about a specific animal and a specific plant e.g. wading bird, seaweed or woodland plant (bluebell) and how they are suited to the habitat in which they live.

Use a computerised microscope to observe and record difference soil samples – (class activity).  
Use a word processor to make an information card about animals or plants in a habitat.

### **Unit 6B Micro-organisms**

Use CD-ROMs/Internet to find out about scientists e.g. Jenner, Pasteur.

Use the Internet or CD-ROMs to identify other uses of micro-organisms in food production e.g. yoghurt, cheese.

ICT 6D Using the Internet to search large databases and to interpret information supports this unit.

### **Unit 6E Forces in action**

Use CD-ROMs to find out about differences in gravitational attraction between objects and the Moon and objects and the Earth.

Use a graphing or spreadsheet program to represent, analyse, interpret and explain data, identifying pattern.

### **Long term Planning**

At KS1 & 2 the ICT units that support the Science activities should be planned so they occur before them.

In Year 1 some aspects of ICT Unit 2C Finding information should be covered to enable pupils to use a CD-ROM effectively.

In Year 4 ICT Unit 5F Monitoring environmental conditions and changes should be covered to enable pupils to use temperature sensors.

In Year 5 pupils' skills in using CD-ROMs to find out information needs to be developed as each of the ICT units are taught. ICT Unit 6D Using the Internet to search large databases and to interpret information should also be covered to enable pupils to make effective use of the Internet.

### **Hardware**

Sensors are required for the monitoring aspects at KS2. These may connect directly into a computer. Alternatively, remote datalogging equipment with built-in sensors may be used, with information transferred afterwards to a computer. Both options require suitable software on the computer to display results.

A computerised microscope allows group or whole class observation at a computer at KS2.

### **Assessment**

At KS1 & 2 the ICT needed to support the Science units will usually have been taught separately, and should be assessed during ICT lessons. When assessing Science work that has involved ICT it is important to assess the achievement of Science objectives and not ICT objectives. Some teachers may wish to combine teaching of ICT and Science. In this case it is important to assess achievement of ICT and Science objectives separately.

## Key Stage 1 and 2 Software and Hardware for Science Checklist

### Key Stage 1

1A Ourselves	CD-ROMs	
1E Pushes and pulls	CD-ROMs	
1F Sound and heating	CD-ROMs	
2B Plants and animals in the local environment	CD-ROMs	
2D Grouping and changing materials	CD-ROMs	

### Key Stage 2

3A Teeth and eating	CD-ROMs	
3D Rocks and soils	CD-ROMs	
3E Magnets and springs	CD-ROMs	
3F Light and shadow	Graphing program CD-ROMs	
4A Moving and growing	CD-ROMs	
4B Habitats	CD-ROMs	
4C Keeping warm	Sensors and software	
5A Keeping healthy	CD-ROMs Internet Word processor Desk-top publishing program Multimedia software	
5B Life cycles	Computerised microscope	
5D Changing state	Sensors and software Internet	
5F Changing sound	CD-ROMs Internet	
6A Interdependence and adaptation	CD-ROMs Computerised microscope Word processor	
6B Micro-organisms	CD-ROMs Internet	
6E Forces in action	CD-ROMs Graphing program Spreadsheet program	