Misterton Primary and Nursery School

Science

2023-2024

1. Curriculum Statement

Intent

The 2014 national curriculum for science aims to ensure that all pupils:

- Develop **scientific knowledge and conceptual understanding** through the specific disciplines of biology, chemistry and physics;
- 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;
- Are equipped with the scientific skills required to understand the **uses and implications** of science, today and for the future. We understand that it is important for lessons to have a skills-based focus, and that the knowledge can be taught through this.

At Misterton Primary & Nursery school, our vision for science is to ignite pupils' curiosity and encourage them to confidently explore, discover and challenge the world around them. This in turn will enable them to develop a deeper understanding of the world we live in now and the world for the future generations.

Through our practical and enjoyable curriculum, we aim to inspire and excite our children and foster a thirst for knowledge and deeper investigation. We aim to create 'scientists for the future'.

In addition, the teaching of science will promote and develop transferable skills such as observation, communication and teamwork and allow children to **children?** embed their skills throughout a broad and balanced curriculum.

Implementation

Teachers create a positive attitude to science learning within their classrooms and reinforce an expectation that all pupils are capable of achieving high standards in science. Our whole school approach to the teaching and learning of science involves the following:

- Science will be taught in planned and arranged Science blocks by the class teacher, to have a project-based approach. This is a strategy to enable the achievement of a greater depth of knowledge.
- Teachers' planning will demonstrate problem solving opportunities that allow children to apply their knowledge, and find out answers for themselves. Children are encouraged to ask their own questions and be given opportunities to use their scientific skills and research to discover the answers. Planning involves teachers creating engaging lessons, often involving high-quality resources to aid understanding of conceptual knowledge. Teachers use precise questioning in class to test conceptual knowledge and skills, and assess pupils regularly to identify those children with gaps in learning, so that all pupils keep up.
- Teachers build upon the knowledge and skill development of the previous years. As the children's knowledge and understanding increases, and they become more proficient in selecting, using scientific equipment, collating and interpreting results, they become increasingly confident in their growing ability to come to conclusions based on real evidence.
- 'Working scientifically' skills are embedded into lessons wherever possible to ensure these skills are being developed throughout the children's school career and new

vocabulary and challenging concepts are introduced through direct teaching. This is developed through the years, in-keeping with the themes.

- Teachers demonstrate how to use scientific equipment, and the various 'working scientifically' skills in order to embed scientific understanding. Teachers find opportunities to develop children's understanding of their surroundings by accessing outdoor learning being taught in class.
- Regular events, such as science week or project days, such as Nature Day, allow all pupils to come off-timetable, to provide broader provision and the acquisition and application of knowledge and skills. These events can also involve families and the wider community.

Impact

The Misterton Primary & Nursery School's approach to science will in turn provide a fun, engaging, high-quality science education, that provides children with the foundations and knowledge for understanding the world. Our engagement with the local environment ensures that children learn through varied and first hand experiences of the world around them. Regular learning outside the classroom is embedded throughout the science curriculum. Through workshops, trips and interactions with experts and local charities, children have the understanding that science has changed our lives and that it is vital to the world's future prosperity. Children learn the possibilities for careers in science, as a result of our community links and connection with national agencies such as STEM association and learning from and working with professionals, thus ensuring that children have access to positive role models within the field of science from the immediate and wider local community. In doing this, all children feel they are scientists and capable of achieving.

2. Teaching and Learning

At Misterton Primary & Nursery School:

- Children are encouraged to ask their own questions and be given opportunities to use their scientific skills and research to discover the answers;
- Teachers ask a range of questions which enable all children to take part, listening carefully to answers and taking learning forward, using open and closed questions and allowing children time to think. These questions are used to assess pupils regularly to identify those who may need further support in meeting age related outcomes;
- Planning involves teachers creating engaging lessons, often involving high-quality resources to aid understanding of conceptual knowledge. Pupil voice is crucial here too – knowledge and curiosity begin and drive the learning forward.
- New vocabulary and challenging concepts are introduced through direct teaching. This is developed through years, in-keepings with the topics. Teachers will seek to correct any misconceptions or incorrectly used terminology.
- 'Working scientifically' skills are embedded into lessons to ensure these skills are being developed throughout the children's school career. The key knowledge for each topic and across each year group is mapped across the school and checked at the end of each science topic.

- Teachers demonstrate how to use scientific equipment, and the various 'working scientifically' skills in order to embed scientific understanding.
- Teachers find opportunities to develop children's understanding by accessing outdoor learning and outside visitors where possible.

3. Planning and Resources

Planning is a process in which all teachers are involved. All teachers should keep a copy of the termly and weekly planning in their files. In addition to this, each class will take part in a Ten Minute Science activity fortnightly, to provoke scientific discussion and engagement.

At Misterton Primary & Nursery school, we use the Chris Quigley Essentials to support the progression and coverage from one year group to another, as well at the transition between Key Stages.

Teachers will seek to take advantage of opportunities to make cross curricular links. They will plan for pupils to practice and apply skills, knowledge and understanding acquired through science lessons to other areas of the curriculum.

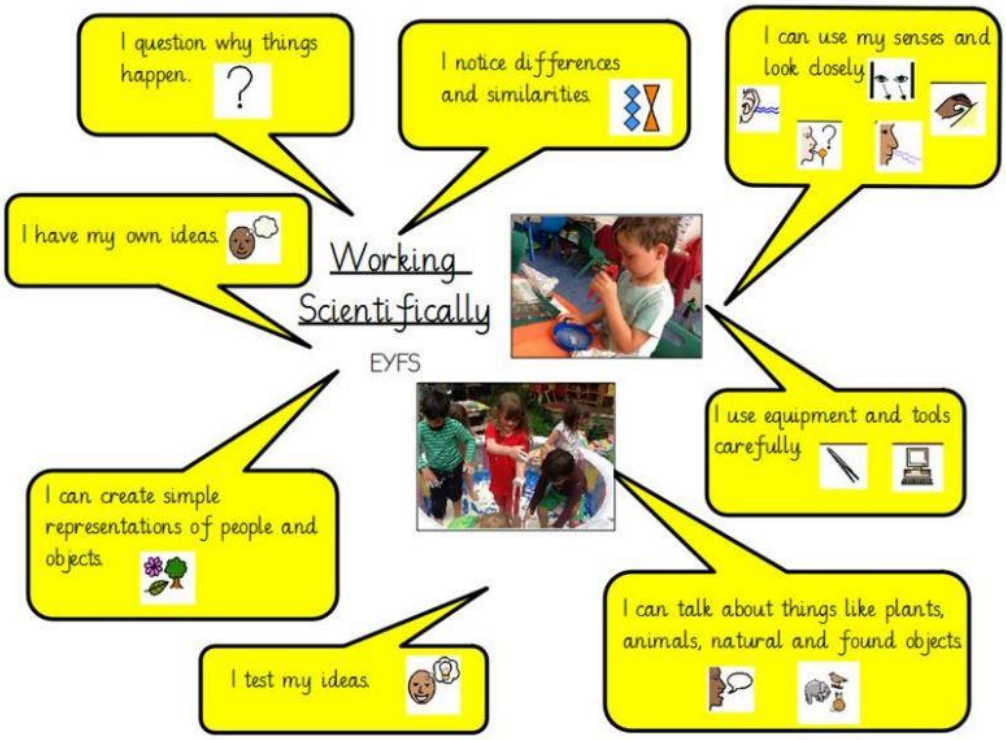
Resources are used to provide pupils with opportunities to develop skills and experience. Physical resources are located in the science cupboard upstairs in school. A wide range of resources are available and should be borrowed and returned with consideration.

Audits will be carried out on a yearly basis by the Subject Lead, to ensure that resources are in good, safe, working order. The subject Lead must be informed of any changes i.e. missing or damaged resources and/or when new or replacement resources are required.

4. Organisation

EYFS

The Foundation Stage deliver content through the 'Understanding of the World' strand of the EYFS curriculum. This involves guiding children to make sense of their physical world and their community through opportunities to explore, observe and find out about people, places, technology and the environment. They are assessed according to the Development Matters attainment targets.



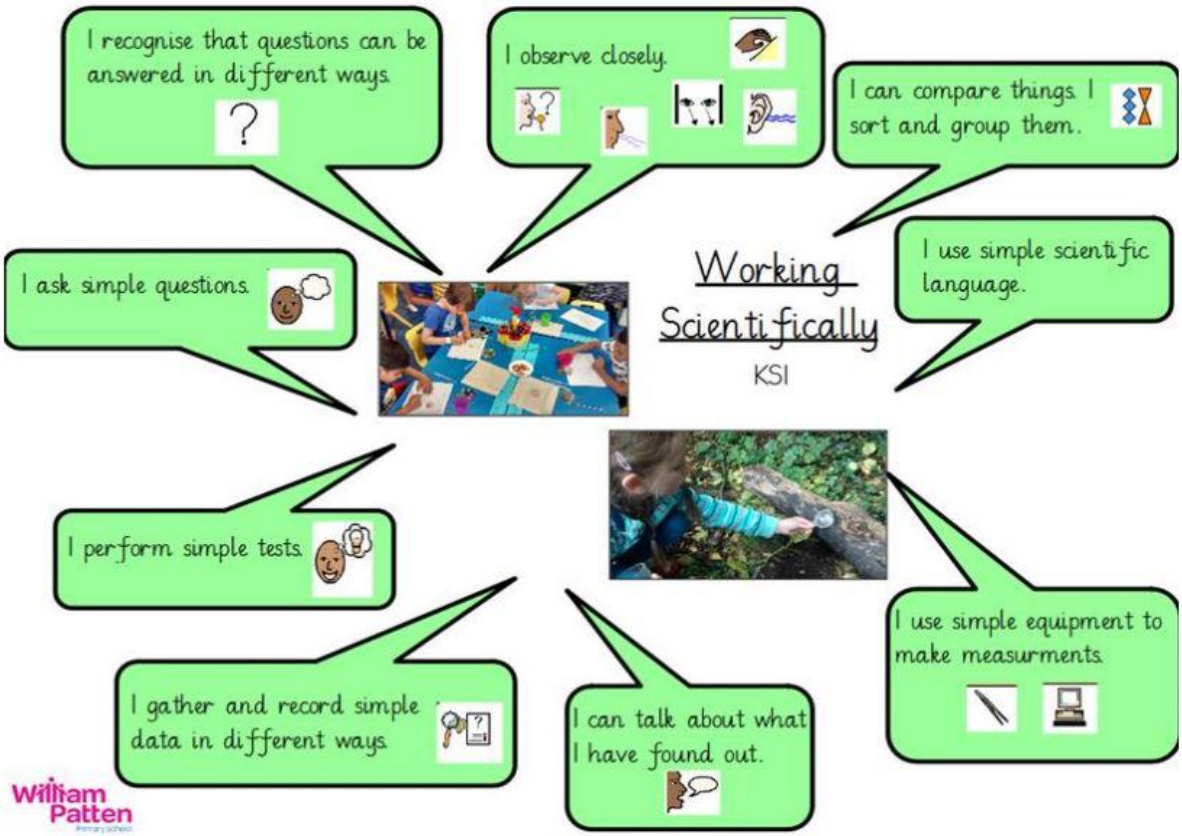
Key Stage One

The principal focus of science teaching in Key Stage One is to enable pupils to experience and observe phenomena, looking more closely at the natural and humanly-constructed world around them. They should be encouraged to be curious and ask questions about what they notice. They should be helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests, and finding things out using secondary sources of information. They should 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 should be done through the use of first-hand practical experiences, but there should also be some use of appropriate secondary sources, such as books, photographs and videos.

'Working scientifically' is described separately in the programme of study, but must **always** be taught through and clearly related to the teaching of substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content.

Pupils should read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at Key Stage One.

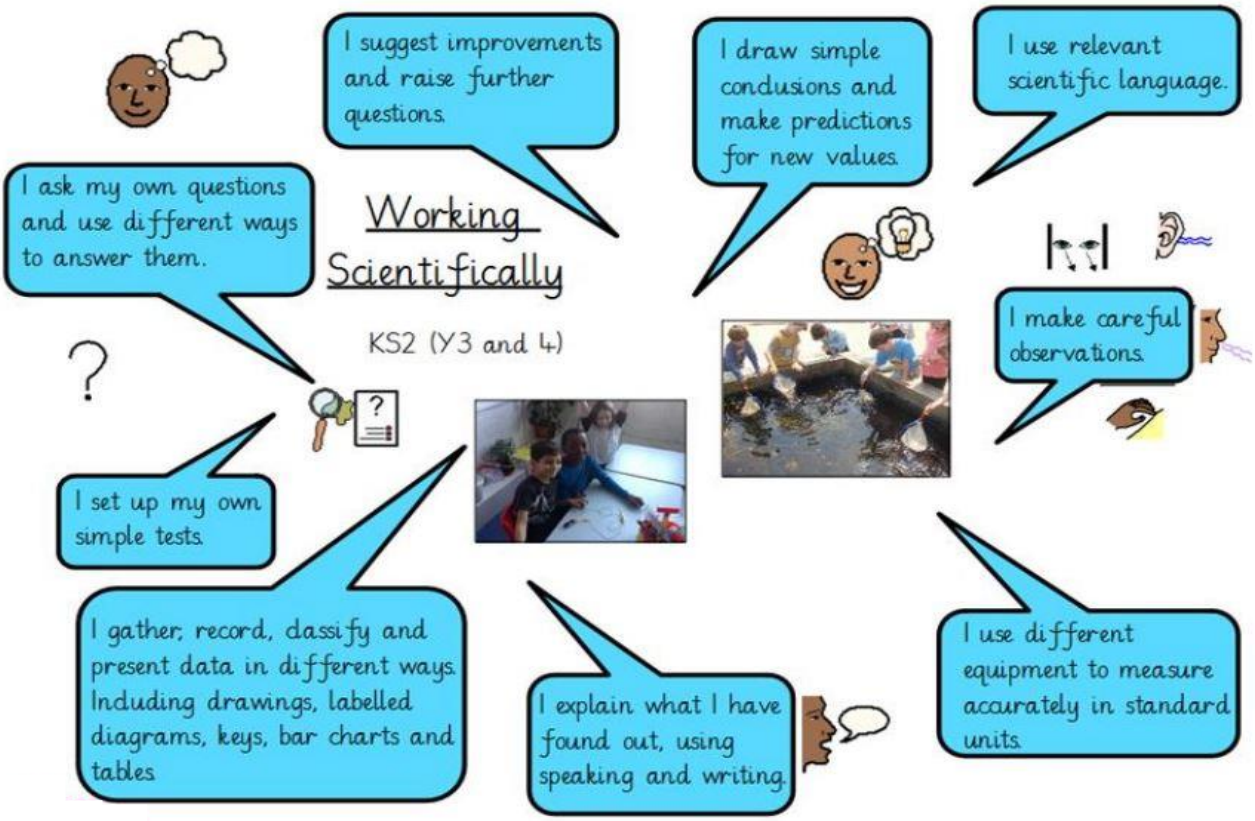
Lower Key Stage Two



The principal focus of science teaching in Lower Key Stage Two is to enable pupils to broaden their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. They should ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes overtime, noticing patterns grouping and classifying things, carrying out simple comparative and fair tests and finding things out using secondary sources of information. They should draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out.

'Working scientifically' is described separately at the beginning of the programme of study, but must always be taught through and clearly related to substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content.

Pupils should read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge.

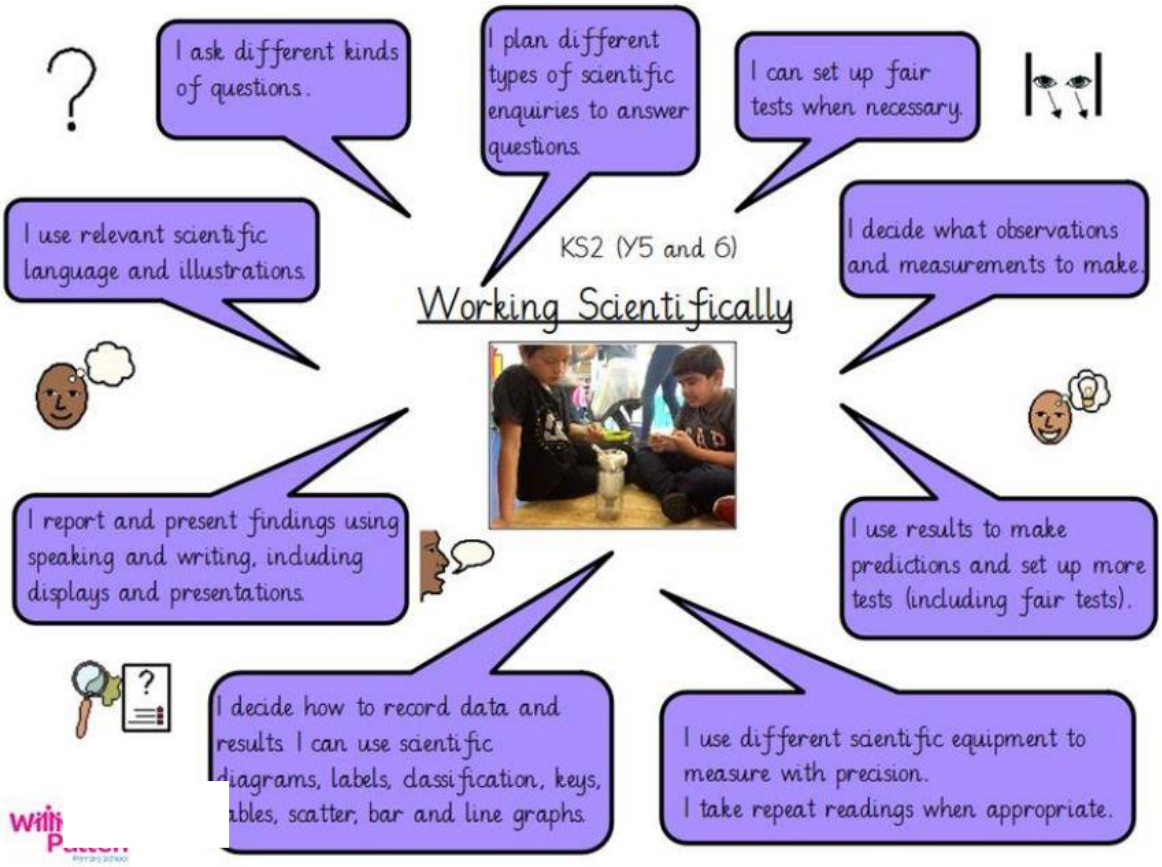


Upper Key Stage Two

The principal focus of science teaching in Upper Key Stage Two is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. At upper Key Stage 2, they should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should also begin to recognise that scientific ideas change and develop over time. They should select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information. Pupils should draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings.

'Working and thinking scientifically' is described separately at the beginning of the programme of study, but must always be taught through and clearly related to substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content.

Pupils should read, spell and pronounce scientific vocabulary correctly.



5. Assessment

Children's progress is continually monitored throughout their time at Misterton Primary & Nursery School and is used to inform future teaching and learning. By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study as set out in the National Curriculum. These are set out as statutory requirements.

Children receive effective feedback through teacher assessment, both orally and through written feedback in line with the learning intention. Children are guided towards achievement of the main objective through the use of process based 'success criteria', provided by and explained by the teacher. Success criteria will be used to identify areas of difficulty by children and teachers when reviewing and assessing work.

Assessment for learning is continuous throughout the planning, teaching and learning cycle. Children are assessed in line with the Assessment Policy.
Work may be evaluated by:

- Comparison with pupil's previous work;
- Sensitive comparison with work of others;
- Making judgements with respect to the child's development of skills and expression of ideas;
- Assessing the ability to co-operate and persevere, to take risks;

- Assessing the ability to contribute to discussion, respond to visual stimuli and communicate feelings and ideas;
- Assessing the ability to interpret information through a range of scientific expression, data, observations and experiment results;
- Discussing their work with staff.

In line with the KWL strategy, children identify what they know already about each theme, as well as what they would like to know. The programme of study is tailored to the children's starting points, as well as their specific interests. It also ensures a focus on the key identified knowledge of each topic, which is mapped within and across year groups to ensure progression.

In Early Years Foundation Stage, we assess the children's Understanding of the World according to the EYFS Statutory Framework and some aspects of Expressive Arts and Design, which are also science based.

6. Inclusion

At Misterton Primary & Nursery School, we aim to provide for all children so that they achieve as highly as they can in science according to their individual ability. We will identify which pupils or groups of pupils are under-achieving or at risk of under-achieving, and take steps to improve their attainment. Children who are exceeding within Science will be identified and suitable learning challenges will be provide to allow children to learn at 'Greater Depth'.

7. The Role of the Subject Leader

The subject Leader should be responsible for improving the standards of teaching and learning in science through:

- Monitoring and evaluating pupil progress;
- Provision of Science;
- The quality of the learning Environment;
- Taking the lead in creating action plans and policy development;
- Auditing and supporting colleagues In their CPD;
- Auditing, organising and purchasing resources;
- Keeping up-to-date with changes in the subject.
- Producing a progression of knowledge document and using this to monitor coverage across the years.