
















Year 6 – Classification of Living Things

| National Curriculum Objectives | | Key Knowledge | | Vocabulary | |
|---|---|---|---|---|---|
| <ul style="list-style-type: none"> Classify living things into broad groups according to observable characteristics and based on similarities and differences. Give reasons for classifying plants and animals based on specific characteristics. | | <ul style="list-style-type: none"> Different classes of vertebrates and major characteristics: fish, amphibians, reptiles, birds, mammals (review from Year 4) Scientists have divided living things into five large groups called kingdoms. Each Kingdom is divided into smaller groupings as follows: Phylum, Class, Order, Family, Genus, Species, Variety Variation exists within a population (and between offspring of some plants). Organisms best suited to their environment are more likely to survive long enough to reproduce. Organisms reproduce and offspring have similar characteristic patterns. | | <p>Classification: animals, vertebrate, invertebrate, mammal, fish, bird, amphibian, reptile, organism, classify, compare, kingdom, order, genus</p> <p>Variation/adaptation: similar, different, variation, adaption, evolution, offspring, reproduction</p> <p>Characteristics/inheritance: common, family, related, characteristic, environmental, inherited, offspring, reproduction, genetic, genes, dominant, recessive</p> | |
| | | | | Key Scientists | Linked Texts |
| | | | | Carl Linnaeus (Identifying, Naming and Classifying Organisms) | <i>Variation and Classification</i> (Melanie Waldron) |
| | | | | Charles Darwin (Variation and Adaptation) | <i>On The Origin of Species</i> (Sabina Radeva) |
| Prior Learning | | Key Questions | | Future Learning | |
| <ul style="list-style-type: none"> Classification of Plants and Animals: Cold-blooded or warm-blooded, vertebrates or invertebrates, characteristics of animal classes, classification of plants.(Y4) Recognise that living things can be grouped in a variety of ways. (Y4) Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. (Y4) Recognise that environments can change and that this can sometimes pose danger to living things. Evolution: Fossils, adaptation, characteristics passing through generations, Mary Anning, Alfred Wallace, Charles Darwin, Darwin’s sketches of finches. (Y5) | | <p>What is classification? How do we classify animals? What groups of vertebrates are there? What makes a mammal a mammal? What are the difficulties with classification? What are the groups invertebrates? What is variation? Why does it exist? What is adaptation? Why does it exist? What does inheritance mean? What are environmental characteristics? Why do animals compete? Why do animals evolve? What is the difference between variation and adaptation? What is the difference between micro and macro evolution? Which is more important, inherited or environmental characteristics?</p> | | <ul style="list-style-type: none"> The dependence of almost all life on Earth on the ability of photosynthetic organisms, such as plants and algae, to use sunlight in photosynthesis to build organic molecules that are an essential energy store and to maintain levels of oxygen and carbon dioxide in the atmosphere. The adaptations of leaves for photosynthesis. The interdependence of organisms in an ecosystem, including food webs and insect pollinated crops. The importance of plant reproduction through insect pollination in human food security. How organisms affect, and are affected by, their environment, including the accumulation of toxic materials. | |
|  Comparative & Fair tests |  Identify & Classify |  Observation over time |  Pattern Seeking |  Research | BIG Question: Assessment Opportunity |
| Which is the most common invertebrate on our school playing field? | How would you make a classification key for vertebrates/invertebrates? | | Do all birds have the same beaks? | How did Charles Darwin discover microevolution? | What is classification and how does it help us understand adaptation/variation? |






Year 6 – Evolution and Adaptation

| National Curriculum Objectives | | Core Knowledge | | Vocabulary | | | | | | | |
|---|--|--|--|---|---|----------------|--------------|--|---|-------------------------------|---|
| <ul style="list-style-type: none"> Know about evolution and can explain what it is. Know how fossils can be used to find out about the past. 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 - recognise that living things have changed over time and that fossils provide information. | | <ul style="list-style-type: none"> Animals have offspring that are of the same kind but often offspring have different appearances Animals and plants have adapted to suit the environment within which they live Adaptation may lead to evolution: Darwin’s finches | | <p>Fossils, adaptation, evolution, characteristics, reproduction, competition, survival of the fittest, evidence, genetics, variation, inherited, environmental, mutation, offspring, adapt, evolution, organisms, genetic, Heredity,</p> <table border="1" style="width: 100%;"> <thead> <tr> <th style="width: 50%;">Key Scientists</th> <th style="width: 50%;">Linked Texts</th> </tr> </thead> <tbody> <tr> <td>Charles Darwin and Alfred Russel Wallace (Theory of Evolution by Natural Selection)</td> <td><i>Moth (Isobel Thomas)</i> <i>Darwin’s On The Origin of Species (Sabina Radeva)</i> <i>Darwin’s Rival (Christian Dorian)</i></td> </tr> <tr> <td>Jane Goodall (Chimpanzees)</td> <td><i>One Smart Fish (Christopher Wormell)</i></td> </tr> </tbody> </table> | | Key Scientists | Linked Texts | Charles Darwin and Alfred Russel Wallace (Theory of Evolution by Natural Selection) | <i>Moth (Isobel Thomas)</i> <i>Darwin’s On The Origin of Species (Sabina Radeva)</i> <i>Darwin’s Rival (Christian Dorian)</i> | Jane Goodall (Chimpanzees) | <i>One Smart Fish (Christopher Wormell)</i> |
| Key Scientists | Linked Texts | | | | | | | | | | |
| Charles Darwin and Alfred Russel Wallace (Theory of Evolution by Natural Selection) | <i>Moth (Isobel Thomas)</i> <i>Darwin’s On The Origin of Species (Sabina Radeva)</i> <i>Darwin’s Rival (Christian Dorian)</i> | | | | | | | | | | |
| Jane Goodall (Chimpanzees) | <i>One Smart Fish (Christopher Wormell)</i> | | | | | | | | | | |
| Prior Learning | | Key Questions | | Future Learning | | | | | | | |
| <ul style="list-style-type: none"> Describe in simple terms how fossils are formed when things that have lived are trapped within rock. (Y3) Living things can be divided into groups based upon their characteristics. (Y4) Environmental change affects different habitats differently. (Y4) Different organisms are affected differently by environmental change. (Y4) Different food chains occur in different habitats. (Y4) | | <ul style="list-style-type: none"> Why are we all different? What is variation, and why is it important? How did life begin on Earth? How do we change? What is evolution? What evidence is there for evolution? How does evolution happen? What reasons do animals become extinct? How did Darwin come up with the theory? Why was his theory not initially accepted? | | <ul style="list-style-type: none"> Differences between species. (KS3) Heredity as the process by which genetic information is transmitted from one generation to the next. (KS3) A simple model of chromosomes, genes and DNA in heredity, including the part played by Watson, Crick, Wilkins and Franklin in the development of the DNA model. (KS3) The variation between species and between individuals of the same species means some organisms compete more successfully, which can drive natural selection. (KS3) Changes in the environment may leave individuals within a species, and some entire species, less well adapted to compete successfully and reproduce, which in turn may lead to extinction. (KS3) | | | | | | | |
|  Comparative & Fair tests |  Identify & Classify |  Observation over time |  Pattern Seeking |  Research | BIG Question: Assessment Opportunity | | | | | | |
| What is the most common eye colour in our class? | Compare the skeletons of apes, humans, and Neanderthals – how are they similar, and how are they different? Can you classify these observations into evidence for & against the idea of evolution? | How has the skeleton of the horse changed over time? | Is there a pattern between the size and shape of a bird’s beak and the food it will eat? | What happened when Charles Darwin visited the Galapagos islands? What ideas did American geneticist Barbara McClintock have about genes that won her a Nobel Prize? | What is evolution, how does it happen and how do scientists know? | | | | | | |






Year 6 – Plants (structure and processes)

| National Curriculum Objectives | | Key Knowledge | | Vocabulary | |
|--|--|---|--|--|---|
| <ul style="list-style-type: none"> Identify and describe the functions of different parts of the flowering plant: roots, stem/trunk/leaves and flowers. Explore the part flowers play in a flowering plants life cycle, including: pollination, seed formation and seed dispersal. Explain the requirements of plants for life and growth (air, light, water, nutrients from soil, room to grow) and how they vary between plants. Know the way in which water is transported between plants | | <p>Structure: non-vascular and vascular plants</p> <ul style="list-style-type: none"> Non-vascular plants (for example: algae) Vascular plants have tube-like structures that allow water and dissolved nutrients to move through the plant Parts and functions of vascular plants: roots, stems and buds, leaves <p>Photosynthesis: Plants are producers, they make their own food.</p> <ul style="list-style-type: none"> Their leaves absorb sunlight and carbon dioxide. Photosynthesis is an important life process that occurs in plant cells, but not animal cells (photo = light; synthesis = putting together). Role in photosynthesis of: energy from sunlight, chlorophyll, carbon dioxide and water | | <p>Vascular/non-vascular plants: air, light, water, soil, growth, root, stem, bud, leaves, vascular, non-vascular, dissolved, nutrients,</p> <p>Photosynthesis: light, energy, leaves, carbon dioxide, oxygen, photosynthesis, absorb, chlorophyll, cell, xylem, phloem, stomata</p> | |
| | | | | Key Scientists | Linked Texts |
| | | | | David Attenborough (Naturalist and Nature Documentary Broadcaster) James Brodie of Brodie (Reproduction of Plants by Spores) | <i>The Hidden Forest</i> (Jeannie Baker) <i>George and Flora's Secret Garden</i> (Jo Elworthy) |
| Prior Learning | | Key Questions | | Future Learning | |
| <ul style="list-style-type: none"> identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers (Y3) explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant (Y3) investigate the way in which water is transported within plants (Y3) explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. (Y3) | | <ul style="list-style-type: none"> Can a plant live without its leaves? What conditions are perfect for a seed to grow? Do plants take in water through their roots? How does water move through the plant? How do plants make their food? How does light affect plant growth? | | <ul style="list-style-type: none"> Photosynthesis: the reactants in, and products of, photosynthesis, and a word summary for photosynthesis; the dependence of almost all life on Earth on the ability of photosynthetic organisms, such as plants and algae, to use sunlight in photosynthesis to build organic molecules that are an essential energy store and to maintain levels of oxygen and carbon dioxide in the atmosphere; the adaptations of leaves for photosynthesis. The interdependence of organisms in an ecosystem, including food webs and insect pollinated crops (KS3) The importance of plant reproduction through insect pollination in human food security (KS3) | |
|  Comparative & Fair tests |  Identify & Classify |  Observation over time |  Pattern Seeking |  Research | BIG Question: Assessment Opportunity |
| How does the length of the carnation stem affect how long it takes for the food colouring to dye the petals? | | What happens to celery when it is left in a glass of coloured water? How do flowers in a vase change over time? | | | |

Year 6 – Plants (reproduction)

| National Curriculum Objectives | | Core Knowledge | | Vocabulary | |
|--|--|---|--|---|--|
| <ul style="list-style-type: none"> Identify and describe the functions of different parts of the flowering plant: roots, stem/trunk/leaves and flowers. Explore the part flowers play in a flowering plants life cycle, including: pollination, seed formation and seed dispersal. Explain the requirements of plants for life and growth (air, light, water, nutrients from soil, room to grow) and how they vary between plants. Know the way in which water is transported between plants | | REPRODUCTION IN PLANTS <ul style="list-style-type: none"> Sexual reproduction flowering plants Sexual reproduction of non-flowering seed plants Sexual reproduction by spore bearing plants Asexual reproduction Functions of sepals and petals, stamen (male), anther, pistil (female), ovary (or ovule) Process of seed and fruit production: pollen, wind, insect and bird pollination, fertilisation, growth of ovary, mature fruit Seed germination and plant growth: seed coat, embryo and endosperm, germination (sprouting of new plant) | | Reproduction in plants: seed, flower, petal, pollen, fruit, asexual, sexual, reproduction, spore, sepal, stamen, filament, anther, ovary, pistil, fertilisation, germination, dispersal, vegetative | |
| | | | | Key Scientists | Linked Texts |
| | | | | David Attenborough (Naturalist and Nature Documentary Broadcaster) | <i>The Hidden Forest</i> (Jeannie Baker) |
| | James Brodie (Reproduction of Plants by Spores) | <i>George and Flora's Secret Garden</i> (Jo Elworthy) | | | |
| Prior Learning | | Key Questions | | Future Learning | |
| <ul style="list-style-type: none"> Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers (Y3) explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant (Y3) investigate the way in which water is transported within plants (Y3) explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. (Y3) | | <ul style="list-style-type: none"> Do plants reproduce in the same ways as us? How do plants spread their seeds? How do plants reproduce? Do all flowers look the same? How do insects know which flowers to pollinate? Why do flowers smell? What do seeds do? | | <ul style="list-style-type: none"> The interdependence of organisms in an ecosystem, including food webs and insect pollinated crops (KS3) The importance of plant reproduction through insect pollination in human food security (KS3) | |
|  Comparative & Fair tests |  Identify & Classify |  Observation over time |  Pattern Seeking |  Research | BIG Question: Assessment Opportunity |
| Which conditions help seeds germinate faster? | How many different ways can you group our seed collection? | How does a bean change as it germinates? | What colour flowers do pollinating insects prefer? | What are all the different ways that seeds disperse? | Do all plants and animals reproduce in the same way? |

Year 6 – Human Body (reproduction)

| National Curriculum Objectives | | Core Knowledge | | Vocabulary | |
|--|--|--|---|---|--|
| <ul style="list-style-type: none"> Describe the changes as humans develop to old age. Know the life cycle of different living things, e.g. Mammal, amphibian, insect bird. Know the differences between different life cycles. Know the process of reproduction in animals. | | <p>Human growth stages: Different animals mature at different rates and live to different ages. Puberty is something we all go through, a process which prepares our bodies for being adults, and reproduction</p> <p>Puberty</p> <p>The reproductive system in females & males; sexual reproduction. Some organisms reproduce sexually where offspring inherit information from both parents.</p> <p>The endocrine system: Hormones control these changes; which can be physical and/or emotional.</p> <p>The human body has two types of glands: duct glands (such as the salivary glands), and ductless glands, also known as the endocrine glands.</p> <ul style="list-style-type: none"> Endocrine glands Pituitary gland Thyroid gland Pancreas Adrenal glands | | <p>Human growth stages: parent, infant, puberty, adult, reproduction, penis, vagina, growth spurt, hair growth, breasts, voice change, pregnancy</p> <p>Reproduction in mammals: ovaries, fallopian tubes, uterus, menstruation, testes, scrotum, urethra, semen, intercourse, fertilisation, zygote, implantation, embryo</p> <p>The endocrine system: hormones, endocrine, glands, ducts, pituitary, thyroid, pancreas, adrenal,</p> | |
| | | | | Key Scientists | Linked Texts |
| | | | | Miriam Menkin | <i>What's Happening To Me? (Usbourne books)</i> |
| | | | | Antonie van Leeuwenhoek | <i>How To Build A Human Body (Tom Jackson)</i> |
| | | | | | <i>What Makes Me Me? (Robert Winston)</i> |
| Prior Learning | | Key Questions | | Future Learning | |
| <p>The Human Body: Circulation: The circulatory system, the heart, the blood vessels, the blood, blood pressure and heart rate. (Yr 5)</p> <p>The Human Body : The muscular system, the skeletal system, the nervous system. (Yr 4)</p> <p>Cycles in Nature: Seasonal cycles and plants, animal migration. Life cycles of a plant and a frog. (Yr 3)</p> <p>The Human Body: Cells, organ systems, the digestive system, teeth and senses, a healthy diet, vitamins and minerals (Yr 3)</p> | | <ul style="list-style-type: none"> Do all animal embryos look the same? How do humans change? Why do humans change? What is a life cycle? What types of life cycles are there? Are life cycles the same? What causes puberty? What changes do we go through during puberty? Are there any patterns between vertebrate animals and their gestation periods? | | <ul style="list-style-type: none"> Reproduction: reproduction in humans (as an example of a mammal), including the structure and function of the male and female reproductive systems, menstrual cycle (without details of hormones), gametes, fertilisation, gestation and birth, to include the effect of maternal lifestyle on the foetus through the placenta (KS3) | |
|  Comparative & Fair tests |  Identify & Classify |  Observation over time |  Pattern Seeking |  Research | BIG Question: Assessment Opportunity |
| How does age affect a human's reaction time? Who grows the fastest, girls or boys? | Can you identify all the stages in the human life cycle? Compare this collection of animals based on similarities and differences in their lifecycle. | How do different animal embryos change? | Is there a relationship between a mammal's size and its gestation period? | What are the differences between the life cycle of an insect and a mammal? Why do people get grey/white hair when they get older? | Do all plants and animals reproduce in the same way? |

Year 6 – Famous Scientists and their Discoveries

| National Curriculum Objectives | Key Knowledge | Vocabulary | |
|---|---|--|--|
| <ul style="list-style-type: none"> Not NC linked | <p>To understand the role of prominent scientists in their respective fields.</p> <ul style="list-style-type: none"> Stephen Hawking – physics (event horizons and black holes) Marie Maynard Daily – chemistry (first African American woman to earn a PhD in chemistry) Alexander Fleming – biology (discovery of penicillin) Mary Leakey – paleoanthropologist Daniel Hale Williams – biology (first doctor to complete open heart surgery) | <p>Each scientist that will be studied will have vocabulary linked to their work and subject matter. This will be reflected in the children’s work as well as through glossaries in their writing.</p> | |
| | | Key Scientists | Linked Texts |
| | | Stephen Hawking | <i>Little People, Big Dreams, Stephen Hawkins</i> |
| | | Marie Maynard Daily | <i>Alexander Fleming for Kids Ruth Richards</i> |
| | | Alexander Fleming | <i>Mary Leakey: Archaeologist Who Really Dug Her Work – Mike Venezia</i> |
| | | Mary Leakey | <i>Daniel Hale Williams: Surgeon Who Opened Hearts and Minds– Mike Venezia</i> |
| | | Daniel Hale Williams | |
| Prior Learning | Key Questions | Future Learning | |
| <ul style="list-style-type: none"> All year groups have science biographies. | <ul style="list-style-type: none"> What did this scientist discover? What do you know about their life and work? What are the effects of black holes? What are the characteristics of invertebrates; | <p>Students will learn more about the work of these and other scientists as they move into KS3.</p> | |