Science Policy

Date agreed by Governors	Summer 2022
Next Review	Autumn 2024

Linked Documents
National Curriculum 2014
Teaching and Learning Policy
Assessment Policy
Marking and Feedback Policy
Medium Term Plans for Science

The United Nations Convention on the Rights of the Child (UNCRC) articles which inform this policy are:

- Article 13: Children have the right to share freely with others what they learn, think and feel, by talking, drawing, writing or in any other way unless it harms other people.
- Article 28: Every child has the right to education. Discipline in schools must respect children's dignity and their rights.
- Article 29: Education must develop every child's personality, talents and abilities to the full. It must encourage the child's respect for human rights, as well as respect for their parents, their own and other cultures, and their environment.

School's Purpose: To prepare pupils for lifelong success

School's Vision: At Godwin Junior School we:

- Value everyone
- Instil a love of learning
- Seek and encourage talent
- Inspire resilient learners
- Open minds to develop responsible global citizens
- Nurture confident, articulate individuals

Intent:

Science lessons at Godwin Junior School aim to give all children a strong understanding of the world around them. Whilst being immersed in scientific vocabulary, pupils acquire specific skills, concepts and knowledge to help them to think scientifically, to gain an awareness of scientific processes and also an appreciation of the uses and implications of Science, today and in the future.

Scientific enquiry skills are embedded in each topic studied and these are developed throughout children's time at school. This model allows children to build upon their prior knowledge and increases their enthusiasm for the subject whilst embedding this procedural knowledge into the long-term memory. All children are supported to develop and use a range of skills including observations, planning and investigations.

In addition, our Learning Powers Approach emphasises the importance of children being curious and asking scientific questions about the world around them. It also encourages them to consider the choices available to them when planning and conducting investigations; thus inspiring them to become independent learners, exploring possible answers and articulating their ideas.

Science Principles:

Science teaching and learning is good when…

- Children are engaged and interested in what they are learning
- Children are enthused by practical activities
- Children have time to plan, investigate and explore
- Children make links between what they are learning and the 'real world'
- Children have access to plentiful, good quality resources
- Children are able to work collaboratively

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. Our whole school approach to the teaching and learning of science involves the following;

- The school has an agreed Visions and Principles document which was drawn up in consultation with the teaching staff and reflects our aims.
- Science is taught in accordance with the statutory requirements of the National Curriculum 2014 document.
- Where possible, integrated links are made with other subjects to offer a creative way to develop children's knowledge, skills and understanding while motivating them to learn through stimulating interconnected topics. This also provides the opportunity to reinforce scientific vocabulary.
- Lesson planning is in line with the Medium Term Plan (MTP) and, where possible, includes opportunities for practical learning which links the topic to real life applications and sets high expectations for all learners.
- Children have access to a Knowledge Organiser for each unit, providing them with key facts to support their learning – these are stuck in their books for easy reference.
- Prior learning is built upon via Knowledge Organisers and Retrieval Practice activities, which encourage children to make links to what they already know.

- Planning involves teachers creating engaging lessons and using high quality resources to aid the understanding of conceptual knowledge.
- Key questions are revisited through Retrieval Practice in subsequent lessons to ensure the understanding of key concepts is embedded.
- Lessons offer the opportunity for cross curricular links and use of skills developed in other areas of learning.
- Planning includes opportunities for all learners to access the science curriculum and make good progress by offering: alternative tasks where appropriate; open-ended tasks to provide for a wide range of responses; a variety of resources; adult support/peer support; challenges and extensions for the most able children to extend and develop their understanding through higher-order questioning and additional tasks which demand mastery.
- Children respond to teaching in a variety of ways: practical tasks, extended writing, presentation of data, completion of investigation frames, written conclusions, drama and diagrams. Books reflect this.
- Key learning is focused on a question for each lesson – the content of the lesson enables all children to be able to confidently answer this question either through practical or written responses.
- Children are encouraged to ask questions to further their understanding and work towards being able to plan and record investigations independently and draw their own detailed conclusions.
- Working Scientifically skills are outlined on the MTP for use in that specific unit – thus ensuring skills are developed and applied in a progressive manner.
- Topic-specific vocabulary is outlined on MTPs and teachers include and use that which is relevant to each lesson within a topic – adding it as part of the science display in class. Key vocabulary is included on the Knowledge Organiser for each unit.
- Teachers demonstrate how to work scientifically: using equipment correctly, setting up investigations and recording them using a variety of methods.
- Opportunities are sought to extend and enhance children's learning experiences beyond the classroom: outside learning, workshops, visits, virtual sessions and include the input of experts and professionals within that field. These are purposeful and complement and broaden the curriculum.
- Children's understanding of science in the real world is extended by provision of a half-termly STEAM (Science, Technology, Engineering, The Arts, Maths) newsletter and whole-school display which highlights one aspect within STEAM.
- Each science unit includes links to Significant Scientists linked to that area of science; where possible these include examples from a diverse range of backgrounds, to demonstrate that science is a career path open to all and helps to dispel the myth of a scientist being 'an old white man in a lab coat'.
- Regular events further the celebration of science. These include three annual Science Weeks with a focus on investigations, engineering and Superhero Scientists, allowing children to further explore what science really is and pique their curiosity.

Impact

The approach at Godwin Junior School encourages engaging, high-quality science education, that provides children with the foundations and knowledge for understanding the world.

Interaction with the local environment ensures that children learn through varied and first-hand experiences of the world around them. Learning outside the classroom and 'real world' and 'local area' opportunities are detailed within the MTPs and build links between school learning and real-world application of science. This thus ensures that children's concept of the purpose of science is developed and misconceptions of it being 'a subject learnt at school' are eradicated.

Through various workshops, educational visits and interactions with experts, children have the understanding that science has changed our lives and that it is vital to the world's future prosperity. They experience first-hand science in action, personal view points of the work involved, and can build links between this and what they know of scientists from our Significant Scientist work.

Children learn about the possibilities for careers in science through our Significant Scientist work as well as our STEAM newsletters and display, ensuring they have access to positive role models within the field of science. From this exposure to a range of different scientists from diverse backgrounds, all children feel they are scientists and capable of achieving.

Displays and work in books demonstrate the children's' ability to respond to the Learning Objective questions, showing that they have retained, understood and can explain concepts from their learning. Learning Objectives are linked directly to the statutory requirements of the National Curriculum. These are re-visited in weekly Retrieval Practice lesson starters, which provide the opportunity for children to recall prior learning and understand that they need this as building blocks for future learning.

Children at Godwin enjoy science, this results in motivated and inquisitive learners who are developing scientific understanding of the world around them, can link key concepts to 'real-world' applications, know what being a scientist means and are eager to find out more - applying the Learning Power of Curiosity.

Assessment

Children's progress is continually monitored throughout their time at Godwin and is used to inform future teaching and learning. Pupils are expected to know, apply and understand the skills and processes specified in the relevant programme of study as set out in Statutory Requirements of the National Curriculum. We also draw on the non-statutory requirements to extend our children and provide an appropriate level of challenge.

Assessment for Learning is continuous throughout the planning, teaching and learning cycle.

- Children receive effective feedback through teacher assessment, both orally and through written comments in line with our Marking ad Feedback Policy.
- Children are guided towards achievement of the main objective through the use of process-based 'success criteria', provided by and explained by the teacher. By the end of the lesson children should be able to use their learning to answer the key questions set as the Learning Objective.
- Retrieval Practice lesson starters provide teachers with a snapshot of information retained by children across a breadth of learning: current unit, previous unit and

learning further back, and can be used as a guide as to what key concepts will need to be revisited in subsequent Retrieval Practice sessions. It also highlights any misconceptions which teachers need to address.

- During lessons teachers assess by: observing children at work – individually, in pairs or groups; through questioning; talking and listening to children; considering input into activities; work in books; the ability to respond to the key question for the lesson; responses to detailed marking.
- At the end of each unit children independently complete a written assessment task.
- Teachers use what they know from both formative and summative assessment to make an overall judgement of the child's attainment in science for that particular unit and record this on the end of unit assessment sheet.

The Role of the Subject Leader

The Science Subject Leader is responsible for improving the standards of teaching and learning in science through:

- Providing a strategic lead and direction for science across the school.
- Ensuring the profile of science is maintained, and all teachers are working collectively towards the goals of science.
- Proactively researching developments in science teaching theory and practice which might impact on the subject, trialling potential changes and innovations and ensuring that the subject develops in an innovative and research-led direction.
- Seeking opportunities to undertake CPL and develop Personal Learning Networks
- Identifying strengths and areas for development across year groups and the school.
- Drafting and implementing an Action Plan to address areas for development.
- Evaluating the impact of their own actions and adjusting future plans accordingly.
- Taking the lead in policy development.
- Identifying and sharing best practice through INSET and by offering 1:1 support for those who may need assistance with planning.
- Purchasing and organising resources.
- Establishing links with outside agencies to further develop science teaching and learning
- Considering enrichment opportunities, for example: Science Week, educational visits and special projects.

To ensure learning and teaching in science is of a consistently high-quality throughout the school, the Subject Leader also evaluates the extent to which children are supported to make good progress through:

- Monitoring planning and work in books to ensure teaching includes all statutory requirements as outlined on MTP, and opportunities to work scientifically.
- The quality of planning, teaching and feedback to pupils.
- The quality of the learning environment.
- Providing summary reports which evaluate strengths and weaknesses and indicate areas for further improvement.
- Reporting to the governors and the science link-governor regarding the provision of the curriculum and progress in science teaching and learning

Resources

Physical resources are stored in the Science Resource cupboard in clearly labelled boxes for each unit. Each year group has their own set of resources to support their science teaching and learning across the year. Godwin Junior School provides sufficient, high-quality resources to enable all children to actively participate in learning.

Teachers are responsible for informing the Science Subject Leader when additional/specific resources are needed, when there are breakages and when consumables are running low.

Teachers are responsible for ensuring that resources are maintained and handled appropriately/safely when in use.

Teachers are responsible for ensuring all resources are returned to the appropriate boxes and returned to the appropriate shelf within the science cupboard.

The Science Subject Leader will audit the resources annually and update and replenish these when needed.

Online Resources: The Subject Leader shares resources with teachers during INSET sessions or via email. A selection of resources are saved to the Science Shared Drive in relevant year group / unit folders. Others can be found by exploring recommended websites.

Teachers planning units are responsible for checking to see what online resources are there to support teaching and learning. Teachers should inform and share any suitable online resources they find which will enhance learning.