

Progression of Skills and Knowledge in Science

18.10.22

	Teacher
LO: to understand how we have night and day.	✓
To understand that night and day are affected by the seasons.	✓

When the Earth faces the sun it is day ✓.
When the Earth faces away from the sun it is night ✓.

When the Earth is tilted towards the sun ...
it is Summer Winter.
it is hot cold.
the days are long short

Draw yourself during the day and the night ✓



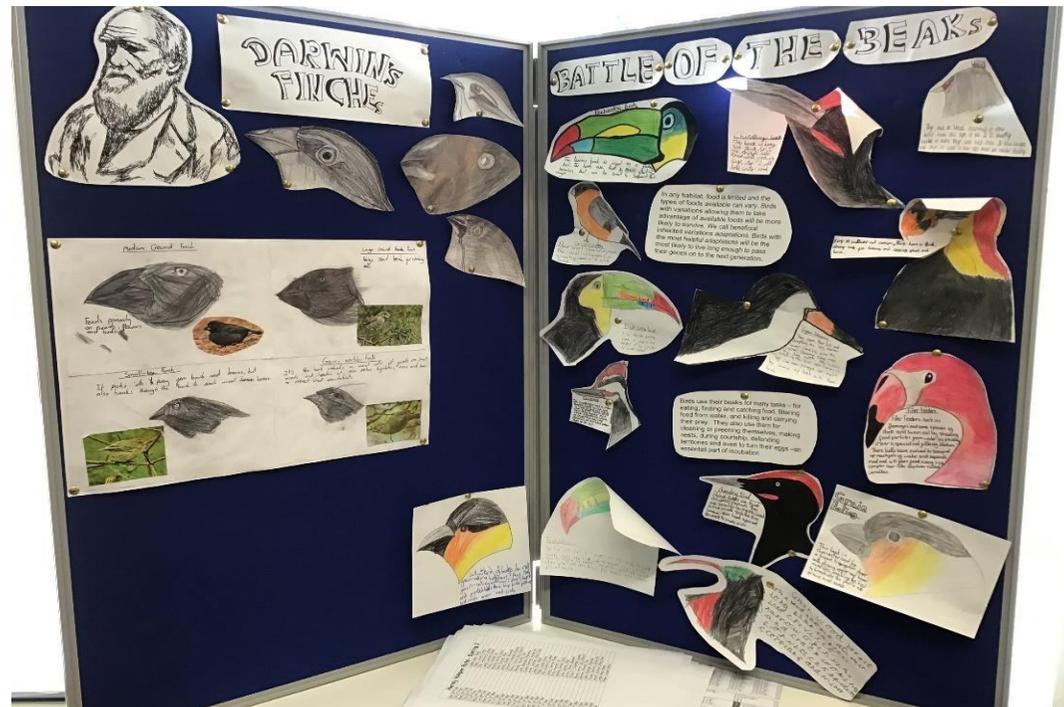
Me in the day.



Me at night.

DARWIN'S FINCHES

BATTLE OF THE BEAKS



The display board is titled "DARWIN'S FINCHES" and "BATTLE OF THE BEAKS". It features a portrait of Charles Darwin, several drawings of different finch beaks, and various photographs of the birds. Handwritten notes explain concepts like natural selection and adaptation. The title "BATTLE OF THE BEAKS" is written in a banner at the top right.

Science

Progression of Skills and Knowledge in Science

Science Overview, written by Michelle Mytton, Subject Leader

Curriculum Intent

At Elton Primary School, the science curriculum provides children with an increasing knowledge and understanding of the world around them and beyond. Our curriculum enables children to explore and question their surroundings, preparing them for life in an increasingly evolving and scientific world and giving them an understanding of how to preserve the environment.

Scientific enquiry skills are used in each topic the children study, and these topics are revisited and developed throughout their time at the school. In EYFS, children explore science by developing knowledge and understanding of the world through hands on learning experiences and this is continued and developed in key stage 1, and developed yet further in key stage 2, where children build upon prior knowledge and skills, and increase their enthusiasm for topics whilst embedding knowledge in their long-term memory.

All children are encouraged to develop and use a range of skills including observation and investigations, as well as develop effective questioning skills and become independent learners. Vocabulary for each topic is taught and built on every term.

Science based workshops and visits are arranged to enrich children's subject knowledge and capture their interest.

Curriculum Implementation

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

- *Science teaching will be linked (where possible) to our Big Question to encourage engagement, and will build on prior key stage knowledge and skills to enable the achievement of a greater depth and understanding. The resource, "Plan-it" gives progression a coherent framework.*
- *Through our planning, we involve investigation opportunities that allow children to find out for themselves. Teachers use precise questioning in class to test conceptual knowledge and skills, and assess children regularly to identify those children with gaps in learning.*

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- *We build upon the learning and skill development of the previous key stages. 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 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 topics.*

Curriculum Impact

The approach at Elton Primary school results in a fun, engaging, high-quality science education that provides children with the foundations 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. So much of science lends itself to outdoor learning and so we provide children with opportunities to experience this. Through various workshops, trips and interactions with experts, children have the understanding that science has changed our lives and that it is vital to the world's future.

Extracurricular opportunities

Homework matters gives children and their families regular opportunities to showcase their enthusiasm for science.

We work in partnership with a number of local schools and businesses to give children opportunities that enrich our science curriculum. Recent collaborations have been with:

- Oundle School - Planetarium and Space day, inside the science lab day (dissections and experiments)
- Royal Society – project on mammals and whiskers
- Manchester University Project on mammals and whiskers
- Cambridgeshire University (electricity workshops)
- Stempoint - Knex day
- Whirlpool – Lego league
- Perkins (STEM ambassadors) - Green Goblins

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EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Make Observations						
<p>(The Natural World) Explore the natural world around them, making observations and drawing pictures of animals and plants</p> <ul style="list-style-type: none"> - 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 	Start to observe closely	Observe closely	Develop skills of systematic observation	Make systematic observations	Independently decide which observations to make	Independently decide which observations to make
Perform Tests						
<p>(Self Regulation) Set and work towards simple goals, being able to wait for what they want and control their immediate impulses when appropriate;</p> <p>(The Natural World) Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.</p>	Perform simple tests with support	Perform simple tests	Set up simple practical enquiries Understand comparative and fair tests	Suggest, set up and carry out simple practical enquiries Understand comparative and fair tests	Recognise and control variables where necessary	Recognise and control variables where necessary Explain which variables need to be controlled and why
Ask Questions						
<p>(Listening, Attention and Understanding) Listen attentively and respond to what they hear with relevant questions, comments and actions when being read to a</p> <ul style="list-style-type: none"> - Make comments about what they have heard and ask questions to clarify their understanding <p>(Speaking) Offer explanations for why things might happen, making use of recently introduced vocabulary</p>	Start to ask and suggest answers to simple scientific questions Use first-hand practical experiences to find answers	Ask and raise their own scientific questions Use first-hand practical experiences to find answers	Ask relevant scientific questions and suggest how to answer eg <i>practical test vs secondary sources</i> Develop different types of scientific enquiry	Generate and answer scientific questions using evidence Select most appropriate type of scientific enquiry	Use science experiences to plan different types of enquiry	Plan different types of scientific enquiry in order to answer questions Use science experiences to explore ideas and raise different types of question

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Gather Data						
	Begin to gather and record data simply using pictures and words	Gather and record data using diagrams, words and charts	Gather, record and present data in variety of ways eg drawings, labelled diagrams, charts Report on findings orally and in writing using scientific language	Gather, record, classify and present data in a wide variety of ways eg <i>drawings, labelled diagrams, charts</i> Report on findings orally and in writing using scientific language to answer questions	Record data/results of increasing complexity using diagrams, classification keys, tables, bar and line graphs Report and present findings from enquiries, examining causal relationships and reliability of results	Decide how to record data/results of increasing complexity using diagrams, classification keys, tables, scatter graphs, bar and line graphs Report and present findings from enquiries, examining causal relationships and reliability of results
Analyse Data						
	Start to discuss what they have found out	Discuss what they have found out	Use results to draw simple conclusions and make predictions Identify similarities, differences, changes related to scientific processes and ideas	Use results to draw simple conclusions, make predictions, suggest improvements and raise further questions Explain similarities, differences, changes related to scientific processes and ideas	Use test results to make predictions to set up further tests (comparative/fair) Identify scientific evidence that has been used to support/refute arguments	Use test results to make predictions to set up further tests (comparative/fair) and explain reasoning Interpret scientific evidence that has been used to support/refute arguments
Use Equipment						
(The Natural World) Explore the natural world around them, making observations and drawing pictures of animals and plants	Begin to use simple equipment eg <i>egg timers, hand lenses</i>	Use simple equipment eg <i>hand lenses, egg timers</i>	Use range of equipment to measure accurately eg <i>dataloggers, thermometers</i>	Confidently use range of equipment to measure accurately eg <i>dataloggers, thermometers</i>	Take measurements using a range of scientific equipment with accuracy and precision	Take measurements using a range of scientific equipment with accuracy and precision, taking repeat readings where appropriate