Knowledge Organiser

Subject: Science Unit: Living things and their habitats – part 1

Overview:

During this sequence of learning, pupils will be looking at different lifecycles and how some animals and plants reproduce.

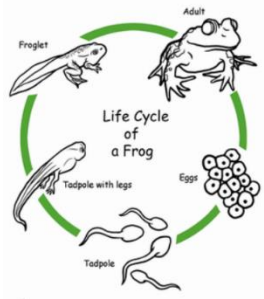
What should I already know?

- Habitats change throughout the year with the seasons.
- Animals can be grouped based on their physical characteristics (e.g. vertebrates and invertebrates) and based on their behaviour (e.g. herbivores, carnivores and omnivores).
- Living things are divided into kingdoms: the animal kingdom, plants, fungi, bacteria, and single-celled organisms.
- A species is a group of living things that have many similarities and can reproduce together to produce offspring.
- A classification key uses questions to sort and identify different living things (see example below).
- How to use a classification key to identify living things.
- How to create a classification key to sort plants on the school premises.
- Negative changes to the environment such as litter, deforestation and over population can make it more difficult for animals to survive and reproduce. In some cases, this can lead to extinction where an entire species can die.
- There can be positive changes to the environment such as building ponds and nature reserves which has a positive impact on species that live there.
- When a species becomes extinct, this can have implications on other species in the food chain e.g. if rabbits became extinct, this could affect foxes as they eat rabbits.
- Human activity such as climate change caused by pollution can change the environment for many living things which can endanger their existence.
- The polar bear is a famous example of climate change endangering the existence of a species; as the climate changes and gets warmer, the sea ice on which polar bears live reduces in amount, making it harder for them to survive and reproduce.

What will I know by the end of the unit?

Life cycles

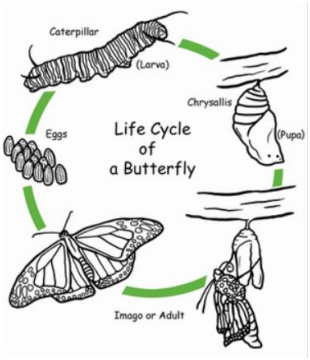
- The life cycle of a living thing is a series of stages of development starting with a fertilised egg in animals or a seed in many plants. It is known as a life cycle as the cycle constantly begins again.
- In most mammals (e.g. humans or dogs) a fertilised egg develops in the womb into an embryo and is then born and fed on milk before it is weaned onto the food that it is adapted to eat; it then develops to maturity in a period called adolescence after which it can reproduce and the cycle can begin again.



Vocabulary:

life cycle	The series of changes in the life of an organism, including reproduction.
life span	The length of time a living things lives for.
metamorphosis	The process of changing into an adult form.
pupa	An insect in its inactive, immature form between a larva and an adult.
larva	The active, immature form of an insect.
chrysalis	A moth or butterfly at the stage of development when it is covered by a hard case.
hatchling	A young animal that has recently hatched from an egg.
fledgling	A young bird that has just left its nest.
insect	A small animal that has six legs and normally one or two pairs of wings.
gamete	A specialised sex cell that fuses with another gamete during fertilization (conception) in organisms that reproduce sexually.
asexual reproduction	Involves one parent who produces offspring that are genetically identical to each other and to the parent.
sexual reproduction	Involves two parents and produces offspring that are genetically unique.

- In amphibians (e.g. frogs) a fertilised egg develops into an embryo and then hatches into a tadpole; the tadpole develops adult characteristics, metamorphoses into the adult form after which it can reproduce and the cycle can begin again.
- In many insects (e.g. butterflies) a fertilised egg develops into wingless feeding form called a larva (caterpillar); the larva feeds then later becomes a pupa (chrysalis) with a protective cocoon; inside this cocoon, the pupa metamorphoses into the adult butterfly after which it can reproduce and the cycle can begin again.



- In birds (e.g. robins) a fertilised egg hatches in a nest (a hatchling) and is fed by its parents until it is ready to fly (i.e. becomes a fledgling); it then leaves the nest and grows into an adult after which it can reproduce and the cycle can begin again.
- Plants reproduce sexually or asexually depending on the plant. In asexual reproduction a plant cell splits in two to produce genetically identical offspring. In sexual reproduction male and female gametes join together to create offspring with a mixture of the two parent's genetics.