


SUBJECT ON A PAGE

Science


At Green Ridge, we understand that children are naturally curious and love to ask questions. We encourage this inquisitive nature throughout their time with us. We believe that science allows children to develop knowledge about the world around them and builds on concepts, skills and develops positive attitudes.




Intent – what we aim to do




To promote a love of science by developing the pupils' interest and enjoyment of science.




To build on the children's curiosity by exploring their questions and allowing them to explore the answers.




To develop scientific knowledge and conceptual understanding of biology, chemistry and physics.




To develop working scientifically skills.



To plan and conduct a range of investigations to help gain understanding of processes.



To be given the opportunity to develop awareness of the importance of science in everyday life.



To introduce pupils to the language and vocabulary of science.



Implementation – how do we achieve our aims?

White Rose Science teaches practical approaches to science and scientific language in a fun and logical way. At the same time, it provides teachers with all the guidance and supporting materials they need to plan and deliver a high-quality science education. The schemes of learning provides full coverage of the national curriculum for science and covers scientific questions around sustainability and the planet, and help children develop an empathy for the local and wider environment. Children have a dedicated science lesson as a minimum one afternoon a week, lasting between 1 hour 40 minutes and 2 hours, which is delivered by their class teacher. There will also be a dedicated Science week during the spring term where the teachers will teach a variety of science lessons or activities over the period.

Planning/ Sequencing



Lessons are sequenced using the 'White Rose Science' scheme. This scheme gives us a series of units to cover across a year. The way in which our lessons are sequenced also link to progression across the school. For example, Years 1, 2, 3 and 5 all complete some Science learning on Plants. Year 1 learn about planting and caring for the plants whilst referencing simple components of a plant. Year 2 learn about what plants need to survive and the plant life cycle from a seed to a mature plant. Year 3 revisit the parts of a plant but look deeper into their function. They also study how water is transported in plants and pollination/seed dispersal. Finally, in Year 5 children look at plant reproduction. Each unit will have a knowledge organiser provided with key knowledge, vocabulary and diagrams to support retrieval practise, vocabulary support and support for further learning at home.

Working Scientifically



Through experiment, practice and discussion, children gain core knowledge around:

- Scientific vocabulary
- 'Working scientifically' skills including systematic and careful observations and following practical scientific methods
- The gathering and interpretation of straightforward scientific evidence
- The use of everyday materials and scientific equipment to solve science problems
- Articulating scientific concepts and using five types of science enquiries



Implementation – (continued)

Structure of a lesson



Lessons are timetabled weekly. This is made up of one afternoon of Science allowing for lessons to be extended but also allowing for shorter knowledge-based lessons. Children will record their learning within a separate Science book, which will be marked (see marking policy). When suitable, next steps should be included within lessons, so children have opportunities to progress within their learning, based on teachers' marking.

STEM Club

We run a club each term that feeds into our science curriculum. Autumn Term we run a STEM club where children are exposed to many of topics they have learned about in class. They have the opportunity to practice their working scientifically skills and also explore areas of science that they are interested in.

Science in EYFS

The Early Learning Goal that links directly to building scientific knowledge is "The Natural World":

- Exploring the natural world around them, making observations and drawing pictures of animals and plants;
- Knowing some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class;
- Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.

These areas are developed through continuous provision throughout the year along with key vocabulary.



10 min – next steps/review



5 min – Explorify enquiry starter



15 min – Teaching input inc vocabulary



10 min – Guided practice



15 min – Independent application



5 min – Review of learning



Assessment



In each unit studied, teachers will use assessment for learning throughout the unit to ensure retrieval practise allows knowledge to move to the long-term memory. Next steps and review of learning each lesson will allow teachers to assess the children's subject knowledge during a unit. Verbal, written and practical work will be assessed throughout the unit and outcomes are recorded, onto O-Track and feed into the summative assessment completed at the end of each year giving an overall attainment grade. Data will be submitted at the end of Key Stage 1 and Key Stage 2 summarising where the child is working in regard to their science knowledge and understanding (Working Towards or Working At).

SMSC + British Values

We aim to promote British Values and SMSC through our Science curriculum:



- Where Science lessons directly link to the termly topic focus being taught, the 'big question' for each topic is designed to allow pupils to question, debate and therefore create discussion about the wider world they live in.
- Pupils explore issues such as the tolerance of those with different faiths and beliefs, including the creationism vs. evolution debate
- By looking at the achievements of famous British scientists, pupils develop an awareness of how they have influenced and shaped the country in which we live. This includes an appreciation of their work.
- We teach pupils to respect and value diversity through showing respect for different viewpoints and ideas as well as in the ability to work effectively together both individually and in groups.
- Enabling pupils to reflect on the wonder of natural world and develop and awareness of the ways that science and technology can affect society and the environment
- Ensure children consider their impact on the environment.



Implementation – (continued)



Sustainability

Our chosen science curriculum covers scientific questions around sustainability and the planet, and helps children develop an empathy for the local and wider environment. **The weeks where sustainability topics are taught will allow children to consolidate their knowledge of the world and take meaningful action to be part of the wider sustainability mission of our school. These explicit lessons will start in Year One however elements of sustainability are introduced in Nursery.**



Retrieval Practice

Through both the starters to each lesson and the progression design of our chosen Science curriculum, children will encounter scientific knowledge repeatedly throughout their time at primary school. Each time a unit is revisited teachers will employ retrieval practice strategies to support children in moving knowledge to the long-term.



Adaptive Teaching

As per our teaching and learning framework, adaptive teaching is used to ensure all learners can apply their knowledge, make progress and apply their knowledge to independent application. Adaptations in science might include :

- Pre-teaching
- Adapted resources
- Adapted expectation for recording
- Vocabulary prompts
- Breaking down knowledge further
- Providing further models/demonstrations



Impact – how will we know we achieved our aims?



Children have a love of science and can articulate their interests.



Children are curious and ask questions about the world around them.



Children have scientific knowledge and conceptual understanding of biology, chemistry and physics.



Children can apply working scientifically skills in practice.



Children can plan and conduct a range of investigations to help gain understanding of processes.



Children are aware of the importance of science in everyday life including links to health and safety.



Children can use the language and vocabulary of science.

Whole School Overview 2023-2024

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1	The Human Body	Materials	Animals	Caring for the planet	Plants	Growing and Cooking
Year 2	Animals' needs for survival	Materials	Plants	Living things and their habitats	Growing Up	Wildlife
Year 3	Skeletons	Nutrition Diet	Rocks	Light	Plants	Magnets/Force
Year 4	Group and classify living things	States of Matter	Sound	Electricity	Habitats	Digestive system
Year 5	Forces	Space	Properties of materials	Animals inc humans	Life Cycles	Reversible and irreversible changes
Year 6	Living things and their habitats	Electricity	Light	Human Body and Circulation	Adaptation	Fossils