Morley Primary School

Science National Curriculum EYFS and Key stage 1 - Working Scientifically (Disciplinary Knowledge)

EYFS: Understanding the World

Understanding the world involves guiding children to make sense of their physical world and their community. The frequency and range of children's personal experiences increases their knowledge and sense of the world around them – from visiting parks, libraries and museums to meeting important members of society such as police officers, nurses and firefighters. In addition, listening to a broad selection of stories, non-fiction, rhymes and poems will foster their understanding of our culturally, socially, technologically and ecologically diverse world. As well as building important knowledge, this extends their familiarity with words that support understanding across domains. Enriching and widening children's vocabulary will support later reading comprehension.

ELG: The Natural World

Children at the expected level of development will:

- Explore the natural world around them, making observations and drawing pictures of animals and plants;
- Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class;
- Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.

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.

Science National Curriculum Key stage 2

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.

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 a 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.

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Morley Primary School –Key Science Concept Words

Science	
anomaly causal classification comparative conclusion explanation evidence fair test hypothesis identification interpretation irreversible matter method	observation precision prediction properties support systematic quantative reversible variable

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Science Progression – Questioning							
Key Area	**EYFS**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Questioning	Know that a question is a phrase/sentence which asks for Information.	Know that there are many questions for finding answers.	Know that there are questions about the world. Know that questions can be tested to see if they are true.	Know that questions can be asked and answered by carrying out a scientific enquiry.	Know that relevant scientific questions need to be asked and answered through different types of scientific enquiry.	Know how to plan for different types of scientific enquires to answer questions, including recognising and controlling variables when necessary.	Know how and when to repeat different types of scientific enquiries to answer questions.

Science Progression – Enquiry Planning (Hypothesising)							
Key Area	**EYFS**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Enquiry Planning	Know that ideas can be put forward for thinking and talking about.	Know that ideas can be suggested as to what might happen. Know that plans can be suggested to cause something to happen.	Know that a prediction is an informed guess about what will happen Know that a simple numbered method can be used to make a simple enquiry.	Know that a hypothesis is as starting point for further scientific enquiry. Know that relevant predictions are tested in a scientific enquiry.	Know that a variable is something that is likely to change, it does not have a fixed pattern Know that different methods can be used to make scientific enquiries.	Know that a variable can be used to test a hypothesis. Know that a variable is involved to make a meaningful prediction.	Know how to choose appropriate variables to a test a hypothesis. Know how to use test results to make predictions to set up further comparative and fair tests.

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Science Progression – Testing							
Key Area	**EYFS**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Testing	Know that a test isa set of tasks.	Know that there are tests to find answers to questions.	Know that there are different ways to perform a test using simple equipment.	Know how to measure tests accurately using a range of equipment.	Know that in a fair test one thing is altered and that thing may change as a result. This is measured while all other conditions are kept the same.	Know how to accurately use further test measuring devices, including digital and analogue scales, measuring cylinders and beakers. Know how and when to repeat tests and measurements.	Know which testing equipment to choose to carry out a scientific enquiry. Know how to identify conditions that were imperfectly controlled and an explain how these might affect results.

Science Progression – Observing (Measuring Patterns)							
Key Area	**EYFS**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Observing	Know that what is seen to be happening can be talked about. Know that changes which are seen to be	Know that there are ways to observe things closely.	Know that observations are made of the world in order to answer questions.	Know that observations can depend on conditions for scientific enquiry.	Know that observations for scientific enquires are limited by the accuracy of the measurements	Know that observations for scientific enquires are limited by the accuracy of the measurements and by an extent to which conditions vary and that repeating enquires, and	Know how and when to repeat observations for scientific enquiries to vary conditions and make improvements.

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	happening can be talked about.		Know that simple equipment is used to make observations.		and use of equipment.	keeping the conditions as consistent as possible can improve an enquiry.	

Science Progression – Interpreting and Recording Data							
Key Area	**EYFS**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Interpreting and recording data	Know that recording what has been seen can be done through drawing pictures. Know that recording the changes which have been seen can be through drawing a series of pictures.	Know that there are many ways to record learning.	Know that there are non-standard units of measure which can be used to take recordings.	Know that information can be gathered in a range of ways - (Suggested examples - bar charts and diagrams) Know how to writea simple scientific enquiry with a provided structure. Know that the conclusions of scientific enquiries can lead to further questions.	Know that results are used to draw conclusions. Know how to write a simple scientific enquiry write-up including an introduction, equipment, a numbered method, results and a conclusion.	Know how to write a simple scientific enquiry Know how to record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.	Know how to independently write a scientific enquiry write up. Know how to recognise and remove outliers from a set of data, justifying the removal. Know how to present brief oral findings from an enquiry, speaking clearly and with confidence, using notes where necessary.

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Science Progression – Conclusions							
Key Area	**EYFS**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Conclusions	Know a conclusion is what has been found out.	Know what they have found out and how they found it out helps to understand what happened in their investigation.	Know how to interpret results to understand any surprise in the results or not. Know scientists reflect and discuss changes about future investigation.	Know to use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. Know to use straightforward scientific evidence to answer questions or to support their findings.	Know to look for changes, patterns, similarities and differences in their data in order to draw simple conclusions and answer questions. Know how to identify new questions arising from the data, make new predictions and find ways of improving what they have already done.	Know how to report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written form such as displays and other presentations. Know how to identify scientific evidence that has been used to support or refute ideas or arguments.	Know how to draw conclusions based on their data and observations, use evidence to justify their ideas, use scientific knowledge and understanding to explain their findings. Know how to use test results to make predictions to set up further comparatives and fair tests.

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Science Progression – Vocabulary							
Key Area	**EYFS**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Vocabulary	Know some language can be grouped by topic.	Know and use some simple scientific language.	Know and use simple scientific language and some science words. Know and use comparative language – bigger, faster etc.	Know how to use scientific language to talk and, later, write about what they have found out. Begin to use comparative and superlative language.	Know how to use relevant scientific language. Know how to read, spell and pronounce scientific vocabulary correctly relating to their topic.	Know how to use relevant scientific language and illustrations to discuss, communicate and justify scientific ideas.	Know there is a range of scientific vocabulary and useconventions such as trend, rogue result, support prediction. Know scientific ideas can describe simple processes. Use correct science vocabulary from a range of topics.

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Science Progression – Research							
Key Area	**EYFS**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Research	Know that answers can be found in books.	Know that answers and information can be found in books and by using computers.	Know the difference between a Primary and Secondary source.	Know that not all questions can be answered through practical investigations.	Know that they can draw conclusions from the findings of other scientists.	Know which secondary sources will be most useful to research their Ideas.	Know which secondary sources will be most useful to research their ideas.

Science Progression – Understanding (Science Capital)							
Key Area	**EYFS**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Understanding	Know that science can affect daily life.	Know how to talk about how science helps us in our daily lives e.g., torches and lights help us see when it is dark.	Know how to talk about how science helps us in our daily lives e.g., torches and lights help us see when it is dark. To know science can sometimes be dangerous.	To know which things in science have made our lives better. Can understand there is some risk in science.	To know which things in science have made our lives better. To know how science is useful in everyday life.	Know how scientific ideas have changed over time. Know which parts of our lives rely on science.	Know and be able to explain the positive and negative effects of scientific development.