

Subject on a page

SCIENCE

Our aims are that our science curriculum will...

At Grace Mary, At Grace Mary Primary School, we believe that a high-quality science education provides the foundations for understanding the world through biology, chemistry and physics.

INTENT



inspire children to want to know more about their understanding of the world through Scientific disciplines of Biology, Chemistry and Physics.



enable children to understand how science has already changed their lives and how it may shape their future.



provide children with scientific knowledge and processes but also offer the children examples of the uses of this science within the real world.



encourage children to recognise the power of rational explanation through exciting investigations, which build upon their natural curiosity.



encourage children to apply their mathematical knowledge to support their understanding of science, including: collecting, presenting, and analysing data.



enable children to explain scientific enquiry coherently and with a critical mind to someone else.

IMPLEMENTATION

-How do we achieve our aims?

Science has changed our lives and is vital to the world's future. All pupils are taught essential aspects of the knowledge, methods, processes and uses of science. Through building on foundational knowledge and concepts, children are encouraged to explain and develop a sense of excitement and curiosity about the world around them. They are encouraged to understand how science can be used to explain what is occurring, predict how things will behave and analyse causes. It aims to build knowledge about the natural world. This knowledge is open to question and revision as we develop new ideas and discover new evidence.

Progression model

To ensure that pupils develop a secure knowledge that they can build on, our science curriculum is planned and organised into a progression model that outlines the skills, knowledge and vocabulary to be taught in a sequential and coherent way.

We identify key concepts within our science curriculum that we consider are important for children to have a secure understanding of. These are clearly outlined on long term planning and children visit before revisiting these concepts regularly throughout their time at Grace Mary.

EYFS/KS1/KS2

Guidance is taken from development matters and the national curriculum which outlines the expected curriculum to be taught.

Big ideas

Biology: Structure and functions of living organism; genetics and evolution and interactions and interdependencies

Physics: Energy, motion and forces, waves, electricity and matter.

Chemistry: Particle nature of matter, chemical reactions, materials and the Earth and atmosphere

IMPLEMENTATION (continued)

Work booklets

Science from year 2 – year 6 is delivered through the use of work booklets. The benefits of work booklets are outlined below:

- All children are given the opportunity to read academically from an early age.
- The children acquire knowledge and skills in a sequential, progressive manner.
- Children are given regular opportunities to retrieve taught knowledge.
- Children learn fascinating knowledge that will hopefully inspire them to pursue the subject in the future.
- The booklets are challenging and all children are expected to achieve.

We believe that one of the most effective way to demonstrate scientific understanding is orally and through writing. Therefore, meaningful writing and oral opportunities are given for pupils to showcase their scientific vocabulary, knowledge and skills including writing essays.

Assessment

Formative

- Teachers frequently check pupils' understanding to identify 'gaps' and misconceptions.
- Ongoing daily assessment of key knowledge/skills outlined on planning through collecting feedback from the whole class and then giving subject specific feedback.
- Multiple choice quizzes that presents the scientific concept and misconceptions.
- Using results from children's feedback to adapt teaching- both in the moment and long term.

Summative

- Rec- Yr 6- half termly pupil book study sessions carried out by science leader and phase leader which focuses on substantive and disciplinary knowledge.
- Yr 1- Yr 6- end of unit quizzes which test substantive and disciplinary knowledge. Testing effect- recalling knowledge from previous units of work followed by immediate feedback.
- Yr 1- Yr 6- assessing pupils' ability to carry out specific practical procedures and investigations.
- Yr 2- Yr 6- essays (once per year) which can be used to add to teacher's knowledge of children's substantive and disciplinary knowledge.

IMPACT

-How will we know we have achieved our aims?



Children demonstrate a love of science work and an interest in further study and work in this field



Children are able to question and consider scientific ideas that already exist and reflect on this knowledge.



Children retain knowledge that is pertinent to Science with a real-life context.



Children work collaboratively and practically to investigate and experiment.



Children are able to demonstrate a high love of mathematical skills through their work, organising, recording and interpreting results.



Children are able to articulate their understanding of scientific concepts and be able to reason scientifically using rich language linked to science.