Hurst Hill Primary School Knowledge Organiser

Hurst Hill Primary School
Learning Together

Science	Evolution	Year 6	Autumn 2	Biology

Knowledge	
What is evolution?	**Research** **Evolution** is a process of change that takes place over many **generations**, during which **species** of animals, plants, or insects slowly change some of their physical **characteristics.** This is because **offspring** are not identical to their parents. · It occurs when there is competition to **survive**. This is called **natural selection.** · Difference within a **species** (for example between parents and **offspring**) can be caused by **inheritance** and **mutations**. · Inheritance is when **characteristics** are passed on from generation to the next. · **Mutations** in **characteristics** are not **inherited** from the parents and appear as new · **characteristics**.
How have fossils helped us to understand evolution and provided us with evidence that evolution of species has taken place?	**Identifying and classifying** Evidence of **evolution** comes from **fossils** - when these are compared to living creatures from today, **palaeontologists** can compare similarities and differences. · Other evidence comes from living things - comparisons of some **species** may reveal common **ancestors**.
How are the skeletons of apes, humans and Neanderthals similar or different?	**Comparative** Compare the skeletons of apes, humans, and Neanderthals – how are they similar, and how are they different?
If living things produce offspring what characteristics / features do they take?	**Comparative** Recognise that living things produce offspring of the same kind but the offspring vary and are not identical to their parents. Look at photos of humans (mum and dad) and compare the features that they share. Does their brother or sister share the same features / characteristics?
What happened when Charles Darwin visited the Galapagos islands?	**Research** Find out what Charles Darwin found out on the Galapagos Islands. How did this help him and the future understand evolution?
How have animals adapted to their environment?	**Observing Over Time** **Adaptation** is when animals and plants have **evolved** so that they have **adapted** to **survive** in their **environments**. For example, polar bears have a thick layer of blubber under their fur to **survive** the cold, harsh **environment** of the Arctic while giraffes have long necks to reach the leaves on trees. · Some **environments** provide challenges yet some animals and plants have **adapted** to **survive** there · Sometimes **adaptations** can be disadvantageous. One example of this can be the dodo, which became · **extinct** as it lost its ability to fly through **evolution**. Flying was unnecessary for the dodo as it had lived for so many years without predators, until its native island became inhabited. · When **adaptations** are more harmful than helpful, these are called **maladaptation's**.
How have Penguins and cacti plants adapted to survive in extreme weather conditions?	**Comparative** Compare the penguin with a cacti and discuss the ways in which they have adapted to survive the extreme weather conditions. How are they similar and how a re they different I n their ways of adapting?
Is there a pattern between the size and shape of a bird's beak and the food it will eat?	**Pattern seeking** Look at a variety of birds who eat different sizes and shapes of food. · What can they see. Is their a pattern? · Why do they think this is the case?
What did Alfred Wallace discover that developed ideas in evolution?	**Ideas over Time** Look at how Alfred Wallace's research broadened the knowledge of evolution. What did he discover? How has it impacted us today?
How can we have different breeds of dogs such as labradoodles, cockapoos etc. that never existed before?	**Observing over Time** Characteristics are passed onto their offspring, consider different breeds of dogs and what happens for example when Labradors are crossed with poodles. Over time this variation can make animals more or less able to survive in different environments.

Vocabulary	
Adaptation	A change in structure or function that improves the chance of survival for an animal or plant within a given environment.
Ancestor	An early type of animal or plant from which a later, usually dissimilar, type has evolved.
Biodiversity	A wide variety of animal and plant species living in their natural environment.
Biome	A large naturally occurring community of animals and plants occupying a major habitat.
Breeding	The process of producing animals by reproduction.
Characteristics	The qualities or features that belong to them and make them recognisable.
Environment	All the circumstances, people, things and events around them that influence their life.
Evolution	A process of change that takes place over many generations during which species of animals, plants or insects slowly change some of their physical characteristics.
Extinct	No longer has any living members either in the world or a particular place.
Fossil	The hard remains of a prehistoric animal that are found inside a rock.
Generation	The act or process of bringing into being through reproduction, especially of offspring.
Inherit	If you inherit a human characteristic you are born with it because your parents or ancestors also had it.
Maladaptation	The failure to adapt properly to a new situation or environment.
Mutation	Characteristics that are not inherited from the parents or ancestors and appear as new characteristics.
Natural selection	A process by which species of animals and plants that are best adapted to their environment survive and reproduce, whilst those that are less well adapted die out.
Offspring	A persons children or an animals young.
palaeontology	The study of fossils as a guide to the history of life on Earth.
Reproduction	When an animal or plant produces one or more individuals similar to itself.
Species	A class of plants of animals whose members have the same main characteristics and are able to breed with each other.
Survive	Continue to exist.
Theory	A formal idea or set of ideas that is intended to explain something.
Variation	A change or slight difference.

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Biology is the science that understands living organisms, including animals and plants.

Evolution and inheritance

Statutory requirements

Pupils should be taught to:

- recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago
- 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.