



Science Policy

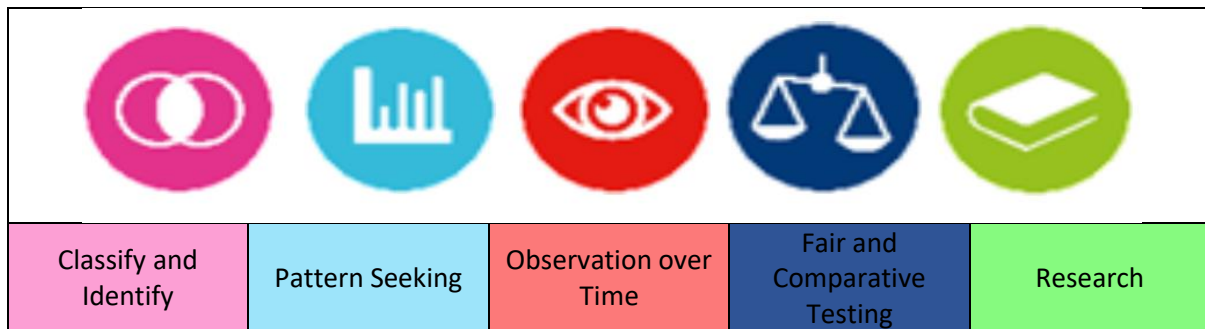
2024-2025

Intent

At Manor Farm Academy, we believe that the teaching of science is a cornerstone of the curriculum in order to nurture the natural curiosity and enquiry of pupils. Our science curriculum aims to cultivate a progressive, fun and engaging route into science with scientific enquiry at the heart of our curriculum. Through logical sequencing of learning, our pupils have a practical accessibility to working scientifically throughout the school to engage with and challenge stimulating questions. We strive to develop curious and ambitious pupils ready to explore and enter the world of science around them.

We will deliver a curriculum that:

- Equips pupils with the skills required to work scientifically and conduct a range of scientific inquiry types (see below).



- Builds on the previous year group's knowledge and skills.
- Imparts knowledge of vocabulary through scientific inquiry, teacher-talk and class discussions.
- Encourages pupils to make predictions, ask questions, analyse findings and make conclusions about subject matter.
- Celebrates and questions scientific knowledge of the past and present, exploring the scientists that have impacted our lives and our environment both locally and nationally.
- Engages children with the fascinating world of science!

Implementation

The Subject Leader for science will lead and monitor, evaluate, review and celebrate good practice. **Science will be taught for 2 hours a week in KS2 and 1 hour and 30 minutes in KS1.**

Each unit of learning in science will have:

- A pre-assessment at the beginning of the unit and a post-assessment completed at the end of the unit to show the end point of the unit: teachers use AfL to assess attainment in science.
- Lessons which use enquiry questions as a driving force - these will be displayed on the science working wall each week.
- Opportunities for previous learning to be recalled and recapped to ensure previous knowledge is retained.
- Medium-Term plans that address misconceptions; teachers have planned for 'common misconceptions' on their Medium-Term Planning so will have pre-empted these before teaching each lesson.
- Subject content that encourages pupils to be curious and ask questions about the wider world.
- Addressed all scientific enquiry types at least once, as well as a working-scientifically statement from the framework.
- Ensure all pupils are being ambitious by planning opportunities for pupils to grapple with their learning.
- Evidence of pupils celebrating the scientific discoveries scientists have made in the past or the present (Only KS2).
- Provide opportunities to consolidate their maths skills (already taught through White Rose Maths) when generating and recording findings.

In addition:

- The science subject leader will seek appropriate and relevant training and the opportunity to keep developing their own subject knowledge, skills and understanding, so they can support curriculum development and their colleagues throughout the school.
- All teaching staff have access to ReachOut Science CPD. This is completely optional and is a CPD opportunity for teachers who feel they need additional support with specific units within the science curriculum.
- Some units will have planned visitors or experiences to enhance the curriculum being delivered (these include: STEM ambassadors, workshops and external gardening club).
- Science week is celebrated each year and an at-home competition for science is ran three times a year.

Impact

At Manor Farm Academy, our pupils:

- Know what science is and why it is important to them and their future
- Understand that science is all around them and in everything they do.
- Enjoy science and show inquisitiveness and curiosity through questioning, prediction making, conducting inquiries and forming conclusions.
- Feel challenged and supported to reach their full potential in science.

In addition, we measure the impact of our curriculum through the following methods:

- Pre-assessments and Post-assessments
- Monitoring the use of Working Walls
- Marking & Feedback (in line with Marking Policy)
- Book Looks
- Learning walks
- Pupil Discussions

Lesson Planning & Delivery

Science planning and lesson sequencing follows the Primary Science Teaching Framework which ensures that subject knowledge is taught progressively and through appropriate enquiry. Teachers have the autonomy to adapt and amend planning to suit the needs of their children, with the main aim of ensuring that learning is ambitious for all.

We show success in science through:

Lesson Planning & Delivery:

- Science is taught for 1 and a half hours a week in KS1 and 2 hours a week in KS2. This consists of a **pre-assessment** and subsequent lessons linked to the three questions on the pre-assessment. A post-assessment will also be completed at the end of the unit to assess the pupil's final outcome.
- All pre-assessments inform future planning and necessary amendments are made to meet the needs of children to ensure learning is personalised e.g. where a child shows they are secure in an area of the pre-assessment, they will access more challenging work. This will be reflected within their learning journey found in their science books.
- Working walls should be used in every lesson to record the lesson's enquiry question, area focused on (e.g. the prediction or conclusion) and to have ensured the findings are on the wall by the end of the lesson.

Books:

- Presentation is to a high standard and displays children's pride in their learning.
- Each lesson will have a 'Learning Target' and 'Working Scientifically' objective in books with a scientific enquiry symbol.
- Learning journeys reflect the outcome of the pre-assessment, e.g. children who have shown a vast subject knowledge should have a different learning journey to the children who have little knowledge about the unit of work.
- Worksheets are only be stuck in when needed to enhance and/or support the learning taking place e.g. providing an additional scaffold, scientific diagrams and tables of findings (Y1 only).
- Where possible, children are encouraged to record work in their books.

Ideas for evidencing work in books (see appendix 1 for examples):

-Drawing scientific diagrams.

-Writing written investigation (with a lesson focus on an element of this, rather than the entire investigation).

-Recording of findings through diagrams, tables and printed photographs.

-Mind map about the scientist of the term (KS2 only).

-Pic collage evidence of practical enquiry when the pupils are not expected to record their findings in their science book.

Effective Feedback:

- Pre-assessments and subsequent lessons are marked in line with the Feedback Policy
- Live feedback and marking is used to move learning forward, to either address misconceptions or through scaffolded support or challenge.

Scaffold & Challenge:*Ideas for scaffold:*

- Pre-teaching and/or Point of Need Intervention
- Modelling (silent/verbal/written in books)
- Working Walls
- Highly scaffolded/worked examples (generic layers of support) that can be reduced. This could be scaffolded on the working wall for pupils to access.
- Spelling banks (found at the bank of their book and on separate key vocabulary lists provided by teachers).
- Guided group work evidenced by a GW.

Ideas for challenge:

- Reasoning with real life concepts (e.g. if you know how a circuit works, can you explain how a set of traffic lights work?)
- Investigate further enquires (e.g if you know that light travels in a straight line, how can you manipulate light to be able to see around the corner?)
- Written/verbal questioning
- Telling the children an answer and asking them what the question might be (e.g. The answer is red blood cell. What is the question? The questions could be, what carries oxygen and carbon dioxide? Which cell carries haemoglobin and how do you know?)

Challenges do not always needed to be printed in the form of a sticker/additional task (at the end of a lesson).

Appendix 1:

Wednesday 13th September 2023

Mammals

- Double loop
- 1 main artery
- Lungs
- Has peripheral tissues
- 2 Ventricles
- 2 Atria
- These all have hearts
- Blood
- Small branches vessels in every organs
- 7 hearts
- Main heart is the Dorsal Vessel.
- Worms don't have lungs because the oxygen goes through skin and the carbon dioxide out.
- Worms, someone to step on a worm it might die.
- There are 2 Auxiliary Invertebrate hearts cycle
- Worms, someone to step on a worm it might die.

Fish

- Single loop
- 1 Ventricle
- 1 Atrium
- Gas Exchange
- 2 time round
- The organs

Wednesday 13th September 2023

CIRCULATORY SYSTEM

The lungs provide blood with oxygen

The heart pumps oxygenated blood through blood vessels called arteries.

The heart pumps deoxygenated blood to the lungs.

Deoxygenated blood and nutrients travel back to the heart through blood vessels called veins.

When the blood travels upwards there are little valves doorways that stop the blood falling down.

The blood travels to all other body parts, delivering oxygen, water and nutrients.

It is an amazing system that travels through your entire body connecting all your body.

Lungs

The lungs have ^{capillary} **capillaries** which transfer to the heart. Depending on what you're doing (for example football or sleep) your lungs work harder or less harder. When you're playing a sport e.g. football your lungs work harder so that is how you feel it pumping fast with the heart so at when you are asleep the heart work as hard as the same person school child (7-11) breathes in 18-30 times a minute.

Left Atrium

Left Atrium receives blood full of oxygen from the lungs and gives it to the Left Ventricle.

Heart

The Heart pumps blood around your entire body this is the main part of your body if your heart isn't working normally nothing else will work. Heart also carries away unwanted carbon dioxide.

Aorta

The aorta helps the heart and is the main artery that carries blood away from the heart to other body parts. The blood leaves the heart through the aortic valve.

Capillaries

The capillaries exchange the blood into oxygen which is a gas exchange. Capillaries are vessels that connect the very small artery branches to very small capillaries.

Prediction: I predicted that the lemon will make the brightest bulb because it carries the most electrolytes. I believe the plates will not be bright due to the amount of electrons produced. I would say the line would be dim.

	Off	On	
Plate	didn't turn on		Zinc and bronze
Lemon	Did not light up		Bronze and Zinc
Time		Very dim, really bright	Bronze and zinc
Bar	did not light up		Zinc and bronze
Challenge:	It did not light up	very dim	Aluminium + Copper iron copper + nickel

Worksheet
 LT: To know that light appears to travel in a straight line.
 WS: To be able to plan different types of scientific enquiries to answer questions.

When the light source, which is from the torch, bounces and reflects off the mirror, it goes that light doesn't bend in straight lines. As the beam of light is travelling in the direction of the mirror, it will eventually hit the mirror and eyes, the mirror will not ever obscure the light. The light is dim if it is possible it won't reach the mirror which is the light source.

• The light source
 • The mirror
 • The block which the light source comes from

