Kirkland and Catterall St Helen’s C of E Primary School

Science Policy

Our School Mission Statement

A Christian family who encourage and equip one another to soar...

At Kirkland and Catterall C of E Primary School we believe that a high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.

At Kirkland and Catterall C of E Primary School we believe that good science teaching and learning happens when:

- Children can discover for themselves through trial and error.
- Children use scientific vocabulary.
- Teachers are confident about what they are teaching.
- When children talk, ask questions, share ideas, explain.
- When children are inspired to do and know more, transfer knowledge.
- When children work in groups.
- When children work practically.
- When children are engaged, excited, involved.
- When children record their learning in a variety of ways using their own words.
**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**
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 terms matches that of the Lancashire Themes, which are being used for creative topic 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 staff members are encouraged to use.

**Curriculum Topics by Year Group:**

<table>
<thead>
<tr>
<th>Year Group</th>
<th>Topics to be taught throughout the year:</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Seasonal Changes <strong>HUMANS’</strong> (incl. body parts &amp; senses) <strong>EVERYDAY MATERIALS’</strong> ANIMALS PLANTS’</td>
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<tr>
<td></td>
<td>Observe plants throughout the year and observe seasonal changes throughout the year (including sunlight, weather and link with plants)</td>
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<tr>
<td>2</td>
<td>‘LIVING THINGS &amp; THEIR HABITATS’ <strong>USES OF EVERYDAY MATERIALS’</strong> HUMANS’ (health &amp; growth) PLANTS’ (growth) ANIMALS, (survival and growth)</td>
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<td></td>
<td>Observe plants and animals in the local environment throughout the year.</td>
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<tr>
<td>3</td>
<td>HUMANS’ (skeletal/muscular system, movement) <strong>FORCES AND MAGNETS’</strong> LIGHT’ <strong>ROCKS’</strong> PLANTS’ (incl. growth, functions, pollination, seed formation, seed dispersal)</td>
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<td></td>
<td>Use the local environment throughout the year to identify and study plants and animals in their habitat.</td>
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<tr>
<td>4</td>
<td>‘SOUND’ ‘LIVING’ (Material) <strong>ELECTRICITY’</strong> ANIMALS,</td>
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<tr>
<td>5</td>
<td><strong>LIVING THINGS &amp; THEIR HABITATS</strong> (observing life cycles /reproduction in animals and plants)</td>
</tr>
<tr>
<td>6</td>
<td><strong>EVOLUTION &amp; INHERITANCE</strong> (incl. adaptations)</td>
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</tbody>
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Use the local environment throughout the year to identify and study plants and animals in their habitat.

Observe life cycles of plants and animals in the local environment throughout the year.

**WORKING SCIENTIFICALLY WITHIN THE CURRICULUM**
Class teachers must ensure that there are frequent opportunities for pupils to ‘work scientifically’ within the curriculum. ‘Working scientifically’ specifies the understanding of the nature, processes and methods of science. Pupils are required to work scientifically within all areas of the science curriculum.

The following skills are statutory:

**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 straightforward 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.

**STAFF TRAINING**

The Science subject leader is responsible for ensuring that all staff are adequately trained so that they are able to deliver the curriculum effectively. This will include: organising CPD; leading staff meetings; sharing resources for planning and teaching; supporting colleagues. Regular communication with staff will be sustained and all staff can speak to the subject leader if they require any further support.

**PLANNING**

All staff are briefed on the planning procedures for Science in staff training. Science should be taught discretely in most cases but teachers are encouraged to make links to the Creativity planning wherever possible.

**Long Term Planning:** The curriculum map (see above) 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. There is a specific topic planning format for staff to follow.

In our school we have developed a sequence of teaching in our science planning which will show progression and develop creativity based on:

- **INITIAL THINKING** (mind maps, glossaries, KWL grids, question boards)
- **IMMERSION** (Lots of Scientific Enquiry opportunities and Key Learning explored and defined)
- **WHAT HAVE WE LEARNED?** (Reporting to an audience, children showing their knowledge in action.)

Medium term plans will be shared with the subject leader to ensure there is progression between years.

Medium term plans should provide of 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.
Medium Term Planning will also take into account planned lessons for ‘Nature Journals’ (Years 1, 2, 3) and Field Journals (Years 4 and 5).

Year 1: Observe plants throughout the year and observe seasonal changes throughout the year (including sunlight, weather and link with plants)

Year 2: Observe plants and animals in the local environment throughout the year

Year 3 and 4: Use the local environment throughout the year to identify and study plants and animals in their habitat.

Year 5: Observe life cycles of plants and animals in the local environment throughout the year

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. These plans are solely for the benefit of the class teacher and do not need to be shared with the subject leader.

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

All lessons have clear learning objectives, 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 which is Science based.
**Recording of Learning**
The children’s learning will be recorded in Topic 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.

**PROCEDURES FOR ASSESSMENT AND REPORTING**
Teachers assess each 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 the Key Learning 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.

**MARKING WORK**
Please refer to the whole School Marking Policy.

**REPORTING TO PARENTS**
This will be done at Parents Evenings in the autumn and spring terms and Science will be reported on specifically on the annual end of year academic report for each pupil.

**EQUAL OPPORTUNITIES:**
We aim to create equality of opportunity for all our children, whatever their gender, abilities or background and give them chance to demonstrate what they know, understand and can do.
SPECIAL EDUCATIONAL NEEDS:
The School’s Policy document for Special Educational Needs explains in full the procedures which are in place for providing for pupils with Special Educational Needs. Within Science, tasks are differentiated to ensure access to the National Curriculum and to offer activities which are relevant to the conceptual development of the child.

MORE 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.

MONITORING AND EVALUATION
The Subject Leader follows the School Self Evaluation for Subject Leaders’ Guidelines and is achieved through:
- monitoring and evaluation of pupils’ work;
- lesson observations;
- monitoring of planning

SAFETY
All staff will follow COSHH guidance ‘Be Safe’. Teachers must plan safe activities for science and complete a risk assessment if 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 between Owls and Eagles classrooms. 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.

Science Co-ordinator: Mrs C. Hilton-Briggs
Policy Review Date: January 2017