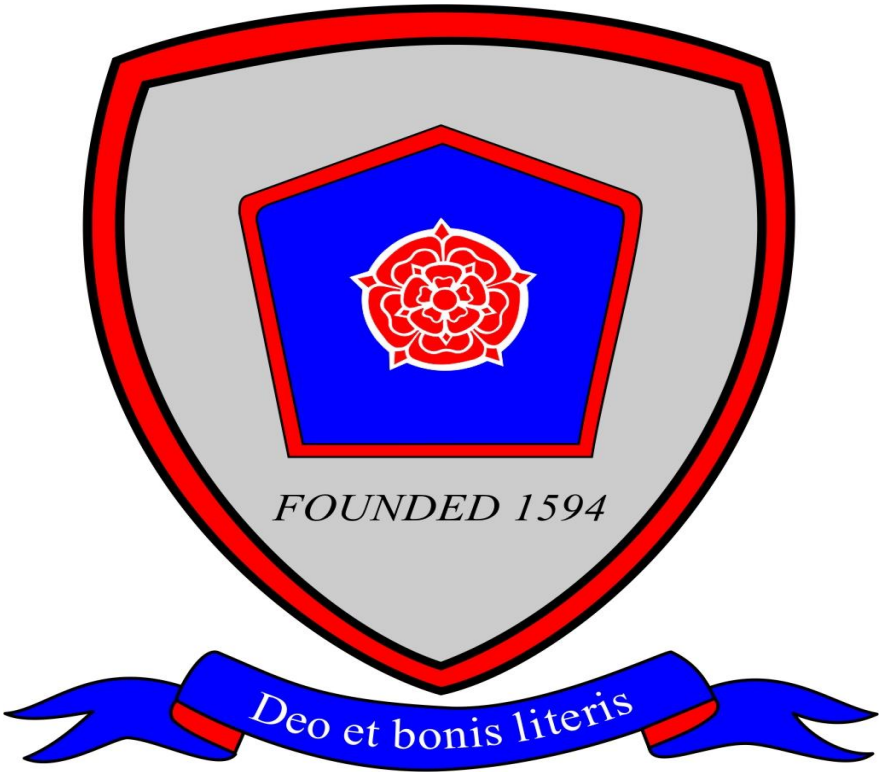
Archbishop Hutton's V.C.

Primary School

Science Policy



For God and sound learning

Archbishop Hutton's V.C. Primary School

Science Policy

Date approved 12/10/17

Next Review: October 2018

Signed: _____M. Jackson (Chair of Governors, Mrs. M. Jackson)
Date: 12/10/17

Signed: _____S. Watson (Headteacher, Miss. S. Watson)
Date: 12/10/17

Mission Statement "We welcome everyone, whatever your background, so that you can achieve your God given potential"

At Archbishop Hutton's Primary School, we believe that children have a natural curiosity about their world and the enthusiasm to want to make sense of it. We aim to capitalise on this, using first-hand experiences so that our children come face to face with phenomena and learn directly about the ways things are, and why they behave as they do. Through science, we are committed to ensuring pupils understand how major scientific ideas contribute to technological change – affecting industry, business and medicine and improving the quality of life. We want children to learn to question and discuss science-based issues that may affect their own lives, the direction of society and the future of the world.

We aim for each child to:

1. Enhance their understanding of the world
2. Care and have respect for the environment and the living things in it
3. Ask and answer scientific questions
4. Plan and carry out scientific investigations using equipment, including computers, correctly
5. Know and understand the life processes of living things
6. Know and understand the physical processes of materials, electricity, light, sound and natural forces
7. Know about the nature of the solar system, including the earth
8. Evaluate evidence and present their conclusions clearly and accurately
9. Develop problem solving strategies in science, and transfer these skills to other areas of the curriculum
10. Promote positive attitudes towards science and scientists

11. Be able to communicate with peers and adults, ideas, experiences, questions, clearly and fluently, using the appropriate scientific language
12. Have equality of opportunity regardless of race, gender, or ability

AIMS

The National Curriculum for science aims to ensure that all pupils:
• develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics
• develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them
• are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future

CURRICULUM AND SUBJECT CONTENT

Reception/EYFS
Understanding the world

People and communities: Children talk about the past and present events in their own lives and in the lives of family members. They will know that other children do not always enjoy the same things and are sensitive to this. They know about similarities and differences between themselves, others, family members, communities and traditions.

The world: Children will know about the similarities and differences in relation to places, objects, materials and living things. They will talk about features of their own immediate environment and to how environments might vary from one another. They will make observations of animals and plants, explaining why some things occur and talk about the changes.

Technology: Children will recognise that a range of technology is used in places such as homes and schools. They will select and use technology for particular purposes.

The programmes of study for science are set out year-by-year for Key stages 1 and 2 in the National Curriculum. Class teachers are responsible for ensuring that all of the relevant statutory content is covered within the school year. The allocation of topics to half-terms matches that of the themes in Lancashire's New Curriculum Support materials which are being used for creative cross-curricular planning and teaching from Years 1 to 6. The National Curriculum gives a full breakdown of the statutory content to be taught within each unit.
Non-statutory guidance is also provided which teachers are encouraged to use.

Years 1 and 2

During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: - 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.

Years 3 and 4

During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: - 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, using a range of equipment, including thermometers and data loggers - gathering, recording, classifying and presenting data in a variety of ways to help in 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 and processes - using straight forward scientific evidence to answer questions or to support their findings.

Years 5 and 6

During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: - 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 when 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, causal 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.

Links between mathematics and other subjects

Science can form part of other subjects, e.g. providing a stimulus in English or links to health and fitness in Physical Education. Skills from other subjects such as data handling can be used in Science lessons.

Computing
Computing will be used in various ways to support teaching and motivate children's learning. This will children using involve laptops, calculators, and audio-visual aids. They will however only be used in a lesson when it is the most efficient and effective way of meeting the lesson objectives.

PLANNING
Science should be taught discretely in most cases but teachers are encouraged to make links to cross-curricular planning wherever possible.

Long Term Planning: The curriculum map outlines the units to be taught in each year group. Teachers will use the Lancashire 'Inspiring Science' resource as a basis to plan each topic.

Medium Term Planning: Teachers should complete a medium term plan for each unit of work so that they can plan for clear progression
Medium term plans will be shared with the subject leader to ensure there is progression between years. Medium term plans should provide an overview of each unit of study, breaking it down into individual lesson or 'chunks' of learning. As a starting point, teachers should look at the statutory key learning content and the non-statutory guidance within the National Curriculum for Science. The medium term plan should identify learning objectives, main learning activities and differentiation. Opportunities to 'work scientifically' should also be clearly shown. The Lancashire 'Inspiring Science' for each year group provides suggestions for teaching and learning activities – these may serve as a good resource for all medium term planning.

Short Term Planning: Short term planning is the responsibility of individual teachers, who build on their medium-term planning by taking account of the needs of children in their class and identifying the way in which ideas might be taught. It is recommended that teachers annotate their medium term plan after each lesson and after continual assessment for learning, ensuring fluidity between sessions. This document can then serve as a short-term plan.

TEACHING STYLE

Science teaching should include visual, auditory and kinesthetic elements to ensure access for children with different learning styles.

All lessons to have clear learning objectives and success criteria, to be shared and reviewed with the pupils. Lessons will make effective links with other curriculum areas and subjects, especially English, Mathematics and Computing.

The programmes of study describe a sequence of knowledge and concepts. While it is important that pupils make progress, it is also vitally important that they develop secure understanding of each key block of knowledge and concepts in order to progress to the next stage. Pupils should be able to describe associated processes and key characteristics in common

language, but they should also be familiar with, and use, technical terminology accurately and precisely. They should build up an extended specialist vocabulary. They should also apply their mathematical knowledge to their understanding of science, including collecting, presenting and analysing data. Teachers should plan to allow for a wide range of scientific enquiry, including: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations) and researching using secondary sources.

The National Curriculum for science reflects the importance of spoken language in pupils' development across the whole curriculum – cognitively, socially and linguistically. The quality and variety of language that pupils hear and speak are key factors in developing their scientific vocabulary and articulating scientific concepts clearly and precisely.

Teachers should plan opportunities for outdoor learning wherever possible with each year group embarking on an external educational visit once per year that is science based.

Recording of Learning

The children's learning will be recorded in cross-curricular books. The purpose of these books is to record work from classroom-based tasks; write short self-reflections about their learning; record and annotate photographs of learning or specific achievements. Learning should be recorded in these on a regular basis.

PROCEDURES FOR ASSESSMENT AND REPORTING

Teachers assess each child at the end of each academic year, using the following descriptors:
Working below age-related expectations.
Working at age-related expectations.
Working at greater depth.
These grades are based on the expectations for children in that year group.

Teachers will highlight the Key Learning Indicators of Performance (KLIPs) for their year group after each topic of work. At the end of the year, these documents will be passed up to the next class teacher to aid assessment descriptors for the end of key stage. Throughout the year, teachers are expected to plan for on-going creative assessment opportunities in order to judge whether the children have achieved KLIPs expectations for their year group.

In Science, we will also assess by:
- Talking to the pupils and asking questions
- Discussing the work with the pupil
- Looking at the work and marking against the learning objective
- Observing the pupils carrying out practical tasks
- Pupils self-evaluation of their work

Marking

Please refer to the whole school Marking and Feedback Policy

Monitoring
Specific times are allocated to discuss, monitor and moderate Science. It is expected that all staff will contribute to these activities positively to ensure consistency of approach, standards and expectations
The Headteacher and Science Subject Leader according to the agreed Monitoring and Evaluation Plan will monitor teaching and planning.

Assessment & Record keeping

Teachers assess every child at the end of each academic year, using the following descriptors: Not accessed (working below the expectations for the year group) Emerging (starting to learn) Developing (demonstrating an increasing understanding; yet to be secure) Secure (secure in understanding and applying in most areas). These grades are based on the expectations for children in that year group. Teachers will highlight the assessment document of 'I can' statements for their year group after each topic of work. At the end of the year, these documents will be passed up to the next class teacher to aid assessment descriptors for the end of key stage. Throughout the year, teachers are expected to plan for on-going creative assessment opportunities in order to judge whether the children have achieved KLIPs and Working Scientifically expectations for their year group.

In Science, we will also assess by - Talking to the pupils and asking questions. - Discussing the work with the pupil. - Looking at the work and marking against the learning objective. - Observing the pupils carrying out practical tasks. - Pupils self-evaluation of their work Recording of Learning

The children's learning will be recorded in cross-curricular books and nature/field Journals. The purpose of these books is to record work from classroom-based tasks; write short self-reflections about their learning; record and annotate photographs of learning or specific achievements. Learning should be recorded in these on a regular basis.

SEND and Inclusion
In accordance with the school's SEND and Single Equalities Policy, teachers ensure that:

- No child is discriminated against in the delivery of Science

- Differentiated Science activities are available in order to support less able children and extend more able children

- Adequate support is provided for children with identified additional learning needs when undertaking Science activities. This will be brought to the attention of the SENDCO

- Parents are kept fully informed and are encouraged to support their child's learning within science by undertaking any agreed home activities

- Parents will work with the class teacher in evaluating and setting their child's IPP targets. When appropriate pupils will be involved in the setting of their targets.

REPORTING TO PARENTS

This will be done at Parents Teacher meetings in the autumn and spring terms. Science will be reported on specifically in the annual end of year academic report for each Year 6 pupil.

EQUAL OPPORTUNITIES

We aim to create equality of opportunity for all our children, whatever their gender, abilities or background and give them the opportunity to demonstrate what they know, understand and can do.

MOST ABLE PUPILS: Pupils with above average ability are to benefit from a curriculum, which offers challenge and opportunities for investigation in order to extend their learning. We aim to give very able pupils the opportunity to extend their scientific thinking through extension activities such as problem solving, investigative work and research of a scientific nature.

SAFETY: All staff will follow COSHH guidance 'Be Safe'. Teachers must plan safe activities for science and complete a risk assessment when necessary. Teachers and teaching assistants need to be aware of health and safety procedures when using equipment/food in science lessons. Pupils must be aware of the need for personal safety and the safety of others during science lessons.

Resources: Science resources are stored in plastic boxes on the shelves in the science cupboard. An inventory of resources is kept on the network and is updated when new resources are ordered. The subject leader must be informed of any changes regarding science resources i.e. missing or broken resources and/or when new or replacement resources are required. All electronic resources are kept on the network and in the Subject Leader/Resources folders.

Extra-curricular activities

Medium term planning will identify the fieldwork, visits to places of scientific interest and visitors to support the learning objectives for units of work where relevant. We will encourage children to take part in activities promoted by Carnforth High School such as Science Club and

make use of sessions which are offered by them for our children. We will also remain in touch with other secondary schools offering their expertise. We will also remain committed to using the local facilities provided on Warton Crag AONB.