Town Lane Infant School
Progression of knowledge and skills in Science
EYFS & KS1

S Macaskill

Year Group	Birth to 3	3 and 4	Reception	ELG	Year 1	Year 2
Living things and their habitat	**UW** Explore and respond to different natural phenomena in their setting and on trips.	**UW** Plant seeds and care for growing plants. Begin to understand the need to respect and care for the natural environment and all living things. Talk about what they see, using a wide vocabulary.	**Understanding the World** Explore the natural world around them. Describe what they see, hear and feel whilst outside. Recognise some environments that are different to the one in which they live. Understand the effect of changing seasons on the natural world around them.	• Explore the natural world around them, making observations and drawing pictures of animals and plants. • Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. • Understand some important processes and changes in the natural world	• 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)	• 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

				around them, including the seasons and changing states of matter.		
Working scientifically skills	• Closely observes what animals, people and vehicles do • Make links and notice patterns in their experience • Answer how and why questions about their experiences • Develop their own narratives and explanations by connecting ideas or events • Learn new vocabulary. • Ask questions to find out more and to check what has been said to them. • Articulate their ideas and thoughts • Use talk to work out problems and organise thinking and activities. Explain how things work and why they might happen.				• Identifying and classifying • Using their observations and ideas to begin to suggest answers to questions • Gathering and recording data to help in answering questions with support • Observing closely, using simple equipment with support.	• Identifying and classifying • Using their observations and ideas to suggest answers to questions • Gathering and recording data to help in answering questions. • Observing closely, using simple equipment

TOPIC	Future learning
Living things and their habitat	Recognise that living things can be grouped in a variety of ways. (Y4 - Living things and their habitats) • Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. (Y4 - Living things and their habitats) • Recognise that environments can change and that this can sometimes pose dangers to living things. (Y4 - Living things and their habitats) • Construct and interpret a variety of food chains, identifying producers, predators and prey. (Y4 - Animals, including humans)
Working scientifically skills	• Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • Asking relevant questions and using different types of scientific enquiries to answer them • Setting up simple practical enquiries, comparative and fair tests • Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • Using straightforward scientific evidence to answer questions or to support their findings.

YEAR 2

KEY LEARNING Living things and their habitat

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.

An object made of wood is classed as dead. Objects made of rock, metal and plastic have never been alive (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.

Common Misconceptions

Some children may think: • an animal's habitat is like its 'home' • plants and seeds are not alive as they cannot be seen to move • fire is living • arrows in a food chain mean 'eats'.

KEY VOCABULARY

Living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed

Names of local habitats e.g. pond, woodland etc.

Names of micro-habitats e.g. under logs, in bushes

Assessment for learning

I can explain that all animals need oxygen, water, shelter and food to survive.

I can identify and name a variety of plants and animals in their habitats, including micro-habitats.

I can describe the conditions of micro-habitats such as light/dark, damp/dry and explain which conditions affect the plants/animals that live there.

I can construct a food chain that starts with a plant and has the arrows pointing in the correct direction.
I can explain which things that are either living, dead or have never been alive.

I can explain that living things are plants (including seeds) and animals.

I can name the habitat of an animal and plant and explain why they are suited to it .

Year Group	Birth to 3	3 and 4	Reception	ELG	Year 1	Year 2
Plants	Explore natural materials, indoors and outside. Explore and respond to different natural phenomena in their setting and on trips.	Use all their senses in hands-on exploration of natural materials Talk about what they see, using a wide vocabulary. Plant seeds and care for growing plants. Understand the key features of the life cycle of a plant and an animal. Begin to understand the need to respect and care for the natural environment and all living things	Explore the natural world around them. Describe what they see, hear and feel whilst outside. Understand the effect of changing seasons on the natural world around them.	Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. Explore the natural world around them, making observations and drawing pictures of animals and plants.	• 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)	• 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.
Working scientifically skills	Closely observes what animals, people and vehicles do • Make links and notice patterns in their experience • Answer how and why questions about their experiences Develop their own narratives and explanations by connecting ideas or events • Learn new vocabulary. • Ask questions to find out more and to check what has been said to them. Articulate their ideas and thoughts in well-formed sentences • Use talk to work out problems and organise thinking and activities. Explain how things work and why they might happen. Use new vocabulary in different contexts.				• Observe closely, using simple equipment with support. • Begin to identify and classify plants • Gather and record data with support to help answer questions.	• Observing closely, using simple equipment • Asking simple questions and recognising that they can be answered in different ways • Performing simple tests • Using their observations and ideas to suggest answers to questions

TOPIC	Future learning
Plants	• Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. (Y3 - Plants) • 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 - Plants) • Investigate the way in which water is transported within plants. (Y3 - Plants) • Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. (Y3 - Plants)
Working scientifically skills	• Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • Identifying differences, similarities or changes related to simple scientific ideas and processes • Setting up simple practical enquiries, comparative and fair tests • Using straightforward scientific evidence to answer questions or to support their findings. • Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions

YEAR Y1

KEY LEARNING Plants	KEY VOCABULARY
Growing locally, there will be a vast array of plants which all have specific names. These can be identified by looking at the key characteristics of the plant. Plants have common parts, but they vary between the different types of plants. Some trees keep their leaves all year while other trees drop their leaves during autumn and grow them again during spring.	Leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud Names of trees in the local area Names of garden and wild flowering plants in the local area
Common Misconceptions Some children may think: • plants are flowering plants grown in pots with coloured petals and leaves and a stem • trees are not plants • all leaves are green • all stems are green • a trunk is not a stem • blossom is not a flower.	**Assessment for learning** I can identify and name a variety of common plants, including those on our school grounds, garden plants, wild plants and trees, and those classified as deciduous and evergreen. I can identify and describe the basic structure of a variety of common flowering plants, including trees. I can recognise that food can be grown and farmed. (Link to Harvest)

YEAR 2

KEY LEARNING Plants

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.

Common Misconceptions

Some children may think: • plants are not alive as they cannot be seen to move • seeds are not alive • all plants start out as seeds • seeds and bulbs need sunlight to germinate.

KEY VOCABULARY

As for Year 1 plus light, shade, sun, warm, cool, water, grow, healthy.

Assessment for learning

I can explain the different sections of a bulb and label it.

I can explain that plants need light, water and a suitable temperature to grow and the amount may be different from one plant to another in order to stay healthy.

I can explain the process of growth from bulbs to plants (seed/bulb, germinate, seedlings, mature plant).

Year Group	Birth to 3	3 and 4 year olds	Reception	ELG	Year 1	Year 2
Animals including humans	Make connections between the features of their family and other families. Notice differences between people.	Talk about what they see, using a wide vocabulary. Continue to develop positive attitudes about the differences between people. Understand the key features of the life cycle of a plant and an animal. Begin to understand the need to respect and care for the natural environment and all living things.	Explore the natural world around them. Describe what they see, hear and feel whilst outside. Name and describe people who are familiar to them. Know and talk about the different factors that support their overall health and wellbeing: - regular physical activity - healthy eating - toothbrushing - sensible amounts of 'screen time' - having a good sleep routine	Explore the natural world around them, making observations and drawing pictures of animals and plants Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices.	• 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.	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.

		Make healthy choices about food, drink, activity and toothbrushing.	being a safepedestrian			
Working scientifically skills	• Closely observes what animals, people and vehicles do • Make links and notice patterns in their experience • Answer how and why questions about their experiences Develop their own narratives and explanations by connecting ideas or events				• Observing closely, using simple equipment with support • Begin to identifying and classify a variety of animals • Gathering and recording data with support to help in answering questions. • Perform simple tests with support	• Identifying and classifying • Gathering and recording data to help in answering questions. • Observing closely, using simple equipment • Asking simple questions and recognising that they can be answered in different ways • Perform simple tests

TOPIC	Future learning
Animals including humans	Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. (Y3 - Animals, including humans) • Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. (Y5 - Living things and their habitats) • Describe the life process of reproduction in some plants and animals. (Y5 - Living things and their habitats) • Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. (Y6 - Animals, including humans).
Working scientifically skills	• Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • Asking relevant questions and using different types of scientific enquiries to answer them • Setting up simple practical enquiries, comparative and fair tests • Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions

YEAR 1

KEY LEARNING Animals including humans

Animals vary in many ways having different structures e.g. wings, tails, ears etc. They also have different skin coverings e.g. scales, feathers, hair. These key features can be used to identify them. Animals eat certain things - some eat other animals, some eat plants, some eat both plants and animals. Humans have key parts in common, but these vary from person to person. Humans (and other animals) find out about the world using their senses. Humans have five senses – sight, touch, taste, hearing and smelling. These senses are linked to particular parts of the body.

N.B. The children need to be able to name and identify a range of animals in each group e.g. name specific birds and fish. They do not need to use the terms mammal, reptiles etc. or know the key characteristics of each, although they will probably be able to identify birds and fish, based on their characteristics. The children also do not need to use the words carnivore, herbivore and omnivore. If they do, ensure that they understand that carnivores eat other animals, not just meat. Although we often use our fingers and hands to feel objects, the children should understand that we can feel with many parts of our body.

KEY VOCABULARY

Head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves • Names of animals experienced firsthand from each vertebrate group • Parts of the body • Senses – touch, see, smell, taste, hear, fingers (skin), eyes, nose, ear and tongue

Assessment for learning

I can identify and name a variety of common animals including amphibians, reptiles, mammals and birds.

I can identify and name a variety of common animals that are carnivores, herbivores and omnivores.

Common Misconceptions Some children may think: • only four-legged mammals, such as pets, are animals • humans are not animals • insects are not animals • all ‘bugs’ or ‘creepy crawlies’, such as spiders, are part of the insect group • amphibians and reptiles are the same.	I can describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). I can identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.

YEAR 2

KEY LEARNING Animals including humans

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.

Common Misconceptions

Some children may think: • an animal's habitat is like its 'home' • all animals that live in the sea are fish • breathing is respiration.

KEY VOCABULARY

Offspring, reproduction, growth, child, young/old stages (examples - chick/hen, baby/child/adult, caterpillar/butterfly), exercise, heartbeat, breathing, hygiene, germs, disease, food types (examples – meat, fish, vegetables, bread, rice, pasta)

Assessment for learning

I can explain that animals, including humans, have offspring which grow into adults e.g babies or kittens.

I can explain that animals such as chickens or insects, may lay eggs 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.

I can discuss the life cycle of a human.

I can explain that all animals, including humans need food, drink, oxygen to survive.

I can describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.

I can name the different food groups and know what a balanced diet looks like.

I can explain what good hygiene looks like and that it is important to stop infections and illnesses from spreading.

Year Group	Birth to 3	3 to 4	Reception	ELG	Y 1	Year 2
Uses of every day materials	Explore materials with different properties. Explore natural materials, indoors and outside.	Use all their senses in hands-on exploration of natural materials. Explore collections of materials with similar and/or different properties. Talk about what they see, using a wide vocabulary. Explore and talk about different forces they can feel. Talk about the differences between materials and changes they notice.	Explore the natural world around them. Describe what they see, hear and feel whilst outside.	Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.	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 simple physical properties. (Y1 - Everyday materials)	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.

Working scientifically skills	• Closely observes what animals, people and vehicles do • Make links and notice patterns in their experience • Answer how and why questions about their experiences • Develop their own narratives and explanations by connecting ideas or events	• Observing closely, using simple equipment with support • Identifying and classifying a range of materials • Begin to ask simple questions and recognising that they can be answered in different ways • Using their observations and ideas to begin to suggest answers to questions • Gathering and recording data to help in answering questions with support • Performing simple tests with support	• Observing closely, using simple equipment • Identifying and classifying a range of materials • Asking simple questions and recognising that they can be answered in different ways • Using their observations and ideas to suggest answers to questions • Gathering and recording data to help in answering questions • Performing simple tests

TOPIC	Future learning
Everyday materials	Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. (Y3 - Rocks) • Notice that some forces need contact between two objects, but magnetic forces can act at a distance. (Y3 - Forces and magnets) • Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. (Y5 - Properties and changes of materials) • Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. (Y5 - Properties and changes of materials)
Working Scientifically Skills	• Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • Setting up simple practical enquiries, comparative and fair tests • Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • Using straightforward scientific evidence to answer questions or to support their findings. • Identifying differences, similarities or changes related to simple scientific ideas and processes • Asking relevant questions and using different types of scientific enquiries to answer them

YEAR 1

KEY LEARNING Everyday Materials

All objects are made of one or more materials. Some objects can be made from different materials e.g. plastic, metal or wooden spoons. Materials can be described by their properties e.g. shiny, stretchy, rough etc. Some materials e.g. plastic can be in different forms with very different properties.

Common Misconceptions

Some children may think: • only fabrics are materials • only building materials are materials • only writing materials are materials • the word 'rock' describes an object rather than a material • 'solid' is another word for hard.

KEY VOCABULARY

Object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil, card/cardboard, rubber, wool, clay, hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, see-through, not see-through.

Assessment for learning

I can name an object and know that it can be made of one or more materials.

I can identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock.

I can describe the simple physical properties of a variety of everyday materials.

I can compare and group together a variety of everyday materials on the basis of their simple physical properties.

YEAR 2

KEY LEARNING Materials

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.

Common Misconceptions

Some children may think: • only fabrics are materials • only building materials are materials • only writing materials are materials • the word rock describes an object rather than a material • solid is another word for hard.

KEY VOCABULARY

Names of materials – wood, metal, plastic, glass, brick, rock, paper, cardboard
Properties of materials – as for Year 1 plus opaque, transparent and translucent, reflective, non-reflective, flexible, rigid
Shape, push/pushing, pull/puling, twist/twisting,
squash/squashing, bend/bending, stretch/stretching

Assessment for learning

I can sort objects made from different materials
e.g wood, glass, plastic, fabric, metal, paper, rock, ceramic,

I can describe the properties of different materials e.g bendy, hard, transparent.

I can identify uses for different materials and know why they make them suitable for a particular object e.g glass for a window.

I can explain how some solid objects made from some materials can be changed by squashing, bending, twisting and stretching.

Year Group	Birth to 3	3 to 4	Reception	ELG	Year 1	Year 3
Seasonal changes	Explore natural materials, indoors and outside. Explore and respond to different natural phenomena in their setting and on trips.	Talk about what they see, using a wide vocabulary.	Understand the effect of changing seasons on the natural world around them. Explore the natural world around them. Describe what they see, hear and feel whilst outside.	Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.	• Observe changes across the four seasons. • Observe and describe weather associated with the seasons and how day length varies.	Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. (Y3 - Light)

Working scientifically skills	• Closely observes what animals, people and vehicles do • Make links and notice patterns in their experience • Answer how and why questions about their experiences • Develop their own narratives and explanations by connecting ideas or events	• Observing closely, using simple equipment • Using their observations and ideas to suggest answers to questions • Gathering and recording data to help in answering questions. • Asking simple questions and recognising that they can be answered in different ways	• Setting up simple practical enquiries, comparative and fair tests • Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • Reporting on findings from enquiries, including oral and written explanations, • Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment

YEAR 1

KEY LEARNING Seasonal changes	KEY VOCABULARY
In the UK, the day length is longest at mid-summer (about 16 hours) and gets shorter each day until mid-winter (about 8 hours) before getting longer again. The weather also changes with the seasons. In the UK, it is usually colder and rainier in winter, and hotter and dryer in the summer. The change in weather causes many other changes. Some examples are: numbers of minibeasts found outside; seed and plant growth; leaves on trees; and type of clothes worn by people.	Weather (sunny, rainy, windy, snowy etc.) • Seasons (winter, summer, spring, autumn) • Sun, sunrise, sunset, day length
Common Misconceptions Some children may think: • it always snows in winter • it is always sunny in the summer • there are only flowers in spring and summer • it rains most in the winter.	**Assessment for learning** I can name the four seasons. I can observe changes across the four seasons and identify when in the year they occur . I can describe weather in different seasons over a year . I can describe days as being longer (in time) in the summer and shorter in the winter .