Griffin Primary School

Science Curriculum

Griffin Primary School Science

At Griffin Primary School we believe a high-quality science education provides the foundations for understanding the world, by promoting experiences of exploring and investigating scientific phenomena in a range of contexts leading to a development of natural curiosity. Children will be encouraged to build their knowledge and understanding through asking questions, taking risks, experimenting, reflecting, making and learning from mistakes; whereby they acquire and apply core skills equipping them for an ever-changing diverse world. We have worked with Developing Experts resources to create a bespoke science learning journey for our pupils. This is regularly reviewed to support gap filling for many of our pupils who are new to the school.

Whole-school definition of science

Science is a way to understand our world by carefully thinking about it and testing our 'guesses' with observations and experiments.

School Curriculum Learning Journey

	Autumn1	Autumn2	Spring1	Spring2	Summer1	Summer2
Nursery	Seasons	Everyday Materials	Looking After Ourselves	Forces	Plants and Animals	
Reception	Seasons	Everyday Materials	Looking After Ourselves	Forces	Plants and Animals	
Year 1	Animals Including Humans	Earth Science- Seasonal Changes	Everyday Materials	Everyday Materials	Plants	Animals Including Humans
Year 2	Uses of Everyday Materials	Plants	Animals Including Humans Growth	Living Things and their Life Cycles	Living Things and their Habitats	Living things and their habitats- Habitats around the world
Year 3	Plants and Animals	Plants and Animals	Rocks and Fossils	Light	Light	Forces and Magnets
Year 4	Plants and Animals		Electricity	Sound	Solids, Liquids and Gases	Animals Including Humans
Year 5	Forces	Earth and Space	Plants and Animals	Properties and Changes of Materials	Properties and Changes of Materials	Properties and Changes of Materials
Year 6	Animals Including Humans	Light	Electricity	Animals Including Humans	Evolution and Adaptation	Living Things and their Habitats

Navigating through the Curriculum Progression Document

- Where new learning is based on **prior** learning, the learning journey starts with a revision session from previous block(s)'s learning. **(Recall)**
- Each overview includes learning points/objectives that need to be covered.
- The lesson-by-lesson knowledge is crucial to ensure that pupils continue to know and remember more as they move through the school.
- New vocabulary to be taught is given, along with previously taught vocabulary.
- **Misconceptions** have been identified for each area of learning- teachers need to ensure that they refer to these during their teaching cycle.
- Practical sessions are explained in medium term planning.
- A minimum of one inquiry is undertaken per area of learning, though more can be undertaken if a teacher sees it as necessary to respond to the needs of their class. Completion of the enquiries should be undertaken in reference to the linked 'working scientifically' learning points/objectives.
- Additional scientific enquirey is included in the learning journey to support the development of scientific enquiry.

Working scientifically: specifies the understanding of the nature, processes and methods of science for each year group and should be taught continuously encouraging pupils to use features of scientific enquiry to answer relevant scientific questions. These types of scientific enquiry should include: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources. Pupils should seek answers to questions through collecting, analysing and presenting data.

Vocabulary: Griffin Primary School's learning community is made up of families from all around the world and as such we put a particular focus on the acquisition of technical vocabulary.
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. Pupils should be encouraged to use this during lessons and refer back to retrieval lessons.

Common Misconceptions:
At Griffin Primary School, teachers have worked together to identify those common misconceptions in the big ideas in science, ones that are held by both children and adults. We have listed a number of them so that staff can clearly ensure that they include teaching around these in their teaching.

Domains of Knowledge
Learning is a change to long-term memory, and **everything in long-term memory is Knowledge.** We have categorised the different types of Knowledge within our Science progression document into these two: substantive and disciplinary. We use them here to recognise these two important aspects of science in which pupils need to build their understanding throughout their time at school.

This knowledge is purposely detailed and supports learning across a unit. ***Substantive knowledge*** is included in the long term overview, however further aims for learning in lessons are listed within medium term planning. It is the ***substantive knowledge*** that will be used to assess how pupils know and remember more as they move through the school.

- **Substantive knowledge:** Refers to the established knowledge produced by science, for example, the parts of a flower or the names of planets in our solar system. This is referred to as,'scientific knowledge' and 'conceptual understanding' in the national curriculum. Think of this as knowledge at your fingertips…things that you know.

- **Scientific Disciplinary knowledge:** Refers to what pupils learn about how to establish and refine scientific knowledge, for example by carrying out practical procedures. By identifying and sequencing this knowledge, it is possible to plan in the curriculum for how pupils will get better at working scientifically throughout their time at school.

Special Educational Needs and Disabilities - Adaptation

The Science curriculum plays a significant role for all pupils. Careful task design is used in making the key aspects of Science lessons clearer and more accessible for pupils with SEND. The Science curriculum is ambitious for all pupils, including children with SEND. However, every pupil is different and what works for each pupil will vary. Our Science curriculum is introduced in 'manageable' chunks. The size of these chunks might be different between different groups of pupils depending on their needs. Nevertheless, these chunks are coherently sequenced to enable all pupils to build on prior knowledge. This also reduces extraneous cognitive load as much as possible, as these 'chunks' are isolated key information and knowledge for these pupils to be able to attach new knowledge onto prior knowledge. We therefore ensure SEND pupils, like all pupils, receive instructions that match their needs. At times, it might be appropriate to have a personalised curriculum in place for a SEND pupil, however, this is based on the child's needs and remains ambitious for the child.

Adaptation (Work with our SENCO and staff to add some age specific ideas here)

Work should be adapted so all children can access the learning being delivered. NOT different learning.

Some children will require additional support outside the classroom to work on EHCP targets and close gaps.
Pre-teaching of specific areas including concept and vocabulary delivered by class teacher / TA. This is also a key strategy for pupils new to English.
Parents are invited to support pre-teaching with specific resources such as vocabulary cards or stories sent home in advance.
These gaps are identified through assessment (in school during learning, formal end of unit assessments, intervention assessment and outside agency assessment). During target setting, parents and children are involved and parents are provided support advice and materials to work with their child at home.
Knowledge organisers are sent home to all children and children have these in their books and classroom displays / resources support this.

Regular meetings are available for parents to seek additional advice and support run by the SENDCo.
Work is adapted so all can succeed (for example ' Widget Online').
Adaptation is made to how children record their learning – use of scribe, technology to record and pictorial representation
Learning is delivered in small chunks and regularly revisited.
Questioning is targeted to assess understanding
Worked models are provided giving clear instruction
Independence is encouraged and celebrated.
Revisit, review and retrieve knowledge throughout learning to embed into long-term memory.

Progression Documents for Planning

The following documents, along with ongoing assessments, support our staff to crete MEDIUM TERM plans and teaching slides

Document	Purpose	Link
Organisation and Ofsted Discussion documentation	Leaders overview document and further detail about structure and design	Ofsted Pack for KS1, KS2 … Developing Expert's Appro…
Curriculum Map with National Curriculum Links	Learning Journey @Griffin Primary School	Griffin Science Curriculum Map.pdf
Curriculum Map linked to ELG	Nursery and EYFS Learning Journey	EYFS - Curriculum Map 2023 PDF.pdf
Knowledge Progression	Supporting planning- what do children need to Know	Developing Experts Progression of Knowledge Document.pdf
Scientific Enquiry Progression	How children explore their science learning.	Enquiry Approaches and Skills by lesson - KS1 & KS2.xlsx

		Enquiry Approaches and S…
Science Skills Progression	How children develop their scientific skills over time.	Developing Experts - Progression of Skills Document (1).pdf
Scientific Misconceptions	Support for staff to recognise common misconceptions by year group.	Year 1 - Misconceptions Document.pptx Year 2 - Misconceptions Document (1).pptx Year 3 - Misconceptions Document.pptx Year 4 - Misconceptions Document.pptx Year 5 - Misconceptions Document.pptx Year 6 - Misconceptions Document (1).pptx
Vocabulary	Support for subject specific language aquisition	Progression of Vocabularyii (2).pdf

EYFS continuous provision	Additional EYFS documentation for continuous provision	EYFS continuous
Deeper Thinking	Support to develop deep thinkers in science	KS1 Rocket Thinking Teacher Notes PDF.pdf KS1 Rocket Thinking Slides PDF.pdf KS2 Rocket Thinking Teacher Notes PDF.pdf KS2 Rocket Thinking Slides PDF.pdf
EYFS Planning and assessment documents	Medium term plans- teacher slides- assessment trackers- knowledge organisers- assessment materials	Nursery and Reception
Year 1 Planning and assessment documents	Medium term plans- teacher slides- assessment trackers- knowledge organisers- assessment materials	Year 1
Year 2 Planning and assessment documents	Medium term plans- teacher slides- assessment trackers-	Year 2

	knowledge organisers- assessment materials	
Year 3 Planning and assessment documents	Medium term plans- teacher slides- assessment trackers- knowledge organisers- assessment materials	Year 3
Year 4 Planning and assessment documents	Medium term plans- teacher slides- assessment trackers- knowledge organisers- assessment materials	Year 4
Year 5 Planning and assessment documents	Medium term plans- teacher slides- assessment trackers- knowledge organisers- assessment materials	Year 5
Year 6 Planning and assessment documents	Medium term plans- teacher slides- assessment trackers- knowledge organisers- assessment materials	Year 6