



GREENLEAS PRIMARY SCHOOL SCIENCE POLICY

OVERVIEW

Purpose of Study (National Curriculum 2014)

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 Greenleas Primary School, we pride ourselves on the ability to stimulate and excite pupil's curiosity about the world in which we live through the specific disciplines of biology, physics and chemistry. We develop positive attitudes to science by engaging children in practical activities which develop their skills in enquiry, investigation, measurement and evaluation.

Children typically have weekly 1 hour lessons in KS1 and 2 hour lessons in LKS2. Classes in upper key stage two choose to complete a science unit in a week block. Throughout the year, there are many opportunities for children to revisit prior learning from topics taught in previous year groups and those taught earlier in the year. We want our pupils to recognise the importance and impact that Science has on our everyday lives whilst also learning about key scientists and their discoveries. Through this, we hope to foster a love of science and a desire to ask deeper questions about the world around them.

NATIONAL CURRICULUM 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.

INTENT

At Greenleas, we encourage children to be inquisitive throughout their time at the school and beyond. It is our intent that children at our school will develop an understanding of the nature, processes and methods of science through the different types of enquiry enabling children to answer scientific questions about the world around them.

Through using the planning matrices from ASE, progression maps and teachers planning, lessons will provide the opportunity for progression across the school, from EYFS through to year 6. This will ensure children will move on to their next stage of education equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future. We also aim to provide children with knowledge of different careers in science, showing them that this is an achievable option for them in the future if they desire.

Working scientifically skills are built upon and developed throughout children's time at the school. Children are encouraged to ask questions and apply their knowledge of science when using equipment, conducting experiments, building arguments and explaining concepts.

IMPLEMENTATION

Teachers create a positive attitude to science learning within their classrooms and reinforce an expectation that all pupils are capable of achieving high standards in science. Children at Greenleas are given the opportunity to apply their knowledge and find out answers for themselves. They are encouraged to ask their own questions and be given opportunities to use their scientific skills and research to discover the answers.

Science at Greenleas is taught in week blocks key stage 1 and in upper key stage 2 following the topics set out by the National Curriculum. In lower key stage 2, topics are taught on a rolling programme and are planned carefully to ensure there is a good progression of skills and appropriate differentiation for year 3 and 4. When there is a natural link between a science topic and other curriculum areas, teachers should endeavour to work in a cross-curricular manner.

Planning

When planning, teachers should be familiar with previous and subsequent year groups' content in order to link learning and build on previous knowledge. When planning, teachers should refer to the progression document and to the ASE planning matrices (see google drive) to ensure teaching is progressive throughout school.

Teachers should be mindful that when planning investigations for their topics they should include the different types of scientific enquiry so that all types have been covered by the end of the academic year. These types of scientific enquiry include:

- observing over time;
- pattern seeking;
- identifying, classifying and grouping;
- comparative and fair testing (controlled investigations);
- researching using secondary sources.

Working Scientifically

Working Scientifically skills are embedded into lessons to ensure these skills are being developed throughout the children's school career and new vocabulary and challenging concepts are introduced through direct teaching. This is developed through the years, in-keeping with the topics. When using equipment, teachers demonstrate how to use scientific equipment, and the various working scientifically skills in order to embed scientific understanding. Teacher can use the TAPS assessment materials from PSST to ensure that all skills are covered throughout the year. Teachers find opportunities to develop children's understanding of their surroundings by accessing outdoor learning.

Vocabulary

Time is taken to identify and teach the specialist vocabulary associated with each topic. They are referred to as they appear in lesson and displayed in the classroom creating a vocabulary rich environment.

Knowledge Organisers

Children should be provided with a knowledge organiser about the topic they are learning about in their science books. This should be discussed with the children at the beginning of the topic and referred to throughout the topic. These could also be displayed in the classroom.

Early Years Foundation Stage

Play underpins the delivery of all the EYFS. In playing, children behave in different ways: sometimes within their play, they may describe and discuss what they are doing and sometimes they may be more reflective and quiet as they play. Within a secure and challenging environment with effective support, children can explore, develop and experiment as they play to help them make sense of the world. The EYFS strand 'Understanding the World' leads directly to scientific elements of the curriculum and leads to more formalised Science learning in KS1 and then KS2.

Cross curricular Links to Science

Science can be linked to other areas of the curriculum that contribute in making learning memorable. Below are some examples:

English:

- Presenting their ideas on what they have done and how to improve their investigations.
- Speaking and listening as children listen and follow instructions and give feedback to their peers.
- Learning of key vocabulary.
- Writing explanations and non-chronological reports.

Maths:

- Recording time using stopwatches.
- Using equipment to measure results of investigations e.g. rulers, thermometers.
- Presenting data using bar charts and line graphs etc.

Geography:

- Looking at the effects of global warming/habitat loss on living things and their habitats.
- The water cycle.
- Rock formation.

Computing:

- Children can use ICT to support science teaching e.g. using apps to capture data.
- Making animations or videos to explain what they have found out.

Contributions to Spiritual, Moral, Social and Cultural development

- Pupils learn about themselves and the variation amongst individuals. They learn about health and hygiene and begin to learn about life cycles.
- Science provides opportunities to develop informed attitudes to many topical issues. By doing so, children can begin to develop mature, responsible opinions and values.
- In science, opportunities should be taken to discuss aspects of environmental awareness with the aim of developing responsible attitudes to waste disposal, resource depletion, wildlife conservation etc.
- Pupils also have the opportunity to investigate living things and a respect for all organisms should be taught.

IMPACT

Each unit of science is mapped against the progression documents, planning matrices and EYFS framework to ensure that learners develop detailed knowledge and skills across the science curriculum.

Monitoring and assessment

Teachers assess children's abilities in science by using the EYFS framework and summative assessments at the end of each unit. These are used to evaluate individual needs and to help with future planning. Formative assessment opportunities will arise each lesson as the teacher observes and discusses ideas with children. At the end of each term, teachers assess and record attainment for science using Target Tracker.

The subject leader is responsible for monitoring the standards of children's skills and the quality of teaching in line with the school's monitoring cycle. The subject leader will:

- Encourage and support staff in the implementation of the curriculum and school approaches to Science teaching
- Co-ordinate assessment procedures and record keeping to ensure progression and development throughout the school
- Monitor the teaching and learning of Science throughout the school
- Organise and review all science resources, ensuring they are readily available and maintained.
- Support staff by encouraging the sharing of ideas and organising in-service training as appropriate

Science education may be monitored and evaluated through:

- Lesson observations
- Examples of teachers planning
- Evidence in books
- Staff surveys
- Pupil voice
- Annual subject review

HEALTH AND SAFETY

The health and safety of our children is always the first area we think about when planning any lesson. It is assumed that pupil behaviour is properly managed, hand-washing facilities are available and pupils have the opportunity to discuss any hazards.

Before carrying out an investigation teachers must think carefully about the potential risks associated with the activity. Pupils understand the risks and are given clear instructions about appropriate procedures for dealing with hazards

Equipment and Resources

There is a wide range of resources available to the school which will be maintained and monitored by the Science Co-ordinator. The resources are a collective responsibility for the whole school, and pupils are encouraged to treat resources carefully and safely. If any resources are damaged, staff need to inform the subject leader. The school grounds and surrounding areas offer a great resource for staff and pupils.

Covid-19 Guidance (CLEAPPS):

Practical activities are most often carried out in groups. How much equipment you have available is the major factor which will determine group size in most practical lessons. Try to minimise group sizes, bearing in mind that this might not always be possible. Remember that learning does not need to be compromised in an attempt to maintain 'in-bubble' distancing. Instead do what you can with what you have.

Consider, Organising the children so that each member of a group doesn't need to touch the same piece of equipment repeatedly; try assigning one child to assemble the equipment, one to take readings, another to record etc (these roles can be swapped during the next lesson).

When placing equipment back inside the science cupboard please ensure you clearly label the date you placed it back so we can ensure it has been quarantined for at least 72 hours.

Additional risk assessment factors to consider:

- Avoid any activities where there is a high risk of transmission of the virus, for example, activities that involve blowing e.g. blowing across bottles for sound activities or blowing straws must not take place.
- . If you are in a high-risk category don't do an activity where you know you are likely to have to break your social distance with your children.
- Gather together any equipment before the lesson. Check it has been cleaned or quarantined for 72 hrs. At the end of the lesson, an adult must carry out any cleaning of equipment or move the equipment to an area to be quarantined.

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