'Learning, Growing, Achieving – Together'

Curriculum statement for the teaching and learning of Science

Intent

At Kingmoor Junior School, our science provision aims to immerse our children in the knowledge and skills they require to be scientists of the future. It is our intention to encourage and enable children to ask questions about the world around them, as well as to develop the skills and confidence necessary in how to go about finding answers to these questions. The science curriculum at Kingmoor is designed so that knowledge and skills are progressive and transferrable to other curriculum areas. Cross-curricular links are continually developed, with a particular focus on reading books (fiction, poetry and biographies of inspiring scientists). We believe that science can unlock ambition and drive in children to learn and succeed, and we aim to inspire in children a belief that science is for everyone.

Underpinned by

The teaching of skills	The application of skills	Vocabulary
Kingmoor pupils will be taught how to use a range of science equipment and technology confidently and accurately. They will develop a range of working scientifically skills including questioning; making observations; planning and performing tests; recording and presenting results, and examining evidence to make and justify scientific conclusions. The skills the pupils learn are transferrable and will support their learning in other subjects, thereby deepening their understanding of the world around them.	Throughout their time at Kingmoor, pupils will be given regular opportunities to practice and apply their working scientifically skills. They will experience a range of different enquiry types: observing changes over time; grouping and classifying; noticing patterns; fair and comparative tests and researching of secondary sources. Cross-curricular links will allow skills to be transferrable and consolidated between curriculum subjects. They will also have opportunity to apply their growing knowledge of scientific vocabulary through practical, collaborative, presentation and written tasks.	Kingmoor pupils will understand and use a range of appropriate scientific vocabulary to discuss, communicate and justify their ideas. They will also understand the vocabulary relevant to the scientific method and associated with working scientifically.

Implementation

Curriculum Approach

Pupils engage with science weekly and are guided, supported and stretched through the science topics which build upon prior knowledge and working scientifically skills. The Kingmoor Schools' Tree of Learning maps out the science curriculum from EYFS to Year 6 and close collaboration with KNIS helps to ensure a smooth transition for science as pupils progress from one school to another.

Planning is carefully differentiated to enable SEND children to access the science curriculum whilst also enabling opportunities for pupils working at greater depth to broaden and apply their knowledge, skills and scientific vocabulary.

External Stimuli

Pupils are taught about how the world has influenced scientists throughout history, including Aristotle, Archimedes, Galileo, Sir Isaac Newton, Maria Sibylla Merian, Charles Linnaeus, Thomas Edison, Mary Anning, Charles Darwin, and Katherine Johnson, amongst others.

Where possible, teaching is made relevant to children's everyday experiences and pupils are encouraged to question the structure and behaviour of the physical and natural world around them.

External agencies visits / visitors:

- Year 3 Rocks: Celeld Rocks Geologist
- Year 4 Living things and their habitats: Finglandrigg Nature Reserve / River Eden
- Year 5 Earth and space: Glasgow Science Centre
- Year 6 Evolution and inheritance: Claire's Cool Creatures
- Tullie House exhibitions and workshops as and where relevant
- Access to Kingmoor Nature Reserve

SMSC

At the heart of science lessons are collaborative practical tasks that require respect and co-operation for shared decision making amongst pupils.

Through discussing past and present scientists and their discoveries, children gain an understanding of the role and impact science and innovation have in society. In addition, this enables children to learn about other times and cultures, and the imagination, creativity, self-belief and perseverance necessary for these inspiring scientists to succeed.

Some science topics require pupils to appreciate different viewpoints e.g. the theory of Evolution and creationism.

Children are also encouraged to develop the working scientifically skill of using evidence to support or refute their ideas and thus to offer reasoned points of view.

Some science topics lend themselves to the exploration of wider moral and social implications on the world e.g. the positive and negative impacts of humans on habitats and the environment.

Throughout KJS (Animals including humans topics) children learn about the importance of making the right choices with regards to a healthy lifestyle, including diet, exercise and drug safety.

In science, children are encouraged to ask questions and this can lead to discussions around "big" questions of a more philosophical and spiritual nature. E.g. How did life on Earth begin? Where did the first drop of water in the water cycle come from?

Resources

Pupils at Kingmoor have access to a wide variety of first class practical science resources including digital tools to support learning. Children are taught to name and use a range of scientific equipment correctly, so that they may select equipment appropriate to its purpose. Opportunities are given for children to practise using these pieces of equipment to develop competency and precision. As they progress through school, children are supported to use science resources with increasing independence, accuracy and critical judgement. Resources such as Concept Cartoons and Explorify are used throughout KJS to elicit dynamic scientific discussion and to encourage children to think like scientists.

Thoughtful Questioning

Questioning is a fundamental aspect of science; it is integral to all types of science enquiry and is developed through every science topic. Pupils often ask questions at the beginning of a science topic to focus their learning as they progress through the unit. In lessons, some questions may be closed, requiring a specific answer based on scientific knowledge. More often, questions are child-centred and open, allowing for i) a range of answers from children of all abilities and life experiences and ii) science investigations. Children are encouraged to understand that some questions may have more than one answer, which may be neither right nor wrong, and to consider what evidence is needed to support or refute an idea.

Sharing work

Pupils' science work is recorded in science books and is shared between pupils and staff. In class, children also share their learning in a variety of ways: discussion, presentations (including PowerPoint and word processing), drawings and posters, information booklets; dance and drama.

There are frequent opportunities to celebrate children's science work and show the process of their learning via display boards in school. Occasionally, science work is shown in assemblies alongside other curriculum subjects. Children's work is also responsibly shared online with parents using our social media platforms. Parents are further informed as to science learning in school through a termly science newsletter.

Local Context

Our science curriculum involves the local area and local people to support the learning of the National Curriculum. In Year 3, Dr Palipane was invited talk about bones in the human body and also use the local environment to learn about plants. Year 4 investigate living things and their habitats at Finglandrigg Nature Reserve. Where relevant, we visit local, short-term exhibitions as they arise to enhance learning of science topics e.g. Tullie House's 'Eye For Colour' exhibition to support learning about light in Year 6 and their 'Fantastic Fairground Factory' to support Year 5's learning about forces and simple machines. The whole school participated in a "Green Action Challenge" to survey a local area and suggest actions to improve local biodiversity and address climate change.

IMPACT

By the end of the key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the subject of science programme of study.

PUPIL VOICE	EVIDENCE IN KNOWLEDGE	EVIDENCE IN SKILLS	BREADTH AND DEPTH
Year 3: • "Science is learning and discovering." • "Science is to learn to test things, to have fun, to fail and succeed." • "I think science is investigating things and learning about the world." • "A scientist is me because we are all scientists." • "I like how fun it is and all the amazing experiments and the fun, scientific investigations." • "I like having a chance to ask questions." **Year 4:** • "Science is finding the answers to difficult questions." • "Science is experimenting to find an answer." • "I think science is about predicting, and observing and experimenting." • "I think science is everything." • "I like when we draw diagrams and test things." • "Science lessons are fun and creative." **Year 5:** • "Science is everywhere." • "I think science is the explanation for everything in the universe." • "Our futures lay in the hands of science." • "A scientist can be anyone who asks questions or tests theories." • "A scientist is me, because everyone is a scientist." • "I like science lessons because I always learn something new and because I find it very interesting." • "I like science because every lesson is different in a fun way." **Year 6:** • "I think Science is where you explore the world." • "Science is everything." • "Science is about questioning, testing, proving and answering." • "Science is classifying and experimenting and finding out new stuff and concluding it like in a graph." • "I like about science that I can ask anything about Earth, humans, plants etc."	Pupils understand how their science knowledge is relevant in the outside world and why it is important to learn about science. Pupils can demonstrate and apply their science knowledge. They are able to articulate both orally and in writing, clear explanations, reasoned opinions and researched information using acquired vocabulary from science lessons.	Within the science curriculum, there are opportunities for all children to demonstrate their working scientifically skills, orally and in writing as well as during more practical and investigative tasks. Pupils are able to apply their working scientifically skills to plan and perform different types of enquiry to answer a question. They are able to present their findings in a variety of ways e.g. results tables, scientific diagrams, graphs. Pupils can examine their findings and explain how and why they have reached their conclusions.	Much opportunity is given for children to develop a deeper understanding, level of skill and appreciation of science. Pupils have developed their scientific ideas to and beyond the expected standard by the end of a science topic. Challenges are available to extend scientific skills within the classroom. Some children can use their skills and knowledge in other curriculum areas and to make links to other topics. Through reflecting on the subject, children are able to self-identify what skills they would like to improve and develop. Visits and visitors create further opportunities to consolidate and enrich scientific understanding. A dedicated whole school Science Week is an ideal opportunity for science to have a high profile and excellence in science to be shared.