Year 6 – Evolution and Inheritance

National Curriculum Objectives/Knowledge Statements (Substantive):

- 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

a) Life cycles have evolved to help organisms survive to adulthood.
b) Over time the characteristics that are most suited to the environment become increasingly common.
c) Living things produce offspring of the same kind. The offspring are not normally identical to their parents and vary from each other.
d) Fossils give us evidence of what lived on the Earth millions of years ago.
e) By studying fossils, scientists can put together how a plant or animal looked. They can identify what the animal ate, where it lived and how it died.
f) Adaptation can lead to evolution if the environment changes. Animals and plants with variations that are best suited survive in greater numbers to reproduce and pass their characteristics on to their young. This is natural selection. Over time these inherited characteristics become more dominant within the population.

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

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

Prior Learning	Breakdown of Lessons		Vocabulary
	Lesson and Big Question	Knowledge **(Progression of substantive knowledge – what?)**. Or Science Enquiry/Skill Based Lesson **(Disciplinary/National Curriculum Working Scientifically Statements – why/how?).** These inc: Fair Testing (Asking Scientific Questions, Planning and Enquiry, Observing closely, Drawing Conclusions, Making Predictions, Evaluating an Enquiry), Identifying & Classifying, Observation Over Time (Observing closely), Pattern Seeking/Research.	
	Gregor Mendel is a scientist who stated that genetic traits can be passed down from both parents to offspring – prove it.	Inheritance Knowledge – What is genetics? What is meant by inheritance? Scientific Enquiry – Observation/Identify. Look at pictures of adults and their children – what traits have been inherited? Mr Men and Little Miss – Choose one from each to create a new Mr Men/Little Miss character with inherited traits from both parents.	
	Mary Anning was a palaeontologist who discovered many important fossils that provide information about some living things that inhabited the planet millions of years ago. These can help to show how living things have changed over time. She believes animals have adapted over millions of years to their environment – prove it.	Knowledge - What do the words 'evolve' and 'adapt' mean? What is the difference? SE - Peppered moth story – How did the moth adapt to its environment?	
	Previous lesson on fossils extended…	Research/Observation - Cookie experiment. Using a tooth pick and chocolate chip cookie, take on the role of a palaeontologist to extract the chocolate chips without damaging any wither with the pick or the heat of your hands. Notice the skill, time and observation needed to take on the role.	
	Charles Darwin is a famous English scientist who revealed his theory of evolution by natural selection to explain how animals adapted to their environment to survive. He thinks that animals can adapt to their habitats/environments – prove it.	Knowledge based/Research/Drawing Conclusions – Look at the story of Charles Darwin and the Galapagos finches. Thinking about survival of the fittest - how have they changed? Why? What did they need to survive? Planning and Enquiry - Explaining adaptations in a chosen animal over time, giving descriptions and detail as to how and why this has happened. (e.g. penguins/giraffe)	
	Darwin's theory of evolution states that simple life forms gradually evolved into ones that are more complex. Let's Investigate. Examine the similarities and differences between the fossil evidence and its closest living relative.	Observation Over Time/Pattern Seeking – Using the photos of the Flatfish, note down the similarities and differences, which show how they are linked and how we see it has changed over time. Using the photos of the fossil and the living relative of the fern leaves, describe what similarities and differences they have.	

	Jean-Baptiste Lamarak was one of the first people to suggest that organisms changed in accordance with natural laws – known as evolution. He believes humans have evolved over millions of years to survive in their environment – prove it.	Observation/Asking Scientific Questions/Knowledge - Compare the physical appearance and skeletons of the Australopithecus Afarensis and human. What are the similarities and differences? How have they evolved and more importantly why?	

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Science Progression from EYFS to Year 6