Westgate Primary School
Science Policy

Rationale

Science challenges children to take the natural curiosity they have for their surroundings and to use this to help them make sense of the world they inhabit. It encourages them to develop skills and to explore their ideas and make discoveries for themselves; where possible through investigation and first-hand experience. It is hoped that a high-quality science education at primary level will set the foundations for understanding the world through the specific disciplines of chemistry, physics and biology as they move through to secondary school. It is hoped that by doing this, children will be able to answer scientific questions about the world around them and be equipped to understand the uses and implications of scientific knowledge to make the world a better place and be able to contribute towards the reduction of climate change..

Aims and Objectives

Our aim at Westgate is to develop the following attributes within our children:

- A natural curiosity about their surroundings and the way that the world works.
- A developed knowledge of scientific facts free from misconception.
- The skill to ask questions, explore their ideas and make discoveries for themselves.
- A desire to extend and challenge their own knowledge through scientific enquiry.
- A development of the skills of scientific enquiry: questioning, prediction and hypothesis, fair testing, recording, interpretation /drawing conclusions and evaluation.
- An understanding that furthering scientific knowledge comes through careful investigation and observation.
- A desire to see Science as a tool to help improve the world with particular emphasis on environmental issues

These aims are intended for all pupils at Westgate Primary School. How they are implemented will be dependent on the age and ability of the pupils.

Time Allocation

When planning our Science teaching we adhere to the following time allocations. Depending on the topic, science lessons may be organised into blocked sections.

Key stage 1: 54 hours across the year **Key stage 2:** 60 hours across the year

Curriculum Content

The National Curriculum has been addressed by adopting the PLAN Science Educational Consultancy lesson plan resources. Not only do these resources address the National Curriculum units

recommended for each Year Group, the plans organise the teaching like our Knowledge Organisers used in other curriculum areas; key vocabulary is identified, existing knowledge and previous learning is identified and common misconceptions are highlighted. Retrieval practice is used at the beginning of a unit to establish a strong link to previous learning.

To tackle the Working Scientifically part of the National Curriculum, we use the TAPS resources which are provided by the Primary Science Teaching Trust. These allow us to specifically address the elements of Working Scientifically which may not always be tackled in a heavily knowledge-based topic. As part of this, children are taught how to write specific parts of the scientific enquiry process; this may include such aspects as planning an experiment, analysing results or reaching a conclusion.

Our whole-school curriculum has three broad learning themes running through them. Some of these themes- in particular our Climate Change Awareness theme – are heavily Science based. Where this is not the case, Science is planned as a standalone unit; though other cross-curricular links are made if they are appropriate.

Each topic unit is planned to build upon prior learning. We ensure that there are opportunities for the children to develop their scientific knowledge and conceptual understanding; develop their understanding of the nature, process and methods of Science and that they are equipped with the scientific knowledge required to understand the uses and implications of Science today and in the future. By following the scheme of work we are confident in the progression that has been built in to help progress children's Science ability as they work through the primary school.

Each teacher is responsible for the delivery of the medium term plans for their Science topic. At Foundation Stage we teach Science as an integral part of the topic work covered during the year. As both the Reception class and the Nursery are part of the Foundation Stage, we relate the scientific aspects of the children's work to the objectives set out in the Early Learning Goals which underpin the curriculum planning for children aged 3-5. Science makes a significant contribution to the aim in the Early Learning Goal and Early Years Foundation Stage Profile of developing children's **Understanding of the World**.

Inclusion and Equal Opportunities

We teach Science to all children, whatever their ability. We set high expectations and provide opportunities for all pupils to achieve, taking account of pupils with SEN or disabilities; pupils from all social, cultural and linguistic backgrounds and more able pupils.

- We recognise that there are children of widely different scientific abilities in all classes and we ensure that we provide suitable learning opportunities for all children by matching the challenge of the task to the ability of the child. We achieve this in a variety of ways:
- Setting common tasks which are open-ended and can have a variety of responses.
- Setting tasks of increasing difficulty to challenge and extend pupils. Providing resources which are free from discrimination and stereotyping and are of different complexity, matched to the ability of the child.
- Using teaching assistants to support the work of individual children and groups while promoting participation and independence.

Learning and Teaching

We use a variety of teaching and learning techniques in Science lessons. Our principal aim is to develop children's knowledge, skills, and understanding. We organise Science lessons that offer children opportunities to learn in different ways. These include:

- Teacher demonstration
- Collaborative work (group or paired)
- Independent work
- Use of ICT resources (computer, internet, modelling data, tablet, camera)
- Fieldwork and educational visits
- Experiential investigation and problem solving
- Research and explorative work

- Practical, oral and written work
- Asking and answering scientific questions

Key Skills

The key skills promoted in Science are:

- **Communication-** Speak effectively for different audiences, listen, understand and respond appropriately to the ideas of others and participate in group discussions.
- **Application of number-** Processing data, solve increasingly complex problems and explain the reasoning used.
- **Information Technology-** Using ICT sources and tools to research, analyse, interpret, evaluate and present information.
- **Working with others-** Contribution to small group work or whole class, ability to work as a team and the development of the social skills of co-operation and mutual understanding.
- **Improving own learning performance-** Understanding purpose for learning, reflect on the processes of learning, assess progress, identify problems and plan ways to improve learning.
- **Problem solving-** Identifying the problem, planning ways to solve a problem, monitoring progress and reviewing solutions to a problem.

Thinking skills

The following thinking skills complement the key skills and are embedded in the Science curriculum.

- **Information processing skills-** Locating, collecting, sorting, classifying, sequencing, comparing, contrasting and analysing information.
- **Reasoning skills-** Give reasons for opinions, draw inferences, make deductions, use precise scientific language to explain thinking and make judgements and decisions informed by reasons or evidence.
- **Enquiry skills-** Asking relevant questions, pose and define problems, plan what to do and how to research, predict outcomes, anticipate consequences, test conclusions and improve ideas.
- **Creative thinking skills-** Generating and extending ideas, suggesting hypotheses, applying imagination, looking for alternative innovative outcomes.
- **Evaluation skills-** Judging the value of what they have read, developing criteria for judging the value of their own and others work and ideas, confidence in their judgements.

Assessment/ Recording/ Reporting

Foundation Stage

Assessment is continuous in the EYFS. A record is made and evidence is added to the child's individual learning profile to contribute to summative assessment judgements in Understanding of the World.

At the end of the EYFS, parents receive information as to whether their child is assessed as emerging, expected or exceeding against the Early Learning Goal for Understanding of the World.

Key stage 1 and key stage 2

Assessment is an on-going process brought about by:

- observation of children working
- discussion with children – before, during and after working, including assessing what the children know at the beginning of a topic
- looking at and marking of children's work
- book looks- Science subject leader
- specific assessment tasks planned by the teacher: these normally take the form of teacher designed quizzes at the end of a topic.

Recording

- Summative assessment records, based on end of unit tests, are recorded at the end of each test. At the end of each year, this information is used to assess children against the expected standard for their year group, and to rank the class in terms of attainment.

Reporting

- Children's annual school report indicates their attainment, effort and progress in Science.
- At the end of key stage 1 and 2 a child's attainment is reported in terms of whether or not they have met or not met the expected standard in Science.
- A summary of standards in Science is presented to governors each year as part of an annual whole school data presentation.

Resources

We have a range of practical and other resources to support planning, teaching and learning in all of the units in the Science scheme of work. These are kept in a central place for KS2 and KS1 in the resources room. The library contains a good supply of Science topic books and this is supplemented each term with project loan resources from the School Library Service.

The role of the Science subject leader is to:

- lead the teaching of Science within the school, through the implementation of a yearly action plan, informed by their monitoring and evaluation of the teaching of Science through school
- be involved in the induction of new staff
- to monitor the implementation of the policy and scheme of work
- ensure continuity and progression of the teaching and learning of Science across the key stages and the school
- make changes to the policy and scheme of work as necessary
- order and maintain resources, managing a budget where allocated
- make staff aware of changes/ thinking in Science
- support staff who are less confident with Science
- provide staff training and development where necessary
- provide an example of good Science practice.
- liaise/ collaborate with Science subject leaders in the Family of Schools as appropriate, in order to share learning and examples of good practice
- support staff in the further development of assessment of Science

Monitoring and review

Monitoring is carried out by the subject leader for Science and by the senior leadership team, in the following ways:

- Informal discussion with staff and pupils
- Monitoring of the implementation of the Science Scheme of Work
- Looking at children's saved computing files
- Classroom observation and Book Looks

Information gathered through monitoring activities is used to inform subject leader action planning, and the School Improvement Plan, as appropriate.

This policy was agreed in May 2023, and is subject to review every three years.

Signed: **(On behalf of the governing body)**

Signed: **(Head teacher)**

Date: