

Ashwell Primary School

Science Curriculum

Seasonal Changes Knowledge Organiser



Year 1 – Seasonal Changes

Core Knowledge / skills to be acquired:

- **observe changes across the four seasons**
- identify what to observe
- use descriptive words, photos and pictures to record changes
- collect evidence of changes (e.g. leaves, seeds, flowers)
- name the four seasons
- recall simple changes associated with each season
- observe and name types of weather (e.g. rain, sun, wind, clouds)
- **observe and describe weather associated with the seasons and how day length varies**
- identify what to measure about the weather
- use prepared tables and charts to record data
- *use secondary data to describe weather in another setting*
- *explain why animals are easier to spot at different times of year (e.g. migrating birds, hibernating animals)*

Key Vocabulary:

Seasons: Autumn, Spring, Summer, Winter, deciduous, evergreen, shoot, fruit, earth, seeds, leaves, flowers, weather types: rain, hail, snow, ice, frost, sun, showers, wind, reproduce, babies/adults, life cycles, birds, insects, cold, warm, hot, sunrise, sunset

Curriculum Enrichment / Cultural Capital Opportunities

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Prior knowledge / skills this builds on: (EYFS)

- Identify and describe different types of weather
- Talk about changes through the seasons at different times of year

What comes next: (Year 2 – Habitats)

- with help, use keys to identify some animals and plants
- recognise that different plants live in the local environment
- identify some local habitats
- describe the simple features of habitats
- recognise a microhabitat as a small habitat (e.g. leaf litter, woodlice under stones)
- describe some microhabitats
- **identify and name a variety of plants and animals in their habitats, including micro- habitats**
- recognise similarities and differences between plants and animals
- **explore and compare the differences between things that are living, dead, and things that have never been alive**
- explain differences between living and non-living things in terms of characteristics such as movement and growth
- use their observations to point out differences between animals, plants and non-living things
- recognise that plants provide food for humans and other animals within an environment

- construct a simple food chain (e.g. grass, cow, human)
- **describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food**
- name a few of the organisms that live in a particular habitat
- suggest reasons why different plants and animals are found in the different environments
- **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**
- *compare animals found in familiar habitats with unfamiliar habitats*
- *compare plants found in familiar habitats with unfamiliar habitats*
- *use different factors to compare a range of habitats (e.g. water, light, temperature)*

Year 2 – Habitats

Core Knowledge / skills to be acquired:

- with help, use keys to identify some animals and plants
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- *compare animals found in familiar habitats with unfamiliar habitats*
- *compare plants found in familiar habitats with unfamiliar habitats*
- *use different factors to compare a range of habitats (e.g. water, light, temperature)*

Key Vocabulary:

Dead, alive, living, non-living, habitats, keys, breathe, grow, eat, have babies, move, sense, go to the toilet, habitat, microhabitat, food chain

Curriculum Enrichment / Cultural Capital Opportunities

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- identify what to measure about the weather
- use prepared tables and charts to record data
- *use secondary data to describe weather in another setting*

explain why animals are easier to spot at different times of year (e.g. migrating birds, hibernating animals)

What comes next: (Year 4 – Classification and Interdependence)

- **explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment**
- **recognise that living things can be grouped in a variety of ways**
- explore ways of grouping living things including animals and plants (flowering and non-flowering)
- recognise that animals can be grouped into vertebrates and invertebrates
- describe some of the characteristics of the vertebrate (fish, mammals, amphibians, reptiles and birds) groups (e.g. warm-blooded, have fur, lay eggs)
- group animals into vertebrate (fish, mammals, amphibians, reptiles and birds) and invertebrates groups (snails, slugs, spiders, worms and insects)
- *explain why some animals are hard to classify (e.g. platypus, echidna, bat, flightless birds)*
- identify that some animals feed on other animals and some on plants
- represent feeding relationships with simple food chains
- recognise that a food chain must always start with a green plant (a producer)
- represent feeding relationships within a habitat with food chains beginning with a green plant which 'produces' food for the other organisms
- recognise that green plants are the ultimate source of food for all animals
- use and understand the terms: producer, predator and prey
- **construct and interpret a variety of food chains, identifying producers, predators and prey** (Teacher Note: statement moved from NC 'Animals including humans' to improve progression within topics)
- *use food chains to predict what might happen to the numbers of an organism if there are suddenly more predators or less prey*
- know the function of some of the more complex features which aid survival in specific habitats (e.g. gills, blubber, camouflage)
- describe why different animals and plants live in different habitats
- **recognise that environments can change and that this can sometimes pose dangers to living things**
- describe how humans can cause changes to environments
- *explain why it is necessary to use a reasonably large sample when investigating the preferences of small invertebrates*
- explain that different organisms are found in different habitats because of differences in environmental factors
- *describe how humans have negatively impacted environments (e.g. pollution, deforestation, introduction of invasive species)*

Year 4 – Classification and Interdependence

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Key Vocabulary:

Predator, prey, producer, river, ocean, desert, arctic, rainforest, mountain, farmland, wood, dry, wet, vegetation, shelter, vertebrate, invertebrate, classify, characteristic, flowering plant, non- flowering plant (fern, moss)

Curriculum Enrichment / Cultural Capital Opportunities

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Prior knowledge / skills this builds on: (Year 2 – Habitats)

- with help, use keys to identify some animals and plants
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- describe the simple features of habitats
- recognise a microhabitat as a small habitat (e.g. leaf litter, woodlice under stones)
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- **explore and compare the differences between things that are living, dead, and things that have never been alive**
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- **describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food**
- name a few of the organisms that live in a particular habitat
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- **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**
- *compare animals found in familiar habitats with unfamiliar habitats*
- *compare plants found in familiar habitats with unfamiliar habitats*
- *use different factors to compare a range of habitats (e.g. water, light, temperature)*

What comes next: (Year 5 – Life Cycles)

- sequence the life cycles of a variety of plants and animals
- recognise the similarities in the life cycles of plants, animals and humans
- ***describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird***
- name the parts of a flower
- describe the functions of some parts of a flower
- describe the main functions of parts of a plant involved in reproduction
- describe the processes of sexual and asexual reproduction in plants
- name the parts of the human reproductive system
- describe the simple functions of parts of the human reproductive system
- ***describe the life process of reproduction in some plants and animals***
- compare methods of seed dispersal
- know that most animals reproduce by sexual reproduction
- *compare internal and external fertilisation in animals*
- *explain that living things need to reproduce if the species is to survive*
- *compare gestation periods (pregnancy) of different animals*
- *explain what is unusual about the life cycle of a kangaroo or koala*

Year 5 – Life Cycles

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- name the parts of the human reproductive system
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- **describe the life process of reproduction in some plants and animals**
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- *explain what is unusual about the life cycle of a kangaroo or koala*

Key Vocabulary:

Live young, hatch, tadpole, caterpillar, butterfly, ladybird, pupae, larvae, chrysalis, reproduction, asexual, sexual, life cycle, pollination, seed dispersal, pollen, stamen, stigma

Curriculum Enrichment / Cultural Capital Opportunities

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Prior knowledge / skills this builds on: (Year 4 – Classification and Interdependence)

- **explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment**
- **recognise that living things can be grouped in a variety of ways**
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- *explain why some animals are hard to classify (e.g. platypus, echidna, bat, flightless birds)*
- identify that some animals feed on other animals and some on plants
- represent feeding relationships with simple food chains

What comes next: (Year 6 – Classification)

- recognise that there is a wide variety of living things
- understand why classification is important
- identify vertebrates and invertebrates
- name and describe the five vertebrate groups
- **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**
- *devise own keys to classify organisms and objects*
- **give reasons for classifying plants and animals based on specific characteristics**
- *describe early ideas about classification (e.g. Aristotle)*
- understand there are living things that are too small to be seen and these can affect our lives
- recognise that there are many micro-organisms, some which can cause illness or decay

- recognise that a food chain must always start with a green plant (a producer) - represent feeding relationships within a habitat with food chains beginning with a green plant which 'produces' food for the other organisms - recognise that green plants are the ultimate source of food for all animals - use and understand the terms: producer, predator and prey construct and interpret a variety of food chains, identifying producers, predators and prey (Teacher Note: statement moved from NC 'Animals including humans' to improve progression within topics) <i>use food chains to predict what might happen to the numbers of an organism if there are suddenly more predators or less prey</i> - know the function of some of the more complex features which aid survival in specific habitats (e.g. gills, blubber, camouflage) - describe why different animals and plants live in different habitats recognise that environments can change and that this can sometimes pose dangers to living things - describe how humans can cause changes to environments <i>explain why it is necessary to use a reasonably large sample when investigating the preferences of small invertebrates</i> - explain that different organisms are found in different habitats because of differences in environmental factors <i>describe how humans have negatively impacted environments (e.g. pollution, deforestation, introduction of invasive species)</i>	- recognise that there are useful micro-organisms which can be used in food production - describe how micro-organisms feed, grow and reproduce like other organisms - describe evidence, from investigations, that yeast is living - explain how micro-organisms can move from one food source to another or from one animal to another <i>compare the rate of reproduction in microorganisms to other animals</i> <i>describe how the development of the microscope has contributed to our understanding of microorganisms</i> <i>describe how ideas about hygiene have changed over time (e.g. Semmelweis)</i>
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Year 6 - Classification

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- recognise that there are useful micro-organisms which can be used in food production
- describe how micro-organisms feed, grow and reproduce like other organisms

Key Vocabulary:

Micro-organism, microbe, fungus, bacteria, virus, classified, classification key, yeast, characteristic, microscope

- describe evidence, from investigations, that yeast is living
- explain how micro-organisms can move from one food source to another or from one animal to another
- *compare the rate of reproduction in microorganisms to other animals*
- *describe how the development of the microscope has contributed to our understanding of microorganisms*
- *describe how ideas about hygiene have changed over time (e.g. Semmelweis)*

Curriculum Enrichment / Cultural Capital Opportunities

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Prior knowledge / skills this builds on: (Year 5 Life Cycles)

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- *explain what is unusual about the life cycle of a kangaroo or koala*

What comes next: (Year 6 - Evolution and Inheritance)

- recognise variation in different species (e.g. dogs, horses)
- recognise that offspring have some of the features of their parents
- **recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents**
- recognise that animals have to compete for food
- describe how animals avoid predators (e.g. speed, camouflage)
- describe how animals and plants are adapted to their environments
- **identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution**
- explain how being well adapted to an environment means an organism is more likely to survive
- *explain that animals which are better adapted to an environment are more likely to survive, reproduce and pass on characteristics to their offspring meaning the animal species will gradually change and evolve (giraffe with the tallest neck could reach more leaves to feed on)*
- **recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago**
- explain why we do not have a complete fossil record
- *describe the story of the peppered moth and how this provides evidence for natural selection*
- *explain how antibiotic resistant bacteria provide evidence for natural selection*
- *explain why we can see evidence for natural selection in fast reproducing organisms like bacteria (e.g. antibiotic resistant bacteria and pesticide resistant insects)*
- *explain how the introduction of a new species to an isolated environment can effect native species (e.g. Dodo, Kakapo or Stephen's island wren)*
- *compare the ideas of Darwin and Lamarck on evolution*

Year 6 - Evolution and Inheritance

Core Knowledge / skills to be acquired:

Evolution and Inheritance:

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- *explain how the introduction of a new species to an isolated environment can effect native species (e.g. Dodo, Kakapo or Stephen's island wren)*
- *compare the ideas of Darwin and Lamarck on evolution*

Key Vocabulary:

Variety, variation, offspring, species, competition, adapt, adaptation, reproduce, survive, evolve, fossil record, gills, blubber, moulting, long neck, hooves, eyelashes, tails, generation

Curriculum Enrichment / Cultural Capital Opportunities

▪

Prior knowledge / skills this builds on: (Year 6 – Classification)

- recognise that there is a wide variety of living things
- understand why classification is important
- identify vertebrates and invertebrates
- name and describe the five vertebrate groups
- **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**
- *devise own keys to classify organisms and objects*
- **give reasons for classifying plants and animals based on specific characteristics**

What comes next:

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| <ul style="list-style-type: none">▪ <i>describe early ideas about classification (e.g. Aristotle)</i>▪ understand there are living things that are too small to be seen and these can affect our lives▪ recognise that there are many micro-organisms, some which can cause illness or decay▪ recognise that there are useful micro-organisms which can be used in food production▪ describe how micro-organisms feed, grow and reproduce like other organisms▪ describe evidence, from investigations, that yeast is living▪ explain how micro-organisms can move from one food source to another or from one animal to another▪ <i>compare the rate of reproduction in microorganisms to other animals</i>▪ <i>describe how the development of the microscope has contributed to our understanding of microorganisms</i>▪ <i>describe how ideas about hygiene have changed over time (e.g. Semmelweis)</i> | |
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