



Flowery Field Primary School - Science

Threshold Concepts Progression

Early Years area of learning – Understanding the World

Children should be guided to make sense of their physical world and their community. The frequency and range of the children's personal experiences increases their knowledge and sense of the world around them – from visiting parks, libraries, museums to meeting important members of society (police officers, nurses and firefighters). Listen to a broad selection of stories, non-fiction, rhymes and poems will foster their understanding of our culturally, socially, technologically and ecologically diverse world. Building important knowledge extends their familiarity with words that support understanding across domains.

Nursery – Use senses in hands-on exploration of natural materials. Explore collections of materials with similar/different properties. Talk about what they see using a wide vocabulary. Plant seeds and care for growing plants. Understand key features of the life-cycle of a plant and animal. Begin to understand the need to respect and care for the natural environment and living things. Explore and talk about different forces they can feel. Talk about differences between materials and changes they notice.

Reception – Explore the natural world around them. Describe what they see, hear and feel outside. Understand the effect of changing seasons on the world around them.

Level Expected at the end of EYFS

We have selected the Early Learning Goals that link closest to the Science National Curriculum.

ELG The Natural World:

- 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, drawing on their experiences and what has been read in class.
- Understand some important processes and changes in the natural world around them, including seasons and changing states of matter.

Key Stage 1 National Curriculum

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.

Key Stage 2 National Curriculum

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.

Intent

At Flowerly Field, we want our children to be naturally curious about the world around them. Our curriculum has been developed by staff to ensure full coverage of the National Curriculum and to foster a sense of wonder about natural phenomena. We are committed to providing a stimulating, engaging and challenging learning environment. Throughout our school, children are encouraged to develop and use a range of scientific skills including planning,



conducting and evaluating. We promote and celebrate these skills. Pupils will become familiar with, and use technical terminology accurately and precisely: scientific language is to be taught and built upon as topics are revisited in different year groups and across key stages. We intend to provide all children with a broad and balanced science curriculum, which will equip them for the world around them today and for the future.

Implementation

In ensuring high standards of teaching and learning in science, we implement a curriculum that is progressive throughout the whole school.

Planning for science is a process in which all teachers are involved to ensure that the school gives full coverage of, 'The National Curriculum programmes of study for Science 2014' and, 'Understanding of the World' in the Early Years Foundation Stage. Science teaching at Flowery Field Primary School involves adapting and extending the curriculum to match all pupils' needs. Where possible, Science is linked to class topics, however it can be taught as discrete units and lessons where needed to ensure coverage.

We ensure that all children are provided with rich learning experiences that aim to:

- Prepare our children for life in an increasingly scientific and technological world today and in the future.
- Help our children acquire a growing understanding of the nature, processes and methods of scientific ideas.
- Help develop and extend our children's scientific concept of their world.
- Build on our children's natural curiosity and developing a scientific approach to problems.
- Encouraging open-mindedness, self-assessment, and perseverance and developing their planning, conducting and evaluating skills.
- Develop the use of scientific language, recording and techniques.
- Develop the use of IT in investigating and recording.
- Make links between science and other subjects.

Science is taught consistently, and is often discretely taught in many different contexts throughout all areas of the curriculum. For example, through English, i.e. biography of a famous scientist's life.

Impact

Flowery Field's approach results in a fun, engaging, high-quality Science curriculum providing children with the foundation and knowledge for understanding the world around them. Using links to STEM and frequent, progressive learning, pupils will have:

- A wider variety of skills linked to both scientific knowledge and understanding, and scientific enquiry/investigative skills.
- A richer vocabulary, which will enable them to articulate their understanding of taught concepts.



- High aspirations, which will see them through to further study, work and a successful adult life.

The Science team, which comprises a member from each phase, will monitor the study of Science (as part of the school's monitoring cycle) using a range of strategies. Book scrutiny will take place after the completion of the science unit. The team will look for evidence in the books and cross- reference them with the objectives for the year group. These are then matched to ensure complete coverage.

PLANNING - INVESTIGATIONS						
Early Years	Y1	Y2	Y3	Y4	Y5	Y6
ELG Children: Explore the natural world around them.	KS1 Science National Curriculum 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: <ul style="list-style-type: none"> • asking simple questions and recognising that they can be answered 		KS2 Science National Curriculum During years 3 and 4, pupils should be taught to use the following practical scientific methods; <ul style="list-style-type: none"> • asking relevant questions and using different types of scientific enquiries to answer them 		KS2 Science National Curriculum 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: <ul style="list-style-type: none"> • planning different types of scientific enquiries to answer questions, 	



	<p>in different ways</p> <ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> gathering, recording, classifying and presenting data in a variety of ways to help in answering questions 	<p>including recognising and controlling variables where necessary</p> <ul style="list-style-type: none"> can set up comparative fair tests can suggest which type of inquiry is likely to be more successful at providing answers to a particular question. Can develop a range of testable questions Can identify and manage variables 			
<p>Children can: During Nursery, pupils should be encouraged to:</p> <ul style="list-style-type: none"> Comment and ask questions about aspects of their familiar world such as the place where they live or the natural world. <p>During Reception, children should:</p> <ul style="list-style-type: none"> Look closely at similarities, differences, patterns and change. <p>During Nursery, pupils should be encouraged to:</p> <ul style="list-style-type: none"> Comment and ask questions about aspects of their 	<p>Children can: -think of some questions to ask</p>	<p>Children can: -explain why it might not be fair to compare two things - compare several things - suggest how to find things out - Can they use prompts to find things out</p>	<p>Children can: - develop a range of testable, relevant questions - with support ask questions using evidence gathered from different types of scientific enquiry - with prompting, identify and manage variables</p>	<p>Children can: - develop relevant testable questions - Investigate using different types of scientific enquiry - Set up comparative and fair tests</p>	<p>Children can: - answer question using evidence gathered from different types of scientific enquiry - Identify and manage variables</p>	<p>Children can: - suggest which type of enquiry, is likely to be more successful at providing answers to a particular question - Identify and manage variables that cannot be easily managed</p>



familiar world such as the place where they live or the natural world.						
CONDUCTING EXPERIMENTS						
Early Years	Y1	Y2	Y3	Y4	Y5	Y6
<p>ELG Children</p> <ul style="list-style-type: none"> Explore the natural world around them, making observations and drawing pictures of animals and plants. 	<p>KS1 Science National Curriculum</p> <p>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:</p> <ul style="list-style-type: none"> observing closely, using simple equipment performing simple tests gathering and recording data to help in answering questions. 		<p>KS2 Science National Curriculum</p> <p>During years 3 and 4, pupils should be taught to use the following practical scientific methods;</p> <ul style="list-style-type: none"> 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 		<p>KS2 Science National Curriculum</p> <p>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:</p> <ul style="list-style-type: none"> taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate Can examine carefully and suggest useful measurements recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs use appropriate equipment to take measurements then consider how modifying technique, measurements can be improved Can identify situations in which taking repeat readings will improve quality of evidence can use labelled diagrams to show complex outcomes 	



				<ul style="list-style-type: none"> • can use various ways to record complex evidence • can recognise limitations of available equipment • can evaluate different recording techniques, referencing accuracy and precision. • can explain why repeatedly taking repeat readings is of little value Pupil can explain why a labelled diagram may be particularly effective • can evaluate various ways of recording complex data. 		
<p>In Nursery, children can talk about some of the things they have observed, such as plants, animals, natural and found objects.</p> <p>In Reception, children should look closely at similarities, differences, patterns and change.</p>	<p>Children can:</p> <ul style="list-style-type: none"> - perform a simple test - use simple equipment to help them make observations - record their findings using standard units - put some information in a chart or table - can they talk about what they <see, touch, smell, hear or taste> 	<p>Children can:</p> <ul style="list-style-type: none"> - use <text, diagrams, pictures, charts, tables> to record their observations - carry out a simple fair test - measure using simple equipment - use <see, touch, smell, hear or taste> to help them answer questions - identify animals and plants by a specific criterion, eg, lay eggs or not; have feathers or not - sort things into groups 	<p>Children can:</p> <p>Pupil can .use various equipment, as instructed, repeatedly and with care</p> <p>Pupil can use various ways to record, group and display evidence</p> <p>Pupil can use words and diagrams to record findings,</p>	<p>Children can:</p> <p>Pupil can select and use various equipment repeatedly and with care,</p> <p>Pupil can use line graph to record basic data.</p> <p>Pupil can start to use labelled diagrams to show more complex outcomes</p>	<p>Children can:</p> <p>Take measurements using a range of scientific equipment</p> <p>Take measurements with increasing accuracy and precision</p> <p>Take repeat readings when appropriate</p>	<p>Children can:</p> <p>Pupils record work with diagrams and label them</p> <p>Pupils can display data using labelled diagrams, keys, tables and bar charts</p> <p>Pupils can display data using line graphs</p>



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EVALUATING						
Early Years	Y1	Y2	Y3	Y4	Y5	Y6
<p>ELG</p> <p>Children should 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.</p> <p>Children should understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.</p>	<p>KS1 Science National Curriculum</p> <p>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:</p> <ul style="list-style-type: none"> identifying and classifying using their observations and ideas to suggest answers to questions 		<p>KS2 Science National Curriculum</p> <p>During years 3 and 4, pupils should be taught to use the following practical scientific methods;</p> <ul style="list-style-type: none"> 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 		<p>KS2 Science National Curriculum</p> <p>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:</p> <ul style="list-style-type: none"> 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. can suggest possible limits to causal relationships. can evaluate the best way of displaying and presenting key findings. 	



		<p>changes related to simple scientific ideas and processes ☒</p> <ul style="list-style-type: none"> • using straightforward scientific evidence to answer questions or to support their findings. 	<ul style="list-style-type: none"> • Can arrange data to make clear characteristics • can, in conclusions, indicate, if appropriate, why the results may not be entirely trustworthy. • Can suggest how factors other than evidence may support or oppose an idea • Can evaluate which further comparative or fair tests would be particularly useful. • can evaluate various ways of recording complex data. 			
<p>In Nursery, children should;</p> <ul style="list-style-type: none"> • talk about some of the things they have observed, such as plants, animals, natural and found objects, • they should talk about why things happen and how things work, • develop an understanding of growth, decay and changes over time, 	<p>Children can:</p> <ul style="list-style-type: none"> - identify and classify things they observe - tell other people about what they have done - answer some scientific questions - give a simple reason for their answers - explain what they have found out - their work using pictures, labels and captions 	<p>Children can:</p> <ul style="list-style-type: none"> -use some scientific words to describe what they have seen and measured - say whether things happened as they expected - find simple patterns (or associations) 	<p>Children can:</p> <p>write a conclusion based on evidence. Pupil can use evidence to suggest further relevant investigations</p> <p>Pupil can recognise patterns that relate to scientific ideas</p>	<p>Children can:</p> <p>with prompting, write a conclusion using evidence and identifying causal links. Pupil can suggest further relevant comparative or fair tests. Pupil can arrange data to make clear key characteristics.</p> <p>Pupil can show how evidence supports a conclusion</p>	<p>Children can:</p> <p>Can draw conclusions orally or written</p> <p>Use test results to make predictions to set up further comparative and fair tests</p>	<p>Children can:</p> <p>process findings to develop conclusions and identify causal relationships</p> <p>use displays and presentations to report on findings</p> <p>explain confidence in findings</p>



<ul style="list-style-type: none">• shows care and concern for living things and the environment.						
<p>In Reception, children should</p> <ul style="list-style-type: none">• look closely at similarities, differences, patterns and change						