KINGMOOR NURSERY AND INFANT SCHOOL

SCIENCE POLICY

Children are natural scientists, instinctively exploring the world around them from a very early age. We capitalise on this natural curiosity and wonder to ignite their passion for science. The concepts that young children develop are based on first hand exploration, interacting with the physical environment. We involve children in a wide range of activities which are practical, relevant and satisfying, building on this natural curiosity. They are supported to consider ideas, observe their effects, develop new ideas and test them. As a core subject in the curriculum, science encompasses essential concepts, knowledge and skills that help other learning to take place effectively. It also encourages the sharing of ideas, information and responsibility within a group.

At Kingmoor, we are dedicated to raising both children's achievement and the whole school community's engagement in science and our aim is to inspire children to consider a future as a scientist, utilising STEM learning initiatives and programmes to do this. All children at Kingmoor will be prepared for life in a scientific world.

- Children will be given opportunities to develop their knowledge and understanding of specific ideas, processes and skills and make links to relate these to everyday experiences.
- Children will be encouraged to treat the living and non-living environment with respect and sensitivity. They will develop a concern for our environment and a sense of place, utilising our special context of being located next to Kingmoor Nature Reserve.
- Children will acquire a curious and questioning mind, with confident problem-solving thinking skills.
- Children will develop skills of observation and investigation through practical work.
- Children will develop core skills through their enjoyment of Science: they will collect, retrieve, present and communicate their findings to others in a variety of ways using scientific language.

INCLUSION

Our school aims to provide children with stimulating and challenging activities, which cater for the wide range of abilities throughout our school. All children will have access to the full science curriculum and make progress via the curriculum, regardless of ethnic origin, gender, class, aptitude or disability. Meeting the diverse and complex needs of each and every individual is embedded in everything that we do as a school and we take it as our responsibility to adapt provision to ensure it meets the needs of our learners. What is good provision for a child with SEND is good for all children, i.e. an abundance of activities that allow children to learn using principles of Quality First Teaching and by embedding our Learning Powers.

We are committed to removing any barriers to learning in science at Kingmoor by:

- Enhancing the learning environment for scientific investigation through "investigate" interactive tables/displays in each classroom, which reflect current learning in scientific skills and knowledge and allow children to practice these skills in their play. Each unit will have tools for scientific investigation available e.g. magnifying glasses. Assistive technologies are used where appropriate for each child.
- Ensuring science lessons are stimulating and meaningfully connected to children's real-life experiences, particularly by making use of the local environment, such as the Kingmoor Nature Reserve, to enhance their learning. Practical investigations are used as much as possible and resources are multi-sensory and of a high quality. Tasks are modelled and children know their targets and 'what a good one looks like' and are appropriately scaffolded to achieve their best. Teachers are always positive and encouraging.
- Teachers being aware that discussion is the most powerful tool of science assessment. Not only does it encourage higher order thinking, help to construct understanding, bring awareness of alternate viewpoints that exist in real world science, but it means children's scientific knowledge and understanding can be assessed with no barrier of literacy skills. Opportunities are planned for paired and collaborative work that is rich in discussion and reflection and this is captured in observations to support assessment. Teachers are aware of alternative methods for recording science work and plan for an array of cross-curricular assessment approaches. Assessments are planned to enable children to demonstrate what they can do and have learned.
- Teaching using metacognitive approaches so that children learn how they learn best and develop and range of tools to support them in approaching their science work independently and confidently.
- Adaptations are fully embedded. Scaffolding is withdrawn to facilitate independence when appropriate.

TEACHING AND LEARNING

Science is covered throughout the year, with the content of this learning outlined in Long Term Plans for each year group. Planning in science is led by the science lead but all teachers are involved in the process to ensure that the school delivers as a minimum full coverage of the current Key Stage 1 (KS1) National Curriculum and Early Years Foundation Stage Curriculum. At the start of each science topic, existing ideas are assessed and learning needs/interests identified with these used to generate learning questions that are explored throughout that half-term. Teachers provide activities that are enjoyable, imaginative and purposeful; they make clear links between science and other subjects. Discussion is a key tool in learning and structured prompts for this are used in science. Teachers offer ample opportunity for first hand practical investigation inside and outside of the classroom: careful planning targets a progression in working scientifically skills from nursery to Year 2, and children carry out investigations and experiments each half-term. Health and safety policies are followed as appropriate for each activity. We enrich the science curriculum at Kingmoor through after school clubs and a variety of visits or visitors.

EARLY YEARS

In Nursery and Reception, our Curriculum is designed using CUSP and Development Matters. Science-based learning is mostly encompassed within the Understanding the World (UTW) area of learning but other areas of learning also develop the working scientifically skills needed to become a skilled scientist, e.g. 'Speaking', 'Understanding' or using tools in 'Moving and handling'. Characteristics of effective learning are of central importance, as good scientists need to be confident to explore, think critically and be active learners etc. Science is taught weekly and enhanced indoor and outdoor provision are utilised to engage the children to talk about and explore the world around them: this focuses on places, objects, materials and living things (including growth and decay). Children foster an awareness of and concern for their immediate environment and have opportunities to experience habitats beyond the local area. Child-initiated exploration is supported and extended by adults and captured through observations for assessment.

KEY STAGE 1

In Key Stage One, Science is taught in weekly lessons over three half terms of the school year. We follow the National Curriculum and use the CUSP curriculum to support our planning and teaching in each of the following areas;

In Year 1 children study

- Seasonal changes and daily weather
- Introduce Plants – (trees)
- Animals, including humans
- Everyday materials
- Plants

In Year 2 children study

- Living things and their habitats
- Animals, including humans
- Uses of everyday materials
- Plants

The main focus of science teaching in KS1 is to enable pupils to experience and observe phenomena, looking more closely at the natural and humanly-constructed world around them. They are encouraged to be curious and ask their own questions about what they notice and what they want to investigate. They are helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions; the types of enquiry used are mapped for KS1 to ensure a broad approach to scientific questions. Children begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways. Most of the learning about science is done through the use of first-hand practical experiences, but there is also use of appropriate secondary sources for research. Teachers know it is important for pupils to read and spell scientific vocabulary at a level consistent with their reading and spelling knowledge at KS1 and in each concept a scientific vocabulary word bank is provided to use.

KNOWLEDGE NOTES AND ORGANISERS

At the beginning of each new topic, there is a knowledge organiser which details the key knowledge that children are expected to learn. For each key learning question, children have a knowledge note in their books. One knowledge note may cover one or more lessons. These knowledge notes contain the key knowledge and vocabulary children will need to support them in answering the question and acquiring key knowledge. Both knowledge organisers and notes are regularly used as part of retrieval practice and they support children with their understanding and recall of knowledge

SUBSTANTIVE KNOWLEDGE

This is the subject knowledge and explicit vocabulary used to learn about the content. Common misconceptions are explicitly revealed as non-examples and positioned against known and accurate content. In CUSP Science, an extensive and connected knowledge base is constructed so that pupils can use these foundations and integrate it with what they already know. Misconceptions are challenged carefully and in the context of the substantive and disciplinary knowledge. In CUSP Science, it is recommended that misconceptions are not introduced too early, as pupils need to construct a mental model in which to position that new knowledge.

DISCIPLINARY KNOWLEDGE – WORKING SCIENTIFICALLY

This is knowing how to collect, use, interpret, understand and evaluate the evidence from scientific processes. This is taught. It is not assumed that pupils will acquire these skills by luck or hope. Pupils construct understanding by applying substantive knowledge to questioning and planning, observing, performing a range of tests, accurately measuring, comparing through identifying and classifying, using observations and gathering data to help answer questions, explaining and reporting, predicting, concluding, improving, and seeking patterns.

ASSESSMENT

In KS1, children are assessed on their ability to Work Scientifically and on their knowledge of the particular learning indicator for the threshold concept. In Early Years, teachers use Development Matters and the EYFS profile objectives for UTW. Children's knowledge is captured through their own writing, use of technology and/or observations/scribing by adults. Other forms of evidencing learning include cross-curricular tools such as dance, drama, model-making and other art forms etc. Children are encouraged to evaluate their own and their peers learning, explaining the processes they have used and why. This ongoing formative assessment is used with Tapestry as a key tool to monitor pupil progress and moderation takes place regularly within the school to align judgements. Teachers make use of the focused assessment database provided by the Primary Science Teaching Trust to capture learning at the end of each half-term. Teachers summarise what children can do and identify next steps for science in termly reports/parents' evenings. At the end of reception year, teachers assess children's UTW against the profile objective with emerging, expected and exceeding marks. At the end of Year 2, teachers judge children's attainment against the KS1 curriculum to see if they have met expected levels of learning.

STAFF WELL BEING

As an employer we are committed to caring for staff emotional well-being and mental health. When you're caring for the emotional wellbeing of others, it easy to forget your own. But to fully support the pupils in your care, we know we need to make sure our own staff are cared for too. The high demands on teachers have been shown to result in stress among teachers. Therefore, addressing the wellbeing of teachers is a vital step to addressing the wellbeing of pupils because engaged, cared for teachers are better able to care for pupils. This policy has been written using guidance from *Ways to reduce workload in your school(s) Tips and case studies from school leaders, teachers and sector experts July 2018, updated March 2019 DFE*

REVIEW

This document is developed and reviewed by the Science Subject Leader in consultation with the staff of Kingmoor Nursery and Infant School.

Date of policy 27/4/2025