Key idea: Variation and Evolution

Y6

Different types of organism (including micro-organisms, plants and animals) have different life cycles

Life cycles have evolved to help organisms survive to adulthood

Fossils provide evidence that Living things have changed over time

Over time the characteristics that are most suited to the environment become increasingly common.

Organisms reproduce and offspring have similar characteristics to parents

Variation exists within a population (and between offspring of same parents)

Competition exists for resources and mates

Environmental change can affect how well an organism is suited to its environment.

Organisms best suited to their environment are more likely to survive long enough to reproduce

Organisms best adapted to reproduce are more likely to do so

Some organisms reproduce sexually where offspring inherit information from both parents

Some organisms reproduce asexually by making a copy of a single parent

Applications and activities related to new NC – BOLD ITEMS MUST BE TAUGHT

- **Pupils should tackle questions requiring them to compare the life cycles of plants and animals in their local environment with other plants and animals around the world (in the rainforest, in the oceans, in desert areas and in prehistoric times). They should be encouraged to think about how each stage helps the organism survive into adulthood.**
- They might observe changes in an animal over a period of time (for example, by hatching and rearing chicks),
- **Pupils should be introduced to the idea that broad groupings such as micro-organisms, plant and animals can be subdivided. Through direct observations where possible they should classify animals into commonly found invertebrates (such as insects, spiders, snails, worms) and vertebrates (fish amphibians, reptiles, birds and mammals). They should discuss reasons why living things are place in one group and not another.**
- **Explore asexual reproduction by trying to grow new plants from different parts of the parent plant, e.g. stem and root cuttings**
- **They should find out about the work of naturalists and animal behaviourists such as David Attenborough and Jane Goodall.**

Evolution (throughout this section the powerful idea that helps children is 'organisms that are best suited to their environment will be more likely to survive long enough to attract a mate and reproduce')

- Pupils could be shown artistic impressions of how horses, giraffes, elephants, humans or other animals have thought to have changed over time and encouraged to describe changes and think about how these changes occurred and over what time scales.
- Pupils could be shown fossils of extinct animals and asked to consider if there is an animal alive today that is similar. The point being that pupils deduce that not everything that once lived is still living and that what is alive today was not always here.
- **They should be introduced 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**
- They could investigate how some living things are adapted to survive in extreme conditions, for example cactuses, penguins and camels or 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. They could hypothesise what might happen to organisms in the future if global warming continues
- Note: At this stage, pupils are not expected to understand how genes and chromosomes work.
- Pupils might find out about the work of paleontologists such as Mary Anning and about how Alfred Wallace and Charles Darwin developed their ideas on evolution.

Yr 4

Environmental change affects different habitats differently

Different organisms are affected differently by environmental change

Human activity significantly affects the environment

Different food chains occur in different habitats

Living things can be divided into groups based upon their characteristics

- **Pupils should use the local environment throughout the year to raise and answer questions that require them to identify and study plants and animals in their habitat.** The important progression from KS1 is that pupils should begin to see how changes in the habitat as a result of seasonal changes (or other environmental changes) affect the organisms that live within the habitat. **They need to investigate questions about how habitats change over a year (and longer periods). They need to investigate how the organisms within a habitat change with the seasons, human induced environmental change and the effects of short-term changes like drought or long periods of cold.** Pupils could investigate the affects of growing under glass or poly tunnels.
- **Pupils should begin to put vertebrate animals into groups such as fish, amphibians, reptiles, birds, and mammals; and invertebrates into snails and slugs, worms, spiders, and insects.**

Yr 2

Environmental change can affect the plants and animals that live there

Living things are adapted to survive in different habitats

There is variation between all living things

Different animals and plants live in different places

Some things are living, some were once living but now dead and some things have never lived

- **Children should raise and seek to answer questions about the local environment; through seeking answers to these questions they will need to identify and study a variety of plants and animals within their habitat and observe how living things depend on each other. Identification should serve the question; identification serves little purpose on its own. Pupils will need support to identify the local wildlife so identification charts that contain the local wildlife will need to be constructed.**
- **Pupils need to explore how the seasons affect local organisms e.g. what happens to flowers, trees and grass, or what happens to squirrels, rabbits and woodlice or the fish in the pond.** They could begin to relate the temperature changes through the year to how well plants grow or why some animals hibernate in winter.

Organisms and their habitats	Life cycles	Evolution and Natural Selection	Inheritance