

Year 6 - Science- We are Evolving

Summer 1 and 2 Knowledge Organiser



Heathfield Schools' Partnership

This Science unit is a new topic for the children in Year 6, that will be continued during the secondary school science journey. The evolution and genetics topic will look at theories of evolution involving natural selection. It will look at adaptive traits and variation in species and how these develop through offspring over generations.

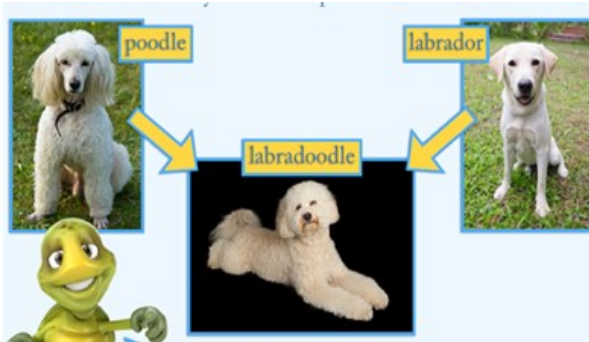
Key knowledge

Offspring: Animals and plants produce offspring that are similar but not identical to them. Offspring often look like their parents because features are passed on.

Inherited Traits: These characteristics/traits are passed on to offspring from their parents. Eye colour, hair colour, shape of your ear lobes and whether or not you can smell certain flowers are examples of inherited traits/characteristics.

Variation occurs in a species from generation to generation. Although an offspring will have some similar characteristics to its parents, it will also have many different characteristics. This is called **variation**.

Variation can be clearly seen when an animal **cross-breeds**:



Here are some examples of adaptive traits:
Polar bear- arctic (**habitat**) - Its white fur enables it to camouflage in the snow.
Camel- desert (**habitat**) - It has wide feet to make it easier to walk in the sand.
Toucan-rainforest (**habitat**) - Its narrow tongue allows it to eat small fruit and insects.
Cactus- desert (**habitat**) - It stores water in its stem.
Ash tress- forest (**habitat**) - It has broad leaves, which enables it to catch more sunlight.

Humans can have **adaptive traits** depending on their family/friend environment e.g. a child that has musical parents will be more likely to play an instrument themselves.

Natural selection eventually leads to **evolution**.

Fossils let scientists know how plants and animals used to look millions of years ago. This is proof that living things have **evolved** over time.

Example of how fossils have provided information about living things that inhabited the Earth millions of years ago:

Fossils of giraffes from millions of years ago show that they used to have shorter necks. They have gradually **evolved** through **natural selection** to have longer necks so that they can reach the top leaves on the taller trees.

Key Vocabulary

Adaptive Traits; These are characteristics that are influenced by the environment the living things live in.

Natural selection is the process where organisms that are better adapted to their environment tend to survive and produce more offspring.

Evolution is the gradual process by which different kinds of living organism have developed from earlier forms over millions of years.

Fossils are the preserved remains, or partial remains, of ancient animals and plants.

Variation occurs in a species from generation to generation.

Inherited Traits: These characteristics/traits are passed on to offspring from their parents.

Offspring: Animals and plants produce offspring that are similar but not identical to them.

Key Questions

What type of offspring do animals and plants reproduce?

What are inherited traits? Can you give some examples of traits that are inherited?

What is variation? Can you give some examples of variation and how it occurs?

Can you tell me the animal, its habitat and how it has adapted?

Why are fossils important for scientist?

Can you explain how fossils have proven evolution?

What is natural selection?

What is evolution?

Science—Enquiry Approaches

Knowledge Organiser



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ambitious for the future

Scientific enquiry approaches are part of our science curriculum and are the different ways that we can carry out scientific investigations.

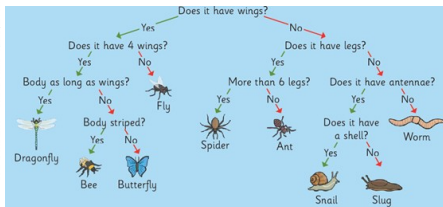
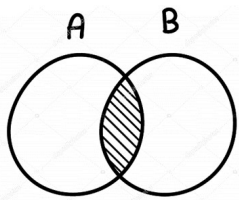
Observing over time



We measure events and changes in living things, processes or materials. These observations (using our senses) may take place over different periods of time; minutes, hours, weeks or months. several weeks or months.

How does the moon appear to change shape during a week?

Identifying and Classifying

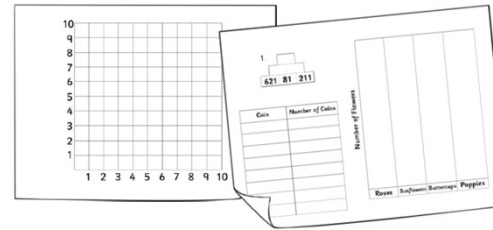


Identification: Naming things by looking at differences.

Classification: Organising things into group by making connections and looking at similarities or differences.

How can we classify animals using a classification key?

Pattern Seeking



We conduct investigations where there are variables we cannot control (practically or ethically).

We don't look for cause and effect in Pattern Seeking, but possible relationships may be identified.

Do sounds get quieter the further away you are from the sound source?

Fair testing



One variable (independent variable) is changed and all other variables must be controlled. The variable that is changed is quantitative (**numbered**).

How does the size of the parachute effect the time it takes to fall?

Researching using Secondary Sources



Sometimes we research when we ask questions that can not be answered practically. We can use secondary sources, such as books, the internet, or an expert.

What are the main parts of the circulatory system and what are their functions?

Comparative testing



One variable (independent variable) is changed and all other variables must be controlled. The variable that is changed is qualitative (**words**).

Which material is the best thermal insulator?