East Midlands Academy Trust

Science Curriculum Overview

Why Teach Science?

We believe that Science will allow pupils to make informed decisions and choices throughout their lives. By fostering and maintaining a curiosity throughout their education, our pupils will be able to:

- Understand how the world around them works
- Adapt to a life in a modern world
- Experience and share the cultural capital that Science provides
- Show resilience when solving problems
- Decipher fact from fiction by learning how to look for reliable sources of information.

Working Scientifically

Our curriculum details the scientific enquiry skills involved in the processes of science, including an understanding that questions are fundamental alongside the design of experiments; reasoning and arguing with scientific evidence and analysing and interpreting data.

- Observing and Measuring
- Asking Questions
- Recording Data
- Making Predictions
- Interpreting and Communicating Results
- Setting up Tests
- Evaluating

Key Vocabulary

'Rocket Words' are identified for each unit. These are displayed in a table so pupils and teachers can make connections and revisit vocabulary from previous years/units.

Science Rocket Words

	Year 1	Year 2	Year 3
Autumn 1	Animals including Humans (About Me)	Living Things and their Habitats	Rocks
	senses- sight, taste, touch, smell, hearing	habitat	metamorphic rock
	organs	desert	igneous rock
	exercise	living	sedimentary rock
	healthy	producer	extinct
	design	root vegetable	weathering
	baby	Food chain	acid rain
	grow	excrete	fossil
	bones	microhabitat	mineral
Autumn 2	Everyday Materials (Exploring)	Animals Including Humans (Growth)	Animals Including Humans (What Makes us)
	flight	birth	skeleton
	structure	growth	tendon
	transparent	reproduction	ligament
	opaque	death	cartilage
	translucent	life cycle	involuntary muscles
	flexible	generation	voluntary muscles
	rigid	child	contract and relax
	oil	adult	vertebrae
Spring 1	Everyday Materials (Uses)	Plants	Forces and Magnets
	magnet	germinate	lodestone
	metal	nutrient	horseshoe magnet

The 8 Big Ideas of the Science Curriculum

Curriculum maps detail the sequencing of substantive knowledge from the disciplines of biology, chemistry and physics to enable pupils to build schemata of important concepts over time through eight 'big ideas'

- Organisms
- Ecosystems
- Genes
- Waves
- Forces
- Electricity and Magnets
- Matter
- Earth

Each unit focuses on one or two of these big ideas. Knowledge relating to each of the big ideas is mapped progressively so that connections can be made to previous learning.

	Reception	Year 1	Year 2	Year 3	Year 4
Ecosystems	Explore the natural world, making observations and drawing pictures of animals and plants. Know some	Identify and name a variety of plants and explore their basic structure. Identify, name and explore the growth and care of animals.	Recognise the importance of a healthy lifestyle. Understand and observe the life cycle of a plant. Understand and identify the habitats of animals and their	Describe the life cycle of a plant, name key organs and what they do.	Construct and interpret food chains and recognise how environments can change, sometimes posing a danger to living things.

Assessment

Pupils' learning of the curriculum is assessed on an ongoing basis to monitor progress and identify the next steps in learning. In lessons, teachers check pupils can understand and remember the key knowledge and working scientifically skills built into the curriculum. Multiple choice quizzes are built into each unit to assess recall and understanding, these act as a diagnostic tool to inform teaching and provide pupils with feedback on their learning.

Scientific Enquiry Approaches used to develop Disciplinary Knowledge

- **Pattern Seeking** – Identify patterns and look for relationships in enquiries where variables are difficult to control.
- **Observation Over Time** – Observing changes that occur over a period of time ranging from minutes to months.
- **Research** – Using secondary sources of information to answer scientific questions.
- **Identifying, Grouping and Classifying** – Making observations to name, sort and organise items.
- **Comparative/Fair Testing** – Changing one variable to see its effect on another, whilst keeping all others the same
- **Problem Solving** – Applying prior scientific knowledge to find answers to problems.

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Substantive Curriculum Content Overview

Forces	*Electricity and Magnets*	*Waves*	*Earth*	*Matter*	*Organisms*	*Ecosystems*	*Genes*

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Autumn 1	Animals, Including Humans (About Me) *Organisms*	Living Things and Their Habitats *Organisms* / *Ecosystems*	Rocks *Earth*	States of Matter *Matter*	Properties of Materials *Matter*	Light *Waves*
Autumn 2	Exploring Everyday Materials 1 *Matter*	Animals, Including Humans 1 (Growth) *Genes*	Animals, Including Humans *Organisms*	Animals, Including Humans *Organisms* / *Ecosystems*	Changes of Materials *Matter*	Looking after the Environment *Ecosystems*
Spring 1	Exploring Everyday Materials 2 *Matter*	Plants *Ecosystems*	Forces and Magnets *Electricity and Magnets* / *Forces*	Living Things and Their Habitats (Conservation) *Ecosystems*	Animals, Including Humans *Genes* / *Organisms*	Electricity *Electricity and Magnets*
Spring 2	Plants *Ecosystems*	Uses of Everyday Materials *Matter*	Plants *Ecosystems*	Living Things and Their Habitats *Genes*	Living Things and their habitats *Ecosystems*	Animals, Including Humans *Organisms*
Summer 1	Animals, Including Humans (All About Animals) *Organisms* / *Ecosystems*	Animals, Including Humans 2 (Life Cycles) *Organisms*	Light *Waves*	Sound *Waves*	Earth and Space *Earth*	Evolution and Inheritance *Genes*
Summer 2	Seasonal Changes Earth	Living Things and Their Habitats (Habitats around the World) Ecosystems	Scientific Enquiry Waves / Matter	Electricity Electricity and Magnets	Forces Forces	Living Things and Their habitats *Genes*