

## Science Project Overview Year 6 Evolution and inheritance

<b>Subject Knowledge (PoS)</b> <b>Substantive Knowledge</b>	<b>Working Scientifically (PoS+Overview)</b> <b>Disciplinary Knowledge</b>	<b>Working Scientifically</b> <b>Methods</b>
<ul style="list-style-type: none"><li>• Living things have evolved or changed over time.</li><li>• Fossils provide information about living things that inhabited the Earth millions of years ago.</li><li>• Living things produce offspring of the same kind.</li><li>• Normally offspring vary and are not identical to their parents.</li><li>• Animals and plants are adapted to suit their environment in different ways.</li><li>• Adaptation may lead to evolution.</li></ul>	<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"><li>• Asking their own questions about scientific phenomena</li><li>• 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.</li><li>• planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</li><li>• taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</li><li>• recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</li><li>• using test results to make predictions to set up further comparative and fair tests</li><li>• 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</li><li>• identifying scientific evidence that has been used to support or refute ideas or arguments.</li><li>• 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</li></ul>	<p>Using different types of scientific enquiry to answer their own questions, including:</p> <ul style="list-style-type: none"><li>• observing changes over different periods of time,</li><li>• noticing patterns,</li><li>• grouping and classifying things,</li><li>• carrying out comparative and fair tests</li><li>• and finding things out using a wide range of secondary sources</li></ul>

<p><b>Previous learning:</b></p> <ul style="list-style-type: none"> <li>• Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other. (Y2 - Living things and their habitats)</li> <li>• Notice that animals, including humans, have offspring which grow into adults. (Y2 - Animals, including humans)</li> <li>• Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. (Y3 - Plants)</li> <li>• Describe in simple terms how fossils are formed when things that have lived are trapped within rock. (Y3 - Rocks)</li> <li>• Recognise that environments can change and that this can sometimes pose dangers to living things. (Y4 - Living things and their habitats)</li> <li>• Describe the life process of reproduction in some plants and animals. (Living things and their habitats - Y5)</li> </ul>	<p><b>Preparing for future learning:</b></p> <ul style="list-style-type: none"> <li>• Heredity as the process by which genetic information is transmitted from one generation to the next. (KS3)</li> <li>• A simple model of chromosomes, genes and DNA in heredity, including the part played by Watson, Crick, Wilkins and Franklin in the development of the DNA model. (KS3)</li> <li>• The variation between species and between individuals of the same species means some organisms compete more successfully, which can drive natural selection. (KS3)</li> <li>• Changes in the environment may leave individuals within a species, and some entire species, less well adapted to compete successfully and reproduce, which in turn may lead to extinction. (KS3)</li> </ul>	<p><b>Bespoke to our learning:</b></p> <p>Children will be taught tier 2 and tier 3 vocabulary and will also learn about reproduction in their 'Big Talk' sessions. This is in addition to Science lessons.</p>
<p><b>Vocabulary:</b></p> <p>Offspring, sexual reproduction, vary, characteristics, suited, adapted, environment, inherited, species, fossils, evolution, evolve, adaptation, variation, inherit, inheritance</p>		
<p><b>Misconceptions:</b></p> <ul style="list-style-type: none"> <li>• Adaptation occurs during an animal's lifetime: giraffes' necks stretch during their lifetime to reach higher leaves and animals living in cold environments grow thick fur during their life</li> <li>• Offspring most resemble their parents of the same sex, so that sons look like fathers</li> <li>• All characteristics, including those that are due to actions during the parent's life such as dyed hair or footballing skills, can be inherited</li> <li>• Cavemen and dinosaurs were alive at the same time</li> </ul>		
<p><b>Cross Curricular Links:</b></p> <p><b>Texts:</b> What Mr Darwin saw, Charles Darwin, Amazing evolution</p>		

Autobiography – Darwin

Newspaper – Nobel Peace Prize winner

Argument – we came from corn vs Darwin

**Maths links:**

Statistics: Know how to construct a pie chart and line graph- creating graphs from results table

Use pie charts and line graphs to solve problems- use results data to write/ discuss conclusions

Understand the term mean as an average and be able to calculate it- calculate averages of readings from investigations on battle of the beaks etc

**Famous Scientists to possibly study:**

**Charles Darwin** 1809 – 1882 Charles Darwin on the theory of evolution and process of natural selection

<https://ca1-tls.edcdn.com/documents/Charles-Darwin.pdf?mtime=20160212053440>

<http://www.nhm.ac.uk/nature-online/science-of-natural-history/biographies/charles-darwin/index.html>

<http://bpes.bp.com/primary-resources/science/ages-9-to-11/evolution-and-inheritance/super-scientists-charles-darwin/>

BBC video [http://www.bbc.co.uk/programmes/articles/2bnTHtTcyLfdKk7BtCtjbhf/scitube-scientists-and-scientific-method?dm\\_i=3YNL,BHOK,2VWQKN,16RVJ,1](http://www.bbc.co.uk/programmes/articles/2bnTHtTcyLfdKk7BtCtjbhf/scitube-scientists-and-scientific-method?dm_i=3YNL,BHOK,2VWQKN,16RVJ,1)

<https://royalsociety.org/about-us/programmes/people-of-science/david-attenborough-charles-darwin/>

Darwin's footsteps storybook – available free as a PDF document at - <http://www.greatplanthunt.org/teachers>

**Explorify links:**

[Alien Shapes](#)

[On thin ice](#)

[Perfect pinchers](#)

[How much variation is there in how we look?](#)

[What if we could bring back woolly mammoths?](#)

**Possible careers/jobs:**

Archaeologist (studies history using artefacts) , Geneticist (studies genes), Geologist (studies the Earth and what it is made of, including rocks)