

Manor Hall Academy



SCIENCE POLICY

CICELY HAUGHTON SCHOOL

Building Relationships

Celebrating Success

Promoting Change

Amendments

CICELY HAUGHTON SCHOOL

POLICY FOR SCIENCE

This policy will be reviewed annually. A schedule of the review of this, and all other policy documents is set out in the School's Two- Year Plan of Whole School Development.

What is Science?

Science is a body of knowledge which is built up through experimental testing of ideas and which is organised in a way that makes it easy to use. Science is also a methodology, a practical way of finding reliable answers to questions we may ask about the world around us.

Aims

Our aims in teaching Science are that all children will:

- retain and develop their natural sense of curiosity about the world around them.
- develop a set of attitudes which will promote scientific ways of thinking including perseverance and the important of teamwork.
- develop observational skills, design fair and controlled experiments and drawing of meaningful conclusions using evaluation of evidence.
- develop problem-solving skills through practical investigation.

Principles of the Teaching and Learning of Science

Science is important because:

- It is a body of knowledge essential to our understanding of the world around us.
- The skills and knowledge of Science has a wide applicability in everyday life.

Science is a core subject in the National Curriculum. The fundamental skills knowledge and concepts of the subject are set out in "Science in the National Curriculum"

Strategies for the Teaching of Science

The science curriculum utilises the Twinkl scheme of work;

- The Science scheme of work ensures that children have a varied, progressive and well-mapped-out science curriculum that provides the opportunity for progression across the full breadth of the science national curriculum for KS1 and KS2.

- This means that Science is studied throughout the academic year

- At KS 1 and 2 Science is studied for approximately 1 hour a week delivered by class teachers.

The predominant mode of working in Science is co-operative and collaborative group-work although individual work and class teaching are also used where appropriate. Within this structure:

- teachers produce/utilise differentiated worksheets and resources
- groups usually of mixed ability with differentiation by group
- relevant discussion is encouraged with reference to use scientific language and vocabulary

There is also an emphasis on cross curricular links in the following forms:

English

Speaking and listening

Focusing on main points and organising what students say.

Remembering specific points that interest them. Students should be able to take turns in speaking

Deleted: A

Deleted: is organised on a topic basis

Deleted: ing

Deleted: Plan Bee and Twinkl

Reading

to follow instructions on worksheets in order to answer questions. Science word lists. Identify use and effect of specialist vocabulary

Writing

Use language and style that are appropriate to the reader. To check spellings with the use of specialist dictionaries.

Maths

Number

Organise work and refine ways of recording

Understanding measurement

Using standard units of length to explain results.

Using and applying, handling data.

Select and use data handling skills, use data to solve problems.

ICT

Using multi media sources, collecting data to compile data base using sensors to datalog.

Mr Chambers is the lead qualified Science teacher. He oversees the resources and delivery of Science through following the relevant curriculum at KS1 And KS2.

COMMERCIALY AVAILABLE SCHEMES OR WORK are used in Science.

The principal scheme in use in the school is Twinkl,

However, we also have full access to:-

- BBC Primary Science, Nature Trek - practical work in the school environment. Scientific Packs. BBC revise wise.
- Plan Bee
- Twinkl online resources

PUPILS WITH SPECIAL NEEDS IN SCIENCE receive extra support in the classroom from a teaching assistant. They include:

- pupils with difficulties in learning Science are given extra opportunities for working at a slower pace through differentiated work sheets and group activities.

Deleted: s Hancock

Deleted: Sh

Deleted: topic based approach at KS1 and

Deleted: The scientific enquiry aspect of science is delivered through enrichment Wednesdays. ¶

Deleted: Plan Bee topics and science schemes

- pupils with particular ability and flair for Science who work more quickly through the levels of the National Curriculum and are extended through the use of additional worksheets and scientific investigation through problem solving
- all pupils are requested to investigate problems, ask questions related to the Science topic or bring in materials to show or display as part of an on-going scientific project.
- parents are encouraged to support Science topics through donating of resources and regular updates on the school website

THE EMPHASIS IN OUR TEACHING OF SCIENCE is on first-hand experience and we encourage children increasingly to take control of their own learning. Thus:

- investigative work is common through AT 1 practical Science
- resources are made readily available and accessible
- pupils are encouraged to work as part of a group and to communicate their scientific findings using a variety of methods e.g. written reports, graphs or pictures.

EXCELLENCE IN SCIENCE IS CELEBRATED in display and performance including

- communication of scientific findings during whole school forum e.g. assembly
- mounting of graphical display with completed science work.

Strategies of Ensuring Progress and Continuity

THE ROLE OF THE SCIENCE COORDINATOR is to

- take the lead in policy development and the production of schemes of work designed to ensure progression and continuity in Science throughout the school
- support colleagues in their development of detailed work plans and implementation of the scheme of work and in assessment and record keeping activities as requested
- monitor progress in Science and advise the Curriculum co-ordinator on action needed
- take responsibility for the purchase and organisation of central resources for Science and care of equipment
- keep up to date with development in Science education and disseminate information to colleagues as appropriate.
- To facilitate/locate the correct Twinkl schemes of work and file on shared area

Deleted: Science

Deleted: and purchase

Deleted: Plan Bee topics

FEEDBACK TO PUPILS about their own progress in Science is achieved through the marking of work. Effective marking:

- aims to help children learn, not to find fault, and comments aim to be positive and constructive
- is often done while a task is being carried out through discussion between child and teacher
- of written work is used sensitively and with discretion so that a child can assimilate a limited number of corrections at one time -this will vary according to age and ability.

FORMATIVE ASSESSMENT is used to guide the progress of individual pupils in Science. It involves identifying each child's progress in each aspect of the subject, determining what each child has learned and what therefore should be the next stage in his learning. Formative assessment has been added to EAZ to focus Science objectives and record teaching outcomes. Baseline assessments are completed at the beginning of Autumn 1 with end of year targets in place. The assessments are completed half termly. This is an assessment of Science taught from the LTP.

Deleted: assessment is mostly carried out informally by teachers in the course of their teaching.

Suitable tasks for assessment include:

- small group discussions perhaps in the context of a practical task
- short tests in which the teacher gives questions orally and pupils write answers. These are taken from the Collins Science Assessment Sheets.
- specific assignments for individual pupils
- individual discussions in which children are encouraged to appraise their own work and progress
- short test in which the teacher gives questions orally and pupils are taped by audiocassette (used rarely)
- Self review for science record of achievement

REPORTING TO PARENTS is completed annually for all children and those with an EHCP will review this annually as part of the annual review process. A written report is submitted with an overview of work completed in science and personalised individual comments on progress.

Deleted: .

Deleted:

Strategies for the Use of Resources

SCIENTIFIC EQUIPMENT IS KEPT in a central source with overall responsibility for care and distribution by the Science Co-ordinator within **NCH/DBE Classroom**. CENTRAL RESOURCES IN SCIENCE are the responsibility of the Science Co-ordinator who has a small budget available. They include:

- class sets of scientific instruments
- class sets of scientific materials
- major/expensive items such as microscopes
- reference books and scheme books.

TIME is a resource that we value. To maximise its use in Science:

- clear behavioural strategies to allow quality teaching and high output
- clear aims and objectives for scientific learning
- clear lesson notes and work sheets for each of the modules.

INFORMATION TECHNOLOGY in Science

- ~~This is an area that is currently being developed. Every pupil has recently been allocated a Chrome book, allowing far greater opportunities for pupils to develop their scientific knowledge with the use of Information Technology.~~

HEALTH AND SAFETY ISSUES IN SCIENCE include:

- appropriate handling of equipment and materials
- appropriate storage of equipment and materials
- lists of centrally held resources for Science safety guidelines.

Equal opportunities

Each child has equal access to Science within our school and every effort is made to ensure that the Science activities and investigations are interesting and achievable. The expectation is the same for boys and girls. Children with special needs are involved in all work planned from the Programme for Science at an appropriate level which will help each child to reach their full potential.

The school has achieved dyslexia friendly full status and as such will give due regard to dyslexia friendly strategies and objectives.

Deleted: is an area yet to be developed and needs a high input of finances to reinforce scientific learning. A Science disc relevant to each of the modules taught in Key Stage 1 & 2 is our aim to provide a variety of teaching resources

Formatted: Indent: Left: 0.5 cm, Hanging: 0.77 cm, Right: 0.5 cm, Space After: 0 pt, Line spacing: single

Deleted: .

Progression of Skills

	KS1	LKS2	UKS2
Plan	<p>KS1 Science National Curriculum Asking simple questions and recognising that they can be answered in different ways.</p> <p>Children can:</p> <ul style="list-style-type: none"> a explore the world around them, leading them to ask some simple scientific questions about how and why things happen; b begin to recognise ways in which they might answer scientific questions; c ask people questions and use simple secondary sources to find answers. 	<p>Lower KS2 Science National Curriculum Asking relevant questions and using different types of scientific enquiries to answer them.</p> <p>Children can:</p> <ul style="list-style-type: none"> a start to raise their own relevant questions about the world around them in response to a range of scientific experiences; b start to make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions; c recognise when a fair test is necessary; d help decide how to set up a fair test, making decisions about what observations to make, how long to make them for and the type of simple equipment that might be used. 	<p>Upper KS2 Science National Curriculum Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.</p> <p>Children can:</p> <ul style="list-style-type: none"> a with growing independence, raise their own relevant questions about the world around them in response to a range of scientific experiences; b with increasing independence, make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions; c explore and talk about their ideas, raising different kinds of scientific questions; d ask their own questions about scientific phenomena; e select and plan the most appropriate type of scientific enquiry to use to answer scientific questions; f make their own decisions about what observations to make, what measurements to use and how long to make them for, and whether to repeat them; g plan, set up and carry out comparative and fair tests to answer questions, including recognising and controlling variables where necessary.

	KS1	LKS2	UKS2
Do	<p>KS1 Science National Curriculum</p> <p>Observing closely, using simple equipment.</p> <p>Performing simple tests.</p> <p>Identifying and classifying.</p> <p>Children can:</p> <ul style="list-style-type: none"> a observe the natural and humanly-constructed world around them; b observe changes over time; c use simple measurements and equipment; d make careful observations, sometimes using equipment to help them observe carefully; e carry out simple practical tests, using simple equipment; f experience different types of scientific enquiries, including practical activities; g talk about the aim of scientific tests they are working on; h use simple features to compare objects, materials and living things; i decide how to sort and classify objects into simple groups with some help. 	<p>Lower KS2 Science National Curriculum</p> <p>Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.</p> <p>Setting up simple practical enquiries, comparative and fair tests.</p> <p>Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.</p> <p>Children can:</p> <ul style="list-style-type: none"> a make systematic and careful observations; b observe changes over time; c use a range of equipment, including thermometers and data loggers; d ask their own questions about what they observe; e where appropriate, take accurate measurements using standard units using a range of equipment; f set up and carry out simple comparative and fair tests; g talk about criteria for grouping, sorting and classifying; h group and classify things. 	<p>Upper KS2 Science National Curriculum</p> <p>Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.</p> <p>Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.</p> <p>Children can:</p> <ul style="list-style-type: none"> a choose the most appropriate equipment to make measurements and explain how to use it accurately; b take measurements using a range of scientific equipment with increasing accuracy and precision; c make careful and focused observations; d know the importance of taking repeat readings and take repeat readings where appropriate; e independently group, classify and describe living things and materials; f use and develop keys and other information records to identify, classify and describe living things and materials.

	KS1	LKS2	UKS2
Record	<p>KS1 Science National Curriculum</p> <p>Gathering and recording data to help in answering questions.</p> <p>Children can:</p> <ul style="list-style-type: none"> a record and communicate findings in a range of ways with support; b sort, group, gather and record data in a variety of ways to help in answering questions, such as in simple sorting diagrams, pictograms, tally charts, block diagrams and simple tables. 	<p>Lower KS2 Science National Curriculum</p> <p>Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.</p> <p>Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.</p> <p>Children can:</p> <ul style="list-style-type: none"> a collect data from their own observations and measurements; b present data in a variety of ways to help in answering questions; c use, read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge; d record findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables. 	<p>Upper KS2 Science National Curriculum</p> <p>Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.</p> <p>Children can:</p> <ul style="list-style-type: none"> a decide how to record data from a choice of familiar approaches; b record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar graphs and line graphs.

KS1	LKS2	UKS2
<p>KS1 Science National Curriculum Using their observations and ideas to suggest answers to questions.</p> <p>Children can:</p> <ul style="list-style-type: none"> a notice links between cause and effect with support; b begin to notice patterns and relationships with support; c begin to draw simple conclusions; d identify and discuss differences between their results; e use simple and scientific language; f read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at key stage 1; g talk about their findings to a variety of audiences in a variety of ways. 	<p>Lower KS2 Science National Curriculum Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.</p> <p>Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</p> <p>Identifying differences, similarities or changes related to simple scientific ideas and processes.</p> <p>Using straightforward scientific evidence to answer questions or to support their findings.</p> <p>Children can:</p> <ul style="list-style-type: none"> a draw simple conclusions from their results; b make predictions; c suggest improvements to investigations; d raise further questions which could be investigated; e first talk about, and then go on to write about, what they have found out; f report and present their results and conclusions to others in written and oral forms with increasing confidence; g make links between their own science results and other scientific evidence; h identify similarities, differences, patterns and changes relating to simple scientific ideas and processes; i use straightforward scientific evidence to answer questions or support their findings; j recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations. 	<p>Upper KS2 Science National Curriculum Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations.</p> <p>Using test results to make predictions to set up further comparative and fair tests.</p> <p>Identifying scientific evidence that has been used to support or refute ideas or arguments.</p> <p>Children can:</p> <ul style="list-style-type: none"> a notice patterns; b draw conclusions based in their data and observations; c use their scientific knowledge and understanding to explain their findings; d read, spell and pronounce scientific vocabulary correctly; e identify patterns that might be found in the natural environment; f look for different causal relationships in their data; g discuss the degree of trust they can have in a set of results; h independently report and present their conclusions to others in oral and written forms; i use their test results to identify when further tests and observations may be needed; j use test results to make predictions for further tests; k use primary and secondary sources evidence to justify ideas; l identify evidence that refutes or supports their ideas; m recognise where secondary sources will be most useful to research ideas and begin to separate opinion from fact; n use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas; o talk about how scientific ideas have developed over time.