Murdishaw West Community Primary School
Science Curriculum Overview

Year 2 (Science) – Living Things and their Habitats (What is in your habitat?)

The **BIG** Picture

Pupils will be introduced to the idea that all living things have certain characteristics that are essential for keeping them alive and healthy. They will raise and answer questions that help them to become familiar with the life processes that are common to all living things. Pupils will be introduced to the terms 'habitat' and 'microhabitat'. They will raise and answer questions about the local environment that help them to identify and study a variety of plants and animals within their habitat and observe how living things depend on each other. The children will compare animals in familiar habitats with animals found in less familiar habitats, for example, on the seashore, in woodland, in the ocean, in the rainforest.

Additional experiences to enhance learning: STEM visitors and experiences, links with the local High School, can visit the pond at a local Primary School and use the school grounds

What do we already know?

•Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. (Y1 - Plants)
•Identify and describe the basic structure of a variety of common flowering plants, including trees. (Y1 - Plants)
•Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. (Y1 - Animals including humans)
•Identify and name a variety of common animals that are carnivores, herbivores and omnivores. (Y1 - Animals including humans)
•Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). (Y1 – Animals, including humans)
•Observe changes across the four seasons. (Y1 - Seasonal changes)

Sticky Knowledge:

Can they match certain living things to the habitats they are found in?

Can they explain the differences between living and non-living things?

Can they describe some of the life processes common to plants and animals, including humans?

Can they decide whether something is living, dead or non-living?

Can they describe how a habitat provides for the basic needs of things living there?

Can they describe a range of different habitats?

Can they describe how plants and animals are suited to their habitat?

Challenging – Can they name some characteristics of an animal that help it to live in a particular habitat?

Challenging - Can they describe what animals need to survive and link this to their habitat?

NC Objectives: Working Scientifically taught throughout Year 1/2:

•Asking simple questions and recognising that they can be answered in different ways

•Observing closely, using simple equipment

•Performing simple tests

•Identifying and classifying

•Using their observations and ideas to suggest answers to questions

•Gathering and recording data to help in answering questions

National Curriculum Knowledge: Year 2:

- Explore and compare the differences between things that are living, dead, and things that have never been alive
- 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
- Identify and name a variety of plants and animals in their habitats, including micro-habitats
- 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

Types of Scientific Enquiry:

- Identifying and classifying
- Research
- Pattern seeking

Key vocabulary:

living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed, water, air, survive, survival, names of local habitats (e.g. pond, woodland etc.), names of micro-habitats (e.g. under logs, in bushes etc.), conditions, light, dark, shady, sunny, wet, damp, dry, hot, cold, names of living things in the habitats and micro- habitats studied

Key Knowledge:

All objects are either living, dead or have never been alive. Living things are plants (including seeds) and animals. Dead things include dead animals and plants and parts of plants and animals that are no longer attached e.g. leaves and twigs, shells, fur, hair and feathers (This is a simplification, but appropriate for Year 2 children.)
An object made of wood is classed as dead. Objects made of rock, metal and plastic have never been alive (again ignoring that plastics are made of fossil fuels).
Animals and plants live in a habitat to which they are suited, which means that animals have suitable features that help them move and find food and plants have suitable features that help them to grow well. The habitat provides the basic needs of the animals and plants – shelter, food and water.
Within a habitat there are different micro-habitats e.g. in a woodland – in the leaf litter, on the bark of trees, on the leaves. These micro-habitats have different conditions e.g. light or dark, damp or dry. These conditions affect which plants and animals live there. The plants and animals in a habitat depend on each other for food and shelter etc. The way that animals obtain their food from plants and other animals can be shown in a food chain.

Scientists across the Curriculum:

Choose from the following options:

William Kirby – father of modern entomology

Prem Singh Gill – Polar Scientist who studies Antarctic seals

Dawood Qureshi – Marine Biologist who studies ocean wildlife

Murdishaw West Community Primary School
Science Curriculum Overview

Year 2 (Science) – Plants (The Apprentice Gardener)

The **BIG** Picture

Pupils will explore and use the local environment throughout the year to observe how plants grow. Pupils will be introduced to the requirements of plants for germination, growth and survival, as well as the processes of reproduction and growth in plants. Pupils will explore how seeds and bulbs need water to grow but most do not need light; seeds and bulbs have a store of food inside them.

Additional experiences to enhance learning: STEM visitors and experiences, links with the local High School, can visit the pond at a local Primary School and use the school grounds

What do we already know?

•Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. (Y1 - Plants)
•Identify and describe the basic structure of a variety of common flowering plants, including trees. (Y1 - Plants)

Sticky Knowledge:

Can they describe what plants need to survive?

Can they describe how seeds and bulbs grow into plants?

Can they describe what a plant needs to grow and stay healthy?

Can they explain that plants grow and reproduce?

Challenging – Can they describe what plants need to survive and link it to where they are found?

Challenging – Can they explain that plants grow and reproduce in different ways?

NC Objectives: Working Scientifically taught throughout Year 1/2:

•Asking simple questions and recognising that they can be answered in different ways

•Observing closely, using simple equipment

•Performing simple tests

•Identifying and classifying

•Using their observations and ideas to suggest answers to questions

•Gathering and recording data to help in answering questions

National Curriculum Knowledge: Year 2:

- Observe and describe how seeds and bulbs grow into mature plants.
- Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.

Types of Scientific Enquiry:

- Identifying and classifying
- Research
- Pattern seeking
- Changes over time

Scientists across the Curriculum:

Choose from the following options:

Daniel Solander – Botanist who worked on Captain Cook's voyage around the world with Joseph Banks

Joseph Banks – Naturalist on Captain Cook's voyage around the world

Thomas Wyatt Turner – Botanist who studies plant disease

Poppy Okotcha – Horticulturalist interested in the connection between healthy environment, food and people

Dr Ben Woodcock – Ecological Entomologist who helps farmers grow food

Angie Burnett – Plant Biologist

Key vocabulary:

light, shade, Sun, warm, cool, water, space, grow, healthy, bulb, germinate, shoot, seedling

Key Knowledge:

Plants may grow from either seeds or bulbs. These then germinate and grow into seedlings which then continue to grow into mature plants. These mature plants may have flowers which then develop into seeds, berries, fruits etc. Seeds and bulbs need to be planted outside at particular times of year and they will germinate and grow at different rates. Some plants are better suited to growing in full sun and some grow better in partial or full shade. Plants also need different amounts of water and space to grow well and stay healthy.

Murdishaw West Community Primary School
Science Curriculum Overview

Year 2 (Science) – Animals, including Humans (Take Care)

The **BIG** Picture

Pupils will begin to learn the basic needs of animals for survival, and the importance of exercise and nutrition for humans. They will begin to learn the processes of reproduction and growth in animals (in simple terms).

Additional experiences to enhance learning: STEM visitors and experiences, links with the local High School, and use the school grounds

What do we already know?

•Identify and name a variety of common animals that are carnivores, herbivores and omnivores. (Y1 - Animals, including humans)
•Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. (Y1 - Animals, including humans)

Sticky Knowledge:

Can they describe what animals need to survive?

Can they explain that animals grow and reproduce? (in simple terms)

Can they explain why animals have offspring?

Can they explain that humans start off as a baby and grow into adult?

Can they describe why exercise and a balanced diet are important for humans?

Can they explain what good hygiene means?

Challenging – Can they explain that animals reproduce in different ways?

NC Objectives: Working Scientifically taught throughout Year 1/2:

•Asking simple questions and recognising that they can be answered in different ways

•Observing closely, using simple equipment

•Performing simple tests

•Identifying and classifying

•Using their observations and ideas to suggest answers to questions

•Gathering and recording data to help in answering questions

National Curriculum Knowledge: Year 2:

- Notice that animals, including humans, have offspring which grow into adults.
- Find out about and describe the basic needs of animals, including humans, for survival (water, food and air).
- Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.

Types of Scientific Enquiry:

- Identifying and classifying
- Pattern seeking
- Fair tests
- Research

Key Knowledge:

Animals, including humans, have offspring which grow into adults. In humans and some animals, these offspring will be young, such as babies or kittens, that grow into adults. In other animals, such as chickens or insects, there may be eggs laid that hatch to young or other stages which then grow to adults. The young of some animals do not look like their parents e.g. tadpoles.

All animals, including humans, have the basic needs of feeding, drinking and breathing that must be satisfied in order to survive. To grow into healthy adults, they also need the right amounts and types of food and exercise.
Good hygiene is also important in preventing infections and illnesses.

Key vocabulary:

offspring, reproduction, growth, baby, toddler, child, teenager, adult, old person, names of animals and their babies (e.g. chick/hen, kitten/cat, caterpillar/butterfly), survive, survival, water food, air, exercise, heartbeat, breathing, hygiene, germs, disease, food types (e.g. meat, fish, vegetables, bread, rice, pasta, dairy)

Scientists across the Curriculum:

Choose from the following options:

Florence Nightingale – Nurse and founder of modern nursing

Elizabeth Garrett Anderson – First English woman to qualify as a doctor

Dr Kelly Blacklock – Veterinary Surgeon

Daniella Dos Santos – Veterinary Surgeon

Murdishaw West Community Primary School
Science Curriculum Overview

Year 2 (Science) – Uses of Everyday Materials (Materials: Good Choices)

The **BIG** Picture

Pupils will be given the opportunity to identify and discuss the uses of different everyday materials so that they become familiar with how some materials are used for more than one thing (metal can be used for coins, cans, cars and table legs; wood can be used for matches, floors, and telegraph poles) or different materials are used for the same thing (spoons can be made from plastic, wood, metal, but not normally from glass). They will think about the properties of materials that make them suitable or unsuitable.

Additional experiences to enhance learning: STEM visitors and experiences, links with the local High School, and use the school grounds

What do we already know?

- Distinguish between an object and the material from which it is made. (Y1 - Everyday materials)
- Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. (Y1 - Everyday materials)
- Describe the simple physical properties of a variety of everyday materials. (Y1 - Everyday materials)
- Compare and group together a variety of everyday materials on the basis of their

Sticky Knowledge:

Can they distinguish between an object and the material it is made from?

Can they identify and name a range of everyday materials?

Can they describe the simple physical properties of a variety of everyday materials?

Can they compare and classify a variety of materials based on their simple physical properties?

Can they explore how the shapes of solid objects can change?

Can they identify and compare the uses of a range of everyday materials?

Can they explain how things move on different surfaces?

Can they explain why a material might be useful for a specific job?

Challenging – Can they say which materials are natural or man-made?

Challenging - Can they explain why materials are changed by heating/cooling?

Challenging - Can they explain how materials are changed by bending/twisting/stretching?

NC Objectives: Working Scientifically taught throughout Year 1/2:

- Asking simple questions and recognising that they can be answered in different ways
- Observing closely, using simple equipment
- Performing simple tests
- Identifying and classifying
- Using their observations and ideas to suggest answers to questions
- Gathering and recording data to help in answering questions

National Curriculum Knowledge: Year 2:

- Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.
- Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.

Types of Scientific Enquiry:

- Identifying and classifying
- Research
- Comparison tests
- Fair tests

Key vocabulary:

Names of materials – wood, metal, plastic, glass, brick, rock, paper, cardboard
Properties of materials – hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, opaque, transparent and translucent, reflective, non- reflective, flexible, rigid
Shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching

Key Knowledge:

All objects are made of one or more materials that are chosen specifically because they have suitable properties for the task. For example, a water bottle is made of plastic because it is transparent allowing you to see the drink inside and waterproof so that it holds the water. When choosing what to make an object from, the properties needed are compared with the properties of the possible materials, identified through simple tests and classifying activities. A material can be suitable for different purposes and an object can be made of different materials.
Objects made of some materials can be changed in shape by bending, stretching, squashing and twisting. For example, clay can be shaped by squashing, stretching, rolling, pressing etc. This can be a property of the material or depend on how the material has been processed e.g. thickness.

Scientists across the Curriculum:

Choose from the following options:

Charles Macintosh – Chemist and inventor of waterproof clothing

John McAdam – inventor of the modern road surface

Victoria Callaghan – develops sustainable packaging for BASF plc

Dr Pearl Agyakwa – Materials Scientist

Murdishaw West Community Primary School
Science Curriculum Overview

Year 2 (Science) – Working Scientifically (The Environment)

The **BIG** Picture

Pupils will be introduced to the ecological challenges that face the modern world. They will have opportunities to develop a greater understanding of environmental issues and the simple changes we can make to live more sustainable lives.

Additional experiences to enhance learning: STEM visitors and experiences, links with the local High School, can visit the pond at a local Primary School and use the school grounds

What do we already know?

- Explore the natural world around them. (Reception – Living things and their habitats)
- Understand the effect of changing seasons on the natural world around them. (Reception – Seasonal changes)
- Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. (Y1 - Animals including humans)
- Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock.
- Describe the simple physical properties of a variety of everyday materials

Sticky Knowledge:

Can they say what the environment is?

Can they suggest ways they can reduce, reuse and recycle?

Can they identify ways that people can use less energy?

Can they name some ways animals become endangered?

Can they name some ways that we can save water?

Challenge – Can they identify ways we can help the environment?

Challenge – can they suggest ways to make good decisions about rubbish?

NC Objectives: Working Scientifically taught throughout Year 1/2:

•Asking simple questions and recognising that they can be answered in different ways

•Observing closely, using simple equipment

•Performing simple tests

•Identifying and classifying

•Using their observations and ideas to suggest answers to questions

•Gathering and recording data to help in answering questions

This topic is additional to the National Curriculum Programmes of Study and focuses on developing Working Scientifically skills

Knowledge Year 2:

- Explore the effect humans have on their environment
- Understand the simple changes we can make to live more sustainable lives

Types of Scientific Enquiry:

- Identifying and classifying
- Fair / Comparison testing
- Pattern seeking
- Research
- Changes over time

Key vocabulary:

Climate change, atmosphere, global warming, greenhouse gas, waste, reduce, reuse, recycle, endangered equator, , energy, renewable, non-renewable, electricity, sustainable, conservation

Key Knowledge:

Humans, like all living things, need certain things to live and be healthy. We need somewhere safe to live, clean air to breathe, clean water to drink and good food to eat. All living things get everything they need from our home, Planet Earth! This is our environment.

It is important that we keep the environment healthy by taking care of the soil, the water, the air and all the plants and animals that live here. That way the Earth can keep giving us all the things that we need to be happy and healthy.

Scientists across the Curriculum:

Choose from the following options:

David Attenborough – Biologist, Natural Historian and TV Presenter

John Tyndall – Physicist who discovered the greenhouse effect