



MANOR BEACH PRIMARY SCHOOL SCIENCE POLICY

REVIEW DUE: APRIL 2022

Manor Beach Science Policy 2021/2022

'Inspiring minds, shaping futures'

Science stimulates and excites pupil's curiosity about natural phenomena and events in the world around them. It also satisfies their curiosity with knowledge. Since science links direct practical experience with ideas, it can engage learners at many levels. Scientific method is about developing and evaluating explanations through experimental evidence and modelling. Through Science, pupils understand how major scientific ideas contribute toward technological change – impacting on industry, medicine, business and improving quality of life. They learn to question and discuss science based issues that may affect their own lives, the directions of society and the future of the world.

Aims

The 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 knowledge required to understand the uses and implications of science, today and for the future

At Manor Beach we aim to do this by:

- Delivering high quality, interesting and engaging science lessons;
- Developing the potential scientific links with all other areas of the curriculum.
- Teaching science in a global and historical context; including the contributions significant scientists from a range of cultures;
- Developing and extending pupils' scientific knowledge and understanding;
- Developing lively, enquiring minds and the ability to question
- Developing pupils' ability to work scientifically and involve pupils in planning, carrying out and evaluating investigations;
- Developing pupils' scientific vocabulary and ability to articulate scientific concepts clearly and precisely;
- Ensuring that all pupils are appropriately challenged to make good progress in science.
- Building on pupils' natural curiosity and enabling them to understand and care for the world in which they live.
- Ensuring pupils are provided with an environment where they can work in an investigative way and can communicate their findings in a variety of ways

Teaching and Learning

At Manor Beach, teachers plan and deliver high-quality and engaging science lessons incorporating a range of teaching and learning styles. Teachers will provide opportunities for pupils to:

- Learn about science, where possible, through first-hand practical experiences;
- Develop their research skills through the appropriate use of secondary sources;
- Work collaboratively in pairs, groups and/or individually;
- Plan and carry out investigations with an increasing systematic approach as they progress through the school;
- Develop their questioning, predicting, observing, measuring and interpreting skills; □ Record their work in a variety of ways e.g. writing, diagrams, graphs, tables;
- Read and spell scientific vocabulary appropriate for their age.
- Be motivated and inspired by engaging and interactive science displays, which include key vocabulary and relevant questions.
- Learn about science using the outdoor learning environment.

Science and the National Curriculum

In Manor Beach Primary School we base our teaching on the National Curriculum Programmes of Study and this is particularly helpful with ensuring that there is continuity and progression.

The National Curriculum document for Science sets out a clear, full and statutory requirement for all children. It determines the content of what will be taught, and sets attainment targets for learning. The programmes of study set out what should be taught at Key Stage 1 and 2 and The Foundation Stage programmes of study for Understanding of the World are set out in the EYFS.

Organisation

At Manor Beach, science is taught as a discrete lesson with links made, where possible and appropriate, to the wider curriculum. Science may have links with other subject areas such as, geography, maths, design technology, art and English.

Foundation stage

The EYFS in Reception sets out the learning objectives for the seven areas of learning:

- Physical Development □ Expressive Arts and Design □ Personal, Social and Emotional Development □ Literacy □ Understanding of the World □ Communication and Language. □ Mathematics

Science in the Early Years Foundation Stage is planned using the Early Years Curriculum 'Understanding of the World'.

Key Stage 1

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:

- Asking simple questions and recognising that they can be answered in different ways
- Observing closely, using simple equipment
- Performing simple tests
- Identifying and classifying
- Using their observations and ideas to suggest answers to questions
- Gathering and recording data to help in answering questions.

Pupils in years 1 and 2 should explore the world around them and raise their own questions. They should experience different types of scientific enquiries, including practical activities, and begin to recognise ways in which they might answer scientific questions. They should use simple features to compare objects, materials and living things and, with help, decide how to sort and group them, observe changes over time, and, with guidance, they should begin to notice patterns and relationships. They should ask people questions and use simple secondary sources to find answers. They should use simple measurements and equipment (for example, hand lenses, egg timers) to gather data, carry out simple tests, record simple data, and talk about what they have found out and how they found it out. With help, they should record and communicate their findings in a range of ways and begin to use simple scientific language. These opportunities for working scientifically should be provided across years 1 and 2 so that the expectations in the programme of study can be met by the end of year 2.

Pupils are not expected to cover each aspect for every area of study

Key Stage2

Lower KS2

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:

- asking relevant questions and using different types of scientific enquiries to answer them
- setting up simple practical enquiries, comparative and fair tests
- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- identifying differences, similarities or changes related to simple scientific ideas and processes
- using straightforward scientific evidence to answer questions or to support their findings.

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. 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. Pupils should use relevant scientific language to discuss their ideas and communicate their findings in ways that are appropriate for different audiences. 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 KS2

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:

- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- using test results to make predictions to set up further comparative and fair tests
- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations
- identifying scientific evidence that has been used to support or refute ideas or arguments.

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. 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. 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.

Programme of Study

Year 1	WS	Animals (humans)	Animals (other animals)	Material properties (everyday materials)	Plants (growth & change)	Wow Science - Ice	
Year 2	WS	Animals and health (how we grow and stay healthy)	Animals (survival and growth)	Environment (living things and their habitats)	Material properties (uses of materials)	Plants (plant growth)	
Year 3	WS	Animals (health and nutrition)	Animals (skeletons and movement)	Forces and magnets	Light (reflections and shadows)	Plants	Rocks
Year 4	WS	Animals (teeth, eating and digestion)	Electricity	Environment (living things and their habitats – classification)	Sound	States of matter	Habitats
Year 5	WS	Animals (human life cycles)	Environment (living things and their habitats)	Earth and space	Forces	Material changes (reversible and irreversible changes)	Material properties
Year 6	WS	Animals (exercise, health and the circulatory system)	Electricity	Light (how light travels)	Living things and their habitats (classification)	Living things (evolution and inheritance)	

*WS = Working scientifically skills

Planning

KS1 and KS2 teachers plan science lessons using the key objectives as outlined in the National curriculum, the LCC planning documents and the newly created planning format to ensure all key objectives are being met throughout a unit of work. We also use the online ASE Plan materials to support planning and assessment.

All science lessons have focused learning objectives, clear differentiation and success criteria to ensure that pupils make at least good progress. 'Working scientifically' is embedded throughout the areas of learning in key stage 1 and 2; this focuses on the key aspects of scientific enquiry which enable pupils to investigate and answer scientific questions.

Assessment

Assessment in Science is based upon scientific knowledge and understanding, rather than achievement in English or Mathematics. In the Foundation Stage we assess children's knowledge and understanding according to the EYFS Learning and Development Stages. In KS1 and KS2 we use a range of assessment materials to ensure that children are making appropriate progress, including assessment tasks and these are noted onto planning grids from the Lancashire KLIPS documents and copies given to the Science Subject Leader. Pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.

Assessment should:

- Be formative and summative
- Be used to inform the teacher for future planning
- Promote continuity and progression
- Form the basis for reporting to parents at the end of the year
- Be based on observation, participation and written outcomes

In addition, teacher assessments are recorded as part of KS1 and KS2 SAT's data. which is reported to parents and the Local Authority.

Recording

Children's recording will take many forms according to the nature of the activity:

- Verbal
- Pictorial
- Diagrammatic
- Graphical
- Written
- Symbolic
- I.C.T.
- Photographic

Teachers should ensure that a range of appropriate methods are used. These may include: Written accounts including: instructions, reports and explanations Diagrams, drawings and pictures Annotated diagrams Spreadsheets (data collection) Charts, graphs and tables Model making

Although most Science will follow a pattern of 'Question, Prediction, Method, Results, Evaluate', it is important to remember that the most valuable time is spent engaging in practical Science

which allows children to understand a concept, rather than recording it.

The Role of the Science Subject Leader:

- To review changes to the National Curriculum requirements and advise on their implementation.
- Attend relevant CPD courses for Science as appropriate in line with the School Development plan.
- Update and review the school improvement plan in relation to science and its development throughout the school
- Arrange staff meetings to discuss the scientific aspects of the themes contained in the school's current scheme of work and how these might be presented in the classroom.
- Carry out an annual audit of the school's Science resources, and operate an efficient storage system for these resources to ensure that our children can learn effectively in and through Science.
- Monitor the progress of individual and groups of children.
- Collate 'End of topic Assessments' and 'End of Key stage Assessments' and set new priorities for development of Science in subsequent years.
- Monitor the learning and teaching in Science and provide support for staff when necessary.
- Take a lead role in organizing Science Events in school in line with LA and national initiatives.
- Endeavour to involve parents/ carers in their children's learning in and through science.

Safe Practice

Children are always encouraged to consider their own safety and the safety of others . Teachers will provide a safe and secure environment for children to learn. Any experiments or trips which are considered a particular risk will need a Risk Assessment Form to be completed and to consult the Science Subject Leader prior.

Resources

Resources are continually reviewed and updated throughout the year from discussions with teaching staff and in line with the subjects development and new technological advances. There are 2 science resource cupboards containing consumables, working scientifically equipment and technology based equipment to enable teachers to experiment across the key areas of biology, chemistry and physics. Requests for equipment can be made to the science subject leader and regular audits and questionnaires are carried out.

This policy was written by the science subject leader – Belinda Jones in April 2021

Policy to be reviewed Spring 2022