Marton Primary Academy and Nursery

BRIGHT FUTURES EDUCATIONAL TRUST

Our Science Intent, Implementation and Impact

(This document should be read in conjunction with Our Science Curriculum).

Working Together to be the Best we can be.

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Intent

Curriculum Drivers:

- Vocabulary
- Basic skills
- Empathy
- Aspirations
- Challenge for all
- Respect

Science Capital:

- Understanding of the world
- Understanding the impact that science has on everyday activities
- Links to the community
- Gateway to STEM careers
- Informs choices for long term good health
- Develops written and verbal communication skills
- Develops understanding of human impact on local and global environment
- Scientific research instils resilience that our first attempt at something may not provide the desired outcome.
- Role models – pupils can learn from the lives of significant scientists.

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Principles:

At Marton Academy and Nursery we believe that all children are Scientists with innate wonder and curiosity. Throughout their learning journey we aim to nurture and develop this by providing opportunities for all children to:

- Ask, research and investigate scientific questions.
- Plan and carry out investigations using Working Scientifically skills taught in a systematic and progressive way from Nursery to Year 6.
- Use Big ideas (Diversity, Systems, Cycles, Health, Energy and Movement, Motion and Mechanisms) to organise and remember scientific vocabulary, concepts, and Working Scientifically skills.
- Use and develop Scientific vocabulary to enhance verbal and written explanations and to engage in Scientific discussions based on their scientific knowledge and understanding.
- Choose efficient and methodical ways to record information including written, mathematical, diagrams, ICT and models.
- To learn in class, outside and on location
- Appreciate the scope and potential of careers in STEM subjects, within the local community, the UK and globally through the development of Science Capital.

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Implementation

Our Science curriculum has been designed to help pupils form a Science schema within their long-term memories.

- **Breadth of study** – the topics that pupils study

- **Big ideas** – the 'big ideas' that pupils explore through every lesson.
- **Milestones** – the goals pupils should reach to show they are meeting the expectations of the curriculum.
- **Milestone indicators** – the small steps in knowledge that children will take in each year group to ensure they are meeting the expectations of the curriculum.
- **Knowledge categories** – the facets of each 'big idea' that help to strengthen the schema. This ensures that skills and knowledge are built on within and across year groups and enables all our pupils to learn how to 'think like a scientist.
- **Pop Tasks** –Each Milestone indicator has specific tasks which provide children with the opportunity to demonstrate the knowledge they have acquired. These tasks increase in complexity- basic, advancing and deep.
- **Blocks**: Each term will be organised into blocks of work to ensure balance in the coverage of Biology, Physics, Chemistry and Working Scientifically. Blocks will be built around Big ideas and knowledge categories.
- **Lessons**: Science is taught weekly: Lessons will have a key question generated from milestone indicators. Children's understanding is assessed through the completion of POP tasks. Each lesson will provide children with the opportunity to learn and practise working scientifically skills.

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The breadth of study including knowledge categories:

Working Scientifically	Biology	Chemistry	Physics
• Questioning • Observation • Testing ideas • Identifying classifying • Recording data • Interpreting data • Carry out the range of scientific enquiries: ○ observation over time ○ identifying and classifying ○ pattern seeking ○ research ○ comparative and fair testing	• Plants • Habitats • Animals and Humans • Living things • Evolution and Inheritance	• Materials • Rocks and Fossils • States of Matter • The Water Cycle	• Light • Sound • Electricity • Forces • Magnets • Earth and Space

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Big Ideas and Knowledge Categories:

Diversity	Health	Cycles	Systems	Motion Movement and Mechanisms	*Energy*
• Plants • Animals • Habitats • Materials • Evolution and Inheritance • Light sources • Sound sources • Electrical sources	• Animals and humans	• Seasons • Day and Night • Animal and Humans • Plants • Rocks and Fossils	• Plants – the water system • Earth and Space • Electricity • States of Matter	• Forces and Magnets • Mechanisms • Earth and Space	• Animals and Humans: Food Chains • Electricity • States of Matter

Milestones:

EYFS			Milestone 1 Year 1 and 2		Milestone 2 Year 3 and 4		Milestone 3 Year 5 and 6	
Nursery Adventurers	Nursery Explorers	Reception 1 and 2	Basic	Advancing Deep	Basic	Advancing Deep	Basic	Advancing Deep

In the **Marton suite** children are accessing Science through EYFS Development Matters – Understanding the world or Pebbles. Pebbles allow children to take smaller steps towards milestone indicators.

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Blocks

Term	Coverage	Number of lessons
Term 1,2,3	Biology Chemistry Physics Working Scientifically	3 3 3 2

Impact

Progress for individual children in assessed against the milestone indicators.
Early Years: Teachers continually assess progress towards the Early Learning Goals (Understanding the World) using Development Matters and Chris Quigley Curriculum Companion Early Years.
Year 1 to Year 6 teachers use TAPS tasks to carry out a scientific enquiry every term this provides staff with assessment data to complete the Science tracker (Dec, Apr, Jul). This data will inform teacher assessment at the end of KS1 and KS2. Working scientifically skills are also Teacher Assessed regularly through individual sets of statements (or Bubbles) which can be found at the front of Science books).