# Science

## Curriculum Intent, Implementation and Impact Statement

### *Intent*

*In line with the 2014 National Curriculum for Science, our aim is to provide a high-quality Science education which equips children to use scientific thinking and to understand the world. The curriculum for science aims to ensure that all pupils develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics.*
*Pupils will develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them.*
*Furthermore, they will be equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.*

*The objectives within each strand support the development of learning across the key stages, ensuring a solid grounding for future learning and beyond. Opportunities are sought throughout the science curriculum to support and promote the ethos of the school, living up to our motto of "Where Stars Shine", and meeting the Mission and Vision Statements through the Golden Threads.*

| ***Key Stage 1 National Curriculum Expectations*** | ***Key Stage 2 National Curriculum Expectations*** |
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| *Pupils should be taught to:*<br>*Working scientifically*<br>*During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:*<br>*asking simple questions and recognising that they can be answered in different ways*<br>*observing closely, using simple equipment*<br>*performing simple tests*<br>*identifying and classifying*<br>*using their observations and ideas to suggest answers to questions*<br>*gathering and recording data to help in answering questions* | *Pupils should be taught to:*<br>*Working scientifically:*<br>*During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:*<br>*asking relevant questions and using different types of scientific enquiries to answer them*<br>*setting up simple practical enquiries, comparative and fair tests*<br>*making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers*<br>*gathering, recording, classifying and presenting data in a variety of ways to help in answering questions*<br>*recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables*<br>*reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions*<br>*using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions*<br>*identifying differences, similarities or changes related to simple scientific ideas and processes*<br>*using straightforward scientific evidence to answer questions or to support their findings.* |

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| | *Notes and guidance (non-statutory)*<br><br>*Pupils in years 3 and 4 should be given a range of scientific experiences to enable them to raise their own questions about the world around them. They should start to make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions; recognise when a simple fair test is necessary and help to decide how to set it up; talk about criteria for grouping, sorting and classifying; and use simple keys. They should begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them. They should help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used. They should learn how to use new equipment, such as data loggers, appropriately. They should collect data from their own observations and measurements, using notes, simple tables and standard units, and help to make decisions about how to record and analyse this data.*<br><br>*With help, pupils should look for changes, patterns, similarities and differences in their data in order to draw simple conclusions and answer questions. With support, they should identify new questions arising from the data, making predictions for new values within or beyond the data they have collected, and finding ways of improving what they have already done. They should also recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations.*<br><br>*Pupils should use relevant scientific language to discuss their ideas and communicate their findings in ways that are appropriate for different audiences.*<br>*These opportunities for working scientifically should be provided across years 3 and 4 so that the expectations in the programme of study can be met by the end of year 4. Pupils are not expected to cover each aspect for every area of study.* |
| | *Upper key stage 2 programme of study*<br>*Working scientifically*<br>*During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:*<br><br>*planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary*<br>*taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate*<br>*recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs*<br>*using test results to make predictions to set up further comparative and fair tests*<br>*reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations*<br>*identifying scientific evidence that has been used to support or refute ideas or arguments* |

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| | *Notes and guidance (non-statutory)*<br><br>*Pupils in years 5 and 6 should use their science experiences to: explore ideas and raise different kinds of questions; select and plan the most appropriate type of scientific enquiry to use to answer scientific questions; recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why. They should use and develop keys and other information records to identify, classify and describe living things and materials, and identify patterns that might be found in the natural environment.*<br><br>*They should make their own decisions about what observations to make, what measurements to use and how long to make them for, and whether to repeat them; choose the most appropriate equipment to make measurements and explain how to use it accurately. They should decide how to record data from a choice of familiar approaches; look for different causal relationships in their data and identify evidence that refutes or supports their ideas. They should use their results to identify when further tests and observations might be needed; recognise which secondary sources will be most useful to research their ideas and begin to separate opinion from fact.*<br><br>*They should use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas and should talk about how scientific ideas have developed over time.*<br><br>*These opportunities for working scientifically should be provided across years 5 and 6 so that the expectations in the programme of study can be met by the end of year 6. Pupils are not expected to cover each aspect for every area of study.* |

## *Implementation*

*At King David School, science is mostly taught using a thematic curriculum approach with a natural world focus built into every unit. Teachers make appropriate use of published schemes, namely 'Switched on Science' (published by Rising Stars) as a planning and resource framework. Learning is further enhanced using resources, projects and ideas from STEM science. Units developed by the school staff for the teaching of thematic units also see opportunities for pupils to make wider links to the world using other subjects. Where possible, scientific learning is enhanced by using highly experiential learning including experiments, cooking, outdoor learning, local and national trips. An annual trip to the Science Fair is made not only to increase pupil enjoyment and pupil knowledge in science but also to ensure pupils can relate science to a visible means of employment.*
*Key skills are mapped across each topic and year group to ensure systematic progression.*

| *Year group* | *Topics* |
|---|---|
| *EYFS* | • *The Natural World* |
| *Year 1* | • *Plants and Animals Where We Live*<br>• *Who am I?*<br>• *Celebrations*<br>• *Polar Places*<br>• *On Safari*<br>• *Holiday* |

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| *Year 2* | • *Our Local Environment*<br>• *Materials Monster*<br>• *Healthy Me*<br>• *Little Masterchefs*<br>• *Young Gardeners*<br>• *Squash, Bend, Twist and Stretch* |
| *Year 3* | • *Food and our Bodies*<br>• *How Does Your Garden Grow?*<br>• *Forces and Magnets*<br>• *Light and Shadows*<br>• *Rocks and Fossils*<br>• *The Nappy Challenge* |
| *Year 4* | • *Living Things*<br>• *Looking at States*<br>• *The Big Build*<br>• *Teeth and Eating*<br>• *What's that Sound?*<br>• *Power it Up* |
| *Year 5* | • *Material World*<br>• *Amazing Changes*<br>• *Out of this World*<br>• *Let's Get Moving*<br>• *Growing Up and Growing Old*<br>• *Circle of Life* |
| *Year 6* | • *Classifying Living Things*<br>• *Light*<br>• *Electricity*<br>• *Healthy Bodies*<br>• *Evolution and Inheritance*<br>• *The Titanic* |

## *Impact*

*Our approach to the curriculum results in a fun, engaging, and high-quality science education. We are in the process of developing our monitoring across the subjects of the National Curriculum, moving towards measuring the impact of the curriculum through triangulation of outcomes: pupil voice, assessment and recording of achievement against the Key Skills, planning, monitoring of books, saved work and displays, lesson learning walks, discussions with teaching staff, pupils and parents. Pupils' achievement is recorded against the Key Skills and a summative grade given at the end of the academic year, which is shared with the parents in pupil reports. Comparisons are made between a cohort's progress in the subject over time and also between different cohorts' achievement against the Key Skills, and this is used to inform planning and the provision of resources. The Key Skills for science are available in a separate document.*