

Key Learning in Science: Year 6

Please Note: There should be plenty of opportunities throughout the year for children to use the school/local environment to observe and identify a variety of plants and animals that live there focusing on their adaptations for survival. This could be done through an ongoing/monthly nature journal to observe, record and review a variety of examples over a period of time and would support their learning and wider research in the 'Living Things and Their Habitats' unit and the 'Evolution and Inheritance' unit.

Environment - Classification	Environment - Evolution And Inheritance	Animals/Health – Exercise, Health & The Circulatory System
<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals. Give reasons for classifying plants and animals based on specific characteristics. Living things can be grouped into micro-organisms, plants and animals. Vertebrates can be grouped as fish, amphibians, reptiles, birds and mammals. Invertebrates can be grouped as snails and slugs, worms, spiders and insects. Plants can be grouped as flowering plants (incl. trees and grasses) and non-flowering plants (such as ferns and mosses). <p>Notes and Guidance (non-statutory):</p> <p>Pupils should build on their learning about grouping living things in Year 4 by looking at the classification system in more detail. They should be introduced to the idea that broad groupings, such as micro-organisms, plants and animals can be subdivided. Through direct observations where possible, they should classify animals into commonly found invertebrates (e.g. insects, spiders, snails, worms) and vertebrates (fish, amphibians, reptiles, birds and mammals). They should discuss reasons why living things are placed in one group and not another. Pupils might find out about the significance of the work of scientists such as Carl Linnaeus, a pioneer of classification.</p> <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> Using classification systems and keys. Identifying some animals and plants in the immediate environment. Researching unfamiliar animals and plants from a broad range of other habitats and decide where they belong in the classification system. 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> 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. <p>Notes and Guidance (non-statutory):</p> <p>Building on what they have learnt 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. 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 should also appreciate 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. Pupils might find out about the work of palaeontologists such as Mary Anning and about how Charles Darwin and Alfred Wallace developed their ideas on evolution.</p> <p>Note: At this stage, pupils are not expected to understand how genes and chromosomes work.</p> <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> Observing and raising questions about local animals and how they are adapted to the environment. Comparing how some living things adapt to survive in extreme conditions, e.g. cactuses, penguins and camels. Analysing 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. 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. Describe the ways in which nutrients and water are transported within animals, including humans. The heart is a major organ and is made of muscle. The heart pumps blood around the body through vessels and this can be felt as a pulse. The heart pumps blood through the lungs in order to obtain a supply of oxygen. Blood carries oxygen/essential materials to different parts of the body. During exercise muscles need more oxygen so the heart beats faster and our breathing and pulse rates increase. Animals are alive; they move, feed, grow, use their senses, reproduce, breathe/respire and excrete. An adequate, varied and balanced diet is needed to help us grow and repair our bodies (proteins), provide us with energy (fats and carbohydrates) and maintain good health (vitamins and minerals). Tobacco, alcohol and other 'drugs' can be harmful. All medicines are drugs, not all drugs are medicines. <p>Notes and Guidance (non-statutory):</p> <p>Pupils should build on their learning from years 3 and 4 about the main body parts and internal organs (skeletal, muscular and digestive system) to explore and answer questions that help them to understand how the circulatory system enables the body to function. Pupils should learn how to keep their bodies healthy and how their bodies might be damaged – including how some drugs and other substances can be harmful to the human body.</p> <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> Exploring the work of scientists. Scientific research about the relationship between diet, exercise, drugs, lifestyle and health. <p>*Additional suggestion beyond NC2014 to support pupils working scientifically and to provide an opportunity to use ICT to collect/interpret data</p> <ul style="list-style-type: none"> Observing/Measuring changes to breathing, heart beat and or pulse rates after exercise.