

Year 6 – Evolution and Inheritance

National Curriculum Objectives:

- Know about evolution and can explain what it is.
- Know how fossils can be used to find out about the past.
- Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents
- Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution- recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago

Building on what they learned about fossils in the topic on rocks in year 3, pupils should find out more about how living things on earth have changed over time. They should be introduced to the idea that characteristics are passed from parents to their offspring, for instance by considering different breeds of dogs, and what happens when, for example, labradors are crossed with poodles. They should also appreciate that variation in offspring over time can make animals more or less able to survive in particular environments, for example, by exploring how giraffes' necks got longer, or the development of insulating fur on the arctic fox. Pupils might find out about the work of palaeontologists such as Mary Anning and about how *Charles Darwin and Alfred Wallace* developed their ideas on evolution.

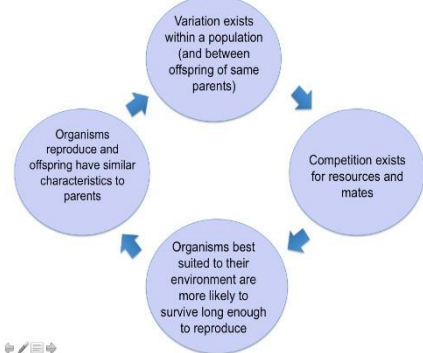
Note: At this stage, pupils are not expected to understand how genes and chromosomes work.

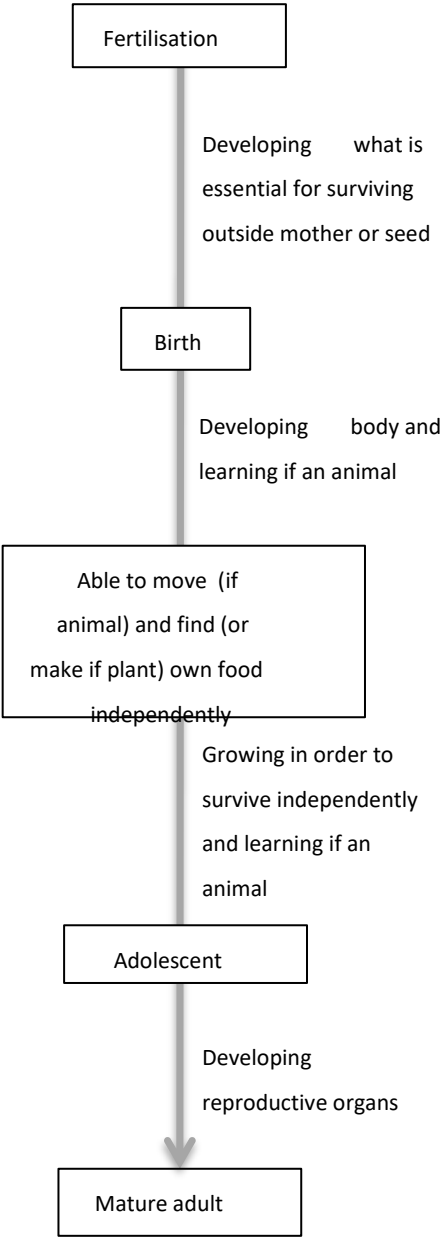
Key Ideas

- Life cycles have evolved to help organisms survive to adulthood.
- Over time the characteristics that are most suited to the environment become increasingly common.

NB: The following could be duplicated in Year 6 Living things and their habitats.

- Organisms best suited to their environment are more likely to survive long enough to reproduce.
- Organisms are best adapted to reproduce are more likely to do so.
- Organisms reproduce and offspring have similar characteristic patterns.
- Variation exists within a population (and between offspring of some plants)
- Competition exists for resources and mates.

Prior Learning	Evolution and Natural Selection				Vocabulary
Not applicable.	<p>Chapter 1: Evolution happens.</p> <ul style="list-style-type: none"> Over the last many millions of years there are many examples of organisms becoming extinct and others evolving into new organisms over many generations. The fossil record provides evidence for this. 	<p>Chapter 2: Fossils provide evidence for evolution.</p> <p>The way fossils form and are found mean the fossil record is an incomplete record of all evolution. Scientists have had to piece together evidence to work out how organisms evolve.</p>	<p>Chapter 3: How does evolution happen?</p> <p>Darwin's theory of Natural Selection explains how evolution occurs. It can be simplified in the flow chart.</p>  <p>□ Some organisms reproduce sexually where offspring inherit information from both parents, others reproduce asexually by making a copy of a single parent. A sexual reproduction results in little variation in a population that makes evolution less likely.</p>	<p>Chapter 4: Why are life cycles so different?</p> <p>All living things have similar stages of life.</p> <p>See Diagram Below.</p>	Fossils, Adaptation, Evolution, Characteristics, Reproduction, Genetics
	<p>□ Construct a large time line along the class wall covering the last 1 billion years. Add to this timeline key events e.g. when life first appeared, when plants first appeared, when dinosaurs appeared and became extinct. Give groups an organism to research how it has evolved and hang this information from the time line.</p>	<ul style="list-style-type: none"> Fossil evidence suggests mammoths lived from 400,000 to 10,000 years ago. What happened to them? Did they become extinct? Did they evolve into modern elephants? Are they still here? Children consider what scientists would have to do to find out which of these is the most likely. Show some trilobite fossils and ask children to consider the possible reasons as to why no fossils younger than 250 million years have ever been found. 	<ul style="list-style-type: none"> Provide children with cards of the Simpson's extended family. They try and create a family tree based upon similarities and differences. Some traits are inherited and others are not. Children do family research to try and work out if the following traits are inherited or not: earlobe attachment, hand clasping (when you link your fingers in a hand clasp which thumb do you place over the other?), cheek dimples, cleft chin, ability to remember random numbers, how far you can stand jump. Provide children with a simple Darwinian and Lamarckian explanation for evolution (but keep anonymous). Children try and work out what the illogical arguments are and therefore work out which one is the better argument. They could try and apply both arguments to explain why giraffes evolved longer necks as available food became higher in trees. Polar bears habitat is rapidly changing, what possible futures do they face and can we predict which is most likely? "Dinosaurs became extinct, so they can't have been very well adapted." Pupils consider this question and do some research and prepare feedback to other groups. All edible bananas have been bred so they have no seeds. All new banana trees are grown from cuttings of existing ones. If the climate changed would bananas be able to evolve? Plants that grow from bulbs (daffodils, blue bells, snow drops and crocuses) can reproduce sexually by pollination (but at the time of year when few insect pollinators are active) and asexually by bulbs swelling and dividing. Children consider how this might give these plants advantages and disadvantages over plants that only reproduce sexually. 	<p>□ Construct these time lines for different organisms and consider why there are such variations in the relative times for each of these stages. E.g. compare humans and horses and oak tree and a bean.</p>	



Different animals have adapted these stages differently, which has enabled them to survive.