Science: Evolution

Definition: The process by which different kinds of living organism are believed to have developed from earlier forms during the history of the earth.

Biology definition: The word **biology** is derived from the greek words /bios/ **meaning** /life/ and /logos/ **meaning** /study/ and is **defined** as the science of life and living organisms. An organism is a living entity consisting of one cell e.g. bacteria, or several cells e.g. animals, plants and fungi.

POS:

- 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.

Prior Learning:

Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other. (Y2 - Living things and their habitats)

Notice that animals, including humans, have offspring which grow into adults. (Y2 - Animals, including humans)

Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. (Y3 - Plants)

Describe in simple terms how fossils are formed when things that have lived are trapped within rock. (Y3 - Rocks)

Recognise that environments can change and that this can sometimes pose dangers to living things. (Y4 - Living things and their habitats)

Describe the life process of reproduction in some plants and animals. (Living things and their habitats - Y5)

Links to other science topics:

Animals including humans (Y1-Y6)
Living things (Y1-Y6)
Life cycles (Y2, Y4, Y5)
Rocks (Y3 Fossils)

Disciplinary concepts:
Variation: How might offspring vary from their parents?
Adaption: what evidence is there to show how animals/plants have adapted?
Evolution: How have some animals changed over time?

Common misconceptions:

Adaptation occurs during an animal's lifetime: giraffes' necks stretch during their lifetime to reach higher leaves and animals living in cold environments grow thick fur during their life

- offspring most resemble their parents of the same sex, so that sons look like fathers
- all characteristics, including those that are due to actions during the parent's life such as dyed hair or footballing skills, can be inherited
- cavemen and dinosaurs were alive at the same time.

Core Knowledge:
All living things have offspring of the same kind, as features in the offspring are inherited from the parents. Due to sexual reproduction, the offspring are not identical to their parents and vary from each other. Plants and animals have characteristics that make them suited (adapted) to their environment. If the environment changes rapidly, some variations of a species may not suit the new environment and will die. If the environment changes slowly, animals and plants with variations that are best suited survive in greater numbers to reproduce and pass their characteristics on to their young. Over time, these inherited characteristics become more dominant within the population. Over a very long period of time, these characteristics may be so different to how they were originally that a new species is created. This is evolution. Fossils give us evidence of what lived on the Earth millions of year ago and provide evidence to support the theory of evolution. More recently, scientists such as Darwin and Wallace observed how living things adapt to different environments to become distinct varieties with their own characteristics.

Wider Knowledge:
Book – 'One Smart Fish' by Christopher Wormell
How did life begin and evolve? – Enquiry based discussion and research https://www.youtube.com/watch?v=TMX8UkgmEX8

Working scientifically:

- Observing and raising 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 2 feet rather than 4, having a long or a short beak, having gills or lungs, tendrils on climbing plants, brightly coloured and scented flowers.

End Goals:

- Identify key characteristics that enable living things to survive in different environments.
- Understand that offspring inherit characteristics from both parents which mean the offspring are similar, but not identical, to their parents and each other.
- Recognises that, if the environment changes, living things that are not well suited will not survive. Only those living things that can survive in the new environment can breed and pass on their characteristics.
- Give examples of how, over time, this leads to a change in the population e.g. peppered moths and finches. He is able to give examples of how fossils provide evidence for this change over long periods of time.

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