Science Policy

All references in this policy are saved in: Staff Workgroup/ All Staff/ Policies 2014
This policy needs to be read alongside other school policies, including:

- Gifted & Talented
- SEN Policy
- Equalities Policy
- Teaching and Learning

Our rationale for teaching science:

A high-quality science education provides the foundations for understanding the world through the disciplines of biology, chemistry and physics. Science is a body of knowledge built up through the experimental testing of ideas. It is also methodology: a practical way of finding reliable answers to questions we may ask about the world around us. Science, in our school, is about developing children's knowledge and ways of working, which enables them to make sense of the world in which they live through investigation, as well as using and applying processing skills. Children are encouraged to understand how science can be used to explain what is occurring, predict how things will behave and analyse causes.

We believe that a broad and balanced science education is the entitlement of all children, regardless of ethnic origin, gender, class, aptitude or disability (For more information read the policies mentioned above).

Aims:

- Preparing our children for life in an increasingly scientific and technological world, by equipping them with the scientific knowledge needed to understand the uses and implications of science, today and for the future.
- Fostering concern about, and active care for, our environment.
- Developing children's understanding of the nature, processes and methods of science through different types of scientific enquiries that help them to answer scientific questions about the world around them.
- Helping develop and extend our children's scientific knowledge and conceptual understanding of the world around them through the disciplines of biology, chemistry and physics.
- Developing our children's understanding of the international and collaborative nature of science.

Scientific learning attitudes:

- Encouraging the development of positive attitudes to science.
- Building on our children's natural curiosity and developing a scientific approach to problems.
- Encouraging open-mindedness, self-assessment, perseverance and responsibility.
- Building our children's self-confidence to enable them to work independently.
- Developing our children's social skills to work co-operatively with others.
- Providing our children with an enjoyable experience of science, so that they will develop a deep and lasting interest and may be motivated to study science further.

Scientific skills:

- Developing children's abilities to seek answers to questions through collecting, analysing and presenting data.
- Developing the skills of investigation ('working scientifically') - including observing over time, pattern seeking, identifying, classifying and grouping, comparative and fair testing (controlled investigations) and researching using secondary sources.
- Developing the use of scientific language, recording and techniques; including measuring, predicting, hypothesising, experimenting, communicating, interpreting, explaining and evaluating.
- Application of mathematical, English and computing skills (in line with age related expectations of their year group) in collecting, presenting and analysing data.
- Enabling our children to become effective communicators of scientific ideas, facts and data.

How science is structured through the school

Science is a core subject in the National Curriculum *(2014) and the Statutory Framework for the Early Years Foundation Stage.* Children in the Foundation Stage are taught the science elements through the Early-Learning Curriculum strand, Knowledge and Understanding of the World, in order to reach the Early Learning Goal.

The school follows the National Curriculum Science (*2014*). The Science topics are taught as set out in each class' curriculum map and include suggested activities to develop children's ability to work scientifically. This ensures progression between year groups and aims to revisit topics. 'Working scientifically' skills should be taught through, and clearly related to, the teaching of the science content. Children should engage in at least two full enquiries each term, taking increasing responsibility for their planning, predictions, testing and recording/interpreting of the results. Where possible, topics should be taught in collaboration with outside agencies or where real life application can be seen.
All teachers should be teaching science for, on average duration of 2 hours each week (this may be combined with other subjects as appropriate).

Assessment and recording in science

We use assessment to inform and develop our teaching.

- Topics commonly begin with an assessment of what children already know. Children are encouraged to return to this at the end of the topic and add on (in a different colour) what new learning they have developed. End of unit assessments may be used in older year groups.
- We assess for learning (AfL) throughout the lessons and term. Children are involved in the process of self-improvement, recognising their achievements and acknowledging where they could improve. Activities during, and at the end of, each topic record achievement and celebrate success.
- We give feedback on each piece of work making it clear verbally, or written, where the work is good, and how it could be further improved. Learning objectives should be highlighted to show achievement (green/pink). Peer marking for success criteria is encouraged.
- We have individual assessment sheets (example at the end of this policy) that record children's progress in knowledge and their ability to work scientifically. These are placed in the front/back of pupils' Science books and encourages pupils to 'own' their learning, as they can see where they are going and what steps they need to take in order to get there. This often results in accelerated progress.
    - Assessment sheets can be found on the school network: Staff Workgroup/ All Staff/ Stottesdon Science/ Assessment grids for books.
    - The following colours should be used for each term when indicating achievement: Autumn – Yellow; Spring – Green; Summer – Pink.
    - Sheets are handed up to the next teacher at the end of the academic year.
    - In years 1/2, 3/4 and 5/6 the working scientifically aspect is build up over a two year program, so sheets will need to be continued or current attainment transferred.

- The school monitors progress through the school by sampling children's work at regular intervals. Children who are not succeeding, and children who demonstrate high ability in science, are identified and supported.
- Each term staff teacher assess children's abilities in the unit covered, using the aforementioned assessment sheets. At Key Stage 2, children are involved with this process. The school monitors these in order to inform strengths and development areas.
- Annual data for science is analysed and reported on by the Headteacher. Outcomes and patterns inform the school development plan.
- Equally important is the continuous assessment of children's work, much of which is informal. This assessment is used to inform teaching throughout the school.
- Reports to parents are made verbally each term, and written once a year, describing each child's attitude to science, his/her progress in being able to work scientifically and his/her understanding of the content of science curriculum.

Resources

The central science store is in the library, where the resources are boxed by subject. All teachers are responsible for keeping the equipment tidy and should check stocks of equipment before they begin teaching a unit.

The shropshirelg.net and other websites e.g. www.cleapss.org.uk are used for guidance on provision and Health and Safety.

Review

This science policy will be reviewed by the science curriculum leader or the senior management team.

Date of review April 2016

Working Scientifically objectives (lower KS2)									
	Em	Dev	Sec	Mas		Em	Dev	Sec	Mas
Asks relevant questions and using different types of scientific enquiries to answer them					Reports on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions				
Sets up simple practical enquiries, comparative and fair tests					Use results to draw simple conclusions, make predictions, suggest improvements & raise questions				
Makes systematic and careful observations and, where appropriate, takes accurate measurements using standard units, using a range of equipment, including thermometers & data loggers					Identifies differences, similarities or changes related to simple scientific ideas and processes				
Gathers , records, classifies & presents data in a variety of ways to help in answering Qs					Uses straightforward scientific evidence to answer questions or to support their findings.				
Records findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables					Can read and spell lower KS2 appropriate vocabulary				

Ks2 Scientific knowledge objectives									
	Em	Dev	Sec	Mas		Em	Dev	Sec	Mas
Autumn Identify how solid shapes can be changed by squashing, bending, twisting and stretching.					Spring Describe how seeds and bulbs grow into plants and what they need to grow and stay healthy.				
Autumn Identify and compare everyday materials for particular uses including how they move on difference surfaces.					Summer Recognise that we need light to see, light can be dangerous, light is reflected from surfaces & how shadows are formed.				
Spring Compare the differences between things that are living or dead.					Summer Identify how sounds are made, how sound travels and how sound gets fainter as the distance increases.				
Spring Identify and compare habitats and food chains, including microhabitats.					Summer Identify common appliances, construct simple circuits, recognise how a switch works and identify constructors and insulators.				

Scientific enquiry Overall grade (please circle)					Scientific knowledge Overall grade (please circle)				
Year group:					Year group:				
Autumn	Em	Dev	Sec	Mas	Autumn	Em	Dev	Sec	Mas
Spring	Em	Dev	Sec	Mas	Spring	Em	Dev	Sec	Mas
Summer	Em	Dev	Sec	Mas	Summer	Em	Dev	Sec	Mas