Year 6 – Evolution and inheritance	**Main Outcomes:** • 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.	**Focus:** Science – biology

What should I already know?

- Fossils are formed when things that have lived are trapped within the rock.
- The life process of reproduction in some plants and animals.
- Most living things live in habitats to which they are suited.
- How different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other.

What I will do

I will have weekly or blocked science lessons. In lessons, I will be taught a skill and I will gain knowledge and understanding through the process of scientific enquiry (observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources).

Possible lines of enquiry

- 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.
- An introduction 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.
- An appreciation 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.
- Find out about the work of palaeontologists such as Mary Anning and about how Charles Darwin and Alfred Wallace developed their ideas on evolution.
- Observe and raise questions about local animals and how they are adapted to their environment.
- Compare how some living things are adapted to survive in extreme conditions, for example, cactuses, penguins and camels.
- Analyse the advantages and disadvantages of specific adaptations, such as being on two feet rather than four, having a long or a short beak, having gills or lungs, tendrils on climbing plants, brightly coloured and scented flowers.

Vocabulary	Meaning
adapted/ adaptation	a **characteristic** of an **organism** that helps it to survive in its **habitat**
characteristic	a feature of an **organism**
cladogram	a branching tree diagram that shows ancestral (past) relationships among **organisms**
chromosome	tiny, threadlike structures inside most cells of every **organism** which carry information about the **organism** in units called **genes**
environment	the physical surroundings on Earth including everything living and everything non-living
environmental variation	the differences between individuals that are not **inherited** but caused by the **environment** that the **organism** lives in
evolution	how living things change over time
fossil	the shape of a long-dead animal or plane, found in a rock
genes/genetic	the basic unit of **inheritance** found inside the cells which make up living things. Genes determine what traits are passed down from a mother and father to their child.
habitat	where an **organism** lives
inherit/ inheritance	when **characteristics** are passed on from a parent to its **offspring**
natural selection	a mechanism of **evolution**; **organisms** that are more **adapted** to their **environment** are more likely to survive and pass on the genes that aided their success.
offspring	the young born of living **organisms**
opinion	a view or judgement formed or made about something or someone that isn't necessarily based on something that is factual
organism	any living thing
species	a group of similar **organisms** that are able to reproduce
suit/suited/ suitable	acceptable or right for something
theory	an explanation for why things work or how things happen
trait	a particular **characteristic**, quality, or tendency that someone or something has
vary/ variation	the differences between individuals of the same **species**, caused by **genetic** and **environmental** factors

Resources

Hamilton Science planning: evolution and inheritance https://www.hamilton-trust.org.uk/science/year-6-science/game-survival/ (all planning also saved on SharePoint).

Knowledge and Skills Map – Science at Estcots School

Knowledge to understand

Variation is the differences between individuals of the same **species**, caused by **genetic** and **environmental** factors.	• Animals and plants produce **offspring** of the same kind. • Usually, the **offspring** look similar, but not identical, to their parents. • We look like our parents because we **inherit** some **characteristics** from them. • We look different to our parents because we have some **characteristics** that are different from them (**variations**). N.B. At this stage, pupils are not expected to understand how **genes** and **chromosomes** work but the introduction of the vocabulary is useful.
Adaptations help living things survive in their environment.	• Adaptations are special features which animals and plants develop to suit the place they live in. For example, animals living in or near a pond might have developed features such as: • fins or flippers to move quickly in the water • gills to breathe underwater • camouflage to help them hide in the reeds
Evolution is how living things change over time.	• Living things **vary** – they are different from each other. • Those that are better **adapted** to their **habitat** are more likely to survive and reproduce. • Many of the **offspring** will **inherit** the useful **adaptations**. • Over time, more and more of the living things will have the features that make them well-**adapted** to their **environment**. This is called **evolution**.

Knowledge to understand (continued)

Fossils can be used to find out about the past.	• **Fossils** are the shapes of long-dead plants and animals that can be found in rocks. • Plants and animals around today look different from those that were around millions of years ago. • This is because they have evolved over time. • Fossils can show us what some plants and animals used to look like.

Skills to learn

- 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
- identifying scientific evidence that has been used to support or refute ideas or arguments

Cross-curricular (geography)

describe and understand key aspects of physical geography, including: climate zones, biomes and vegetation belts, rivers, mountains, volcanoes and earthquakes

Equipment to become familiar with

None for this unit.

Evidence of Learning

Science books
Photos
Videos
Pupil conferencing
Teaching and learning observations
Learning walks
Data analysis

How will I know what I've learnt?

See KS2 teacher assessment exemplification for science

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/763065/2018_key_stage_2_teacher_assessment_exemplification_science.pdf

See also Hamilton Science_Assessment_Y6 (saved in planning folder on Sharepoint).

KS2 quizzes:

https://gcequiz.com/quiz/ks2-science-quizzes

https://churchfieldsjunior.com/test-your-skills-science/