SCIENCE POLICY

RATIONALE

At Hedgewood School we aim to provide a broad and balanced curriculum that meets the needs of all pupils. We want each pupil to achieve their full educational potential and make progress in their learning. We believe that this can impact positively on pupil behaviour, help keep pupils safe, contribute to their spiritual, moral, social and cultural development and help raise achievement.

Science teaches an understanding of the world around us. Through learning experiences in science, pupils learn systematic inquiry, analysis of problems and formation of ideas. Their testing and modification are encouraged through whole class group or individual investigations and project work, designed to arouse the pupils' natural curiosity of the world around them.

Science motivates pupils to discover more about the physical world. This, in turn, enables them to recognize the importance of sustainable development for the future of all life. Learning experiences that pupils receive are presented in a practical and relevant context to accommodate every pupil's individual learning needs.

This policy needs to be read in line with other school polices particularly; Whole School Curriculum; Teaching and Learning; Planning, Teaching & Assessment Policy.

AIMS AND OBJECTIVES

The Science Curriculum is designed to give pupils experience of all aspects of Science through as many different means as possible, depending on each pupils' ability to access subject content and individuals learning preferences. All pupils will be given opportunities to experience a wide range of Science activities with access to the resources, ideas and questions Science brings to our lives. All pupils will be involved in the development of all Science skills at their own level, including Scientific Enquiry, Life processes (Humans), Life processes (Plants), and Life processes (Animals), Physical Processes and Materials.

The Curriculum focuses on four key areas linked to Science, which are; Plants; Animals including Humans; Everyday materials, and Seasonal change. This is to ensure our pupils have a solid foundation of scientific understanding and enquiry.

The emphasis is on development of investigational, experimentation and creative skills using a variety of visual, interactive and physical resources.

The aims are to:

- Enable all pupils to develop an awareness of and interest in, themselves, their immediate environment, knowledge and understanding of the world.
- Encourage the pupils to join in practical activities that link to ideas.
- Foster curiosity and develop an enquiring and analytical mind.
- Widen experiences and develop all senses to explore and investigate.
- Develop an understanding of cause and effect.

The skills that teaching Science are looking to build and develop include;

- Investigation – observing, measuring, predicting, hypothesising, experimenting, communicating, interpreting, explaining and evaluating.
- Use of scientific language, recording and technique.
- Use of ICT in investigating and recording.
- Effective communicators of scientific ideas, facts and data.

ORGANISATION OF THE CURRICULUM

Science is incorporated throughout our two year overview and is built around 4 core areas: Plants; Animals including humans; Everyday materials and Seasonal change. This is to ensure our pupils have a solid foundation of scientific understanding and enquiry. These four core strands go from EYFS to Year 6 with additional mini topics introduced in response to pupils' developmental levels and interests.

Planning for Science is taken from Special Needs (STRATA) | AstraZeneca Science Teaching Trust. This is used as a starting point from which objectives can be drawn and coverage checked. The Science curriculum should show coverage of the full range of Science areas for each pupil across the year.

Science planning is covered over three levels; long, medium and short term.

- Long term planning is currently in the format of a year by year range of scientific areas, which cover the four main areas of Science.
- Medium term planning contains differentiated objectives for each pupil and the learning they will experience to work towards these objectives.
- Short term planning will be present during times of observation and scrutiny, noting whether the plans fit with the medium term plans and individual pupil targets.

PLANNING, TEACHING, ASSESSMENT AND RECORD KEEPING

If pupils are to have full access to the Science curriculum and progress and achieve to the best of their abilities, careful planning and thoughtful, imaginative teaching are essential. Due to the nature of our school we have adopted the statutory inclusion statement on providing effective learning opportunities for all pupils as well as providing a more inclusive curriculum which:

a) sets suitable learning challenges
b) responds to pupils' diverse learning needs

c) overcomes potential barriers to learning and assessment for individuals and groups of pupils.

Due to the complex learning needs of our pupils it is necessary to use the lower level topic headings and ideas and then extend the objectives according to our assessment system (Bsquared). This enables us to meet the objectives for the individual levels and learning needs of each pupil in the class.

Science can be cross-curricular; when appropriate it is incorporated into topics and themes. Science is also taught as a dedicated lesson. Pupils use a range of resources such as maps, statistics/data, photographs, plans and diagrams. ICT is also used in Science lessons, to support learning.

Whenever possible, pupils are involved in 'fieldwork' activities within the immediate school environment. Recognising pupils' different scientific skill and understanding levels. We provide tailored learning opportunities for each pupil by matching challenge to their ability. When planning learning teachers take into account each pupil's learning targets as set out in their Individual Learning Plan (ILP).

Formative teacher assessment is integral to teaching and ongoing throughout each lesson. Assessments (often through pupil observation) are recorded on the weekly short term planning sheets for each pupil. They inform the next steps for a pupil's learning and are reflected in the pupil's individualised planning. Assessment of pupils' achievement in Science is also gathered from teaching assistants and parental response. Information about each pupil's learning is entered into their individual computerised BSQ record. Using an analysis module, pupil progress can then be analysed (over a term, over a year). This tracking of targets together with review and update of each Learning Journey (with levelled work examples both from within the dedicated Science lesson and from broader topic lessons) provides a rich overview of each pupil's progress and attainment.

Pupil engagement and attitudes to learning are evaluated through teacher observation, self-evaluation opportunities from pupils where possible, which are part of each lesson. Immediate feedback is sought through verbal or visual means. Pupil voice is captured in their contribution to pupil Learning Journeys as well as through the Annual Review process.

Pupil's work may be presented:

- pictorially
- verbally/signing/gesture
- through video
- in writing
- through computer generated/assisted communication (in print)
- with formal notation
- through models
- through demonstration (this may be as a video)

Achievement may be recorded and celebrated in;

- Learning Journeys
- curriculum subject files
- parent/teacher consultations
- Achievement assembly.

CROSS CURRICULAR LINKS

At Hedgewood School, we want pupils to be able to apply their skills and understanding in a range of contexts. For this reason our science schemes of work will be linked with other subjects when there are relevant links. In addition, pupils will be given opportunities to develop their scientific understanding when using ICT. Teachers are provided with a bank of useful ICT links as well as other resources.

Science offers a stimulating context for the development of pupils' English and Maths skills.

Opportunities for cross curricular links include:

English and Maths Links:
Science has very strong links with English and Maths and they are subjects which share key skills, core concepts, principles and understanding. There are many ways in which you can enrich a Science lesson through using the key concepts of English and Maths i.e. weight, measure, volume, discussion and debate, presentations etc. Vocabulary will be introduced at each individual child's level of language acquisition. Children will be encouraged to use a range of graphs and diagrams to support their ability to record their findings in line with the statistics element of the maths national curriculum.

Design Technology
Pupils will learn about nutrition and healthy food choices and the relationship between diet and physical activity and the importance of both. A range of teaching approaches are used within these subjects.

Food stuffs are often used for the demonstration of concepts and to make the content of lessons relevant and engaging to pupils e.g. understanding fractions in Maths, money management, drawing up tables to record surveys related to food, physical and activities, reversible and irreversible changes in Science.

PHSCE and SMSC
We encourage all pupils to take an active part in the life of their school and its neighbourhood. Science can provide opportunities for pupils to gain the knowledge, skills and understanding they need to lead confident, healthy and independent lives and to become informed, active and responsible citizens.
Through Science, pupils learn:

- That people and other living things have needs and that they have a responsibility to meet them.
- What might improve or harm their local, natural and built up environments and some of the ways people look after these resources.
- How to make simple choices that improve their health: including healthy diet and exercise.
- That medicine is helpful but can also be harmful if not used properly.
- To identify and respect the differences and similarities between people.

FEEDBACK and REPORTING

Discussion about each pupil's achievement and progress is done orally with the pupil during the lesson, with next steps to develop learning further clearly identified. Significant achievements are acknowledged, for example, by display on the class wall, showing to the Head teacher or other teachers as well as through 'Pat on the Back' assemblies and certificates.

Parents are kept informed of achievement and progress through certificates, photos or copies of work being sent home; notes made in the Link Book; parent /teacher meetings; Individual Learning Programmes reviews; Annual Review Reports together with updated objectives.

RESOURCES

The Science Learning Manager is responsible for monitoring and replenishing stock, following up on feedback from year groups through Science stock request forms and subject evaluation forms. Teachers are responsible for the organisation and storage of these resources, in their classrooms.

HEALTH AND SAFETY

It is important that teachers plan work that is suited to the scientific area they are focusing on and local opportunities. Teachers may wish to consider the extent to which first-hand experience is available to their class in the light of the following questions:

- What safety aspects are involved in the visit?
- Has a risk assessment been carried out that complies with the school's policy for such visits?
- Has a preliminary visit been done prior to assess the potential hazards and challenges?
- What other resources are available locally? Could a visit be made or is a visitor coming into school more appropriate?
- Are there sufficient adults available to supervise pupils' on this visit?

Pupils must always be taught procedures for using equipment and materials safely. This has to precede pupils being given access to any particular item of equipment. When purchasing materials and tools, health and safety will be the foremost consideration, with risk assessments being carried out for all materials being used.

It is each teacher's responsibility to check that tools and resources used are in good condition and fit for purpose. Teachers must teach pupils to recognise hazards in a range of products, activities and environments and to take action to control the risks to themselves and others.

PROMOTING FUNDAMENTAL BRITISH VALUES

We promote the fundamental British values of democracy, the rule of law, individual liberty and mutual respect and tolerance of those with different faiths and beliefs. These beliefs and values are developed through Science by working scientifically, engaging in fair testing, following rules for the safety, speaking and listening to others.

MONITORING

The Science Learning Manager is responsible for monitoring the standard of the pupils' work and the quality of teaching. He/She is also responsible for supporting colleagues in their teaching, for researching current developments in the subject, and for providing a strategic lead for science across the school.

The Science Learning Manager will collate and update an assessment folder showing examples of pupils' leveled work to support teacher assessment and moderation. Ideas and example plans for units of work together with a file containing details of the whole school Science subject audit will also be updated regularly. The Folders are kept in the Curriculum/Assessment office.

Evidence for subject monitoring will be gathered by:

- observing pupils at work individually and in small groups
- questioning, talking and listening to pupils.
- scrutinising pupils' Learning Journeys, and also doing this with individual pupils to explore their learning experiences
- joint observations involving the Learning Manager with a member of the Senior Management Team.

Selected examples of pupils' Science work are available to view in the subject moderation folder.

GOVERNOR INVOLVEMENT

Each Learning Manager has an associated Governor. Their involvement ensures that as 'critical friends' they have the opportunity to ask pertinent questions to evaluate, strategically, the effectiveness of the learning manager's work. There are opportunities to feedback to the Governors through governing body meetings.