



Science at Great Whelnetnam C of E Primary School

Robins Class – Year 2 and 3

Cycle 1

Title	Survival (Animals and Humans)
Overview	In this unit, children learn about how humans and other animals are born, grow and change, and what we need to survive and be healthy. The pupils will classify different kinds of animal babies, learn about the basic needs that are shared by humans and animals, and research the differing needs of animals within our care. Focusing on their own experiences, children explore the need for humans to eat a varied diet, to keep themselves clean, and to take regular exercise.
Knowledge Acquisition	By the end of this unit the children will be able to say which animal some babies will grow into. They will know the names of some animal babies. They will know the three things that animals need to survive and recognise patterns in humans. They will know examples of healthy and less healthy foods and recognise the five food groups. They will be able to name some things that humans do to maintain hygiene. The children will understand the importance of exercise and be able to record information about how exercise affects us.
Vocabulary	offspring, grow, adults, nutrition, vitamins, minerals, fat, protein, carbohydrates, fibre, water, reproduce, survival, water, food, air, exercise, hygiene, life cycle, skeletons, support, protection, skull, brain, ribs, heart, lungs, movement
Key Learning Objectives	<ul style="list-style-type: none"> ➤ To describe how animals change as they grow. ➤ To know the basic needs of animals and humans for them to survive. ➤ To investigate patterns in humans. ➤ To be able to ask and answer questions about a pet ➤ To be able to give reasons as to how humans can stay healthy. ➤ To know the five food groups and the foods which belong to them. ➤ To identify the main body parts of animals and humans ➤ To know the importance of exercise and how it affects our bodies.
Suggested Learning Experiences	<ul style="list-style-type: none"> ➤ Sorting and matching animals and their babies. ➤ Order the stages of animals growing into an adult. ➤ Create a 'How to look after your pet' leaflet – list what they need to survive, include the difference between 'want' and 'need'. ➤ Experiments – investigating patterns in humans – pose questions – is the oldest person the tallest? Think of further questions to investigate. ➤ Recap five food groups, sort foods into correct groups. ➤ Create a balanced meal on a plate for an athlete. ➤ Using magnifying glasses to observe how clean their hands are. ➤ Children to take part in exercise activities to think about how it affects their bodies – fair test, who can run the fastest.

Title	Sound - Hearing things
Overview	The aim of this unit is to introduce children to the concept of sound and for them to begin to develop a basic understanding of how we hear sound and how sound travels. Children will relate sounds to their sense of hearing and understand that sounds travels away from a source.
Knowledge Acquisition	By the end of this unit the children will know different types of sounds and how they are made. They will know that sound is a form of energy. They will understand how the ear functions to hear sounds. They will understand that sound travels through vibrations. They will know that sounds reduce in volume the further they travel. They will know how sounds can be reduced in volume.
Vocabulary	Sound, soundwaves, vibrate, vibrations, vibrating, air, ear, hear, volume, pitch, faint, fainter, loud, louder, insulated, source, soundproof, tension, blow, bang, shake, high, tight, tuning, noise
Key Learning Objectives	<ul style="list-style-type: none"> ➤ To identify the many kinds of sound and sources of sound ➤ To understand that we hear sound with our ears ➤ To understand that sounds travel away from sources, getting fainter as they do so, and that they are heard when they enter the ear ➤ To investigate how sound travels and can be insulated
Suggested Learning Experiences	<ul style="list-style-type: none"> ➤ Explore how sounds are made through the process of vibration. ➤ Carry out investigations on how sound travels – what happens when you increase the distance from the source of the sound. ➤ Investigate how you can insulate sound. ➤ Make some basic junk model instruments. ➤ Investigate how sound travels and can be insulated.

Title	What are we made from?
Overview	The aim of this unit is for children to extend their understanding of animals and humans. The children’s learning will focus on the different structures of animals and the impact this has on how they move. The children will learn about skeletons and muscles and the functions that these have. The children will deepen their understanding about eating healthily by learning about nutrition and nutrients what they provide humans with. The children will also have the opportunity to compare human and animal diets.
Knowledge Acquisition	By the end of this unit children will understand the role of the skeleton for animals and humans and the need for them. They will be able to sort animals into vertebrates and invertebrates. Children will be able to name the different types of skeleton and animals which fit into each group. Children will be able to name types of muscles and describe the way the work in conjunction with bones. They will know the nutrients humans need to have good nutrition and be able to name them. Children will be able to identify similarities and differences between human and animal diets.
Vocabulary	Skeleton, vertebrates, invertebrates, exoskeleton, endoskeleton, hydro skeleton, adapt, muscle, names of bones, joints, support, protection, movement, nutrition, nutrients, carbohydrates, protein, fats and oils, fibre, vitamins and minerals, herbivore, carnivore, omnivore.

Key Learning Objectives	<ul style="list-style-type: none"> ➤ To understand that humans and some animals have a skeleton. ➤ To know why humans and some animals have a skeleton. ➤ To identify vertebrates and invertebrates. ➤ To know the different types of skeleton. ➤ To know the function of our muscles. ➤ To know that some animals do not have a skeleton and to understand how they move. ➤ To know how muscles and bones work together to create movement. ➤ To know the types of nutrients we need. ➤ To understand where animals, including humans get their nutrition from. ➤ To compare human and animal diets.
Suggested Learning Experiences	<ul style="list-style-type: none"> ➤ To recap parts of the body – draw and label around a partner. ➤ Label the bones in the skeleton – play ‘bone bingo’/build a skeleton. ➤ Concept maps using key words showing their understanding of words. ➤ Sort animals into groups (vertebrates, invertebrates, exoskeleton) ➤ Play odd ones out ➤ Research which foods contain these nutrients and how they keep us healthy. ➤ Sort foods under the nutrients they provide. ➤ Children to look at food labels and show their understanding of what they mean. Use the labels to compare foods based on their nutrients.

Title	Eco-Detectives
Overview	In this unit, children will learn about the diversity of habitats on the Earth. They will explore how living things have adapted to them in terms of body forms, life cycles and behaviours. Children will look at wildlife in their local area as well as in a nearby reserve. They will learn about the role humans can play for good and bad in terms of their impact on the environment.
Knowledge Acquisition	By the end of this unit the children will be able to describe differences between the living and dead. They can describe different living environments and the way they affect plants and animals that live there. The children will create food chains and make links between animals and sources of food. They will know the importance of looking after animals and caring for the environment.
Vocabulary	Habitat and Microhabitat (including woodland, meadow, desert, rainforest, ocean, seashore), dead, alive, living, movement, respiration, respire, sensitivity, nutrition, excretion, reproduction, growth, temperature, climate/weather, suited/suitability, energy, producer, consumer, prey, predator.
Key Learning Objectives	<ul style="list-style-type: none"> ➤ To explore and compare the differences between things that are living, dead and things that have never been alive.

	<ul style="list-style-type: none"> ➤ Identify similarities and differences between different environments and ways in which these affect animals and plants that are found there. ➤ To 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. ➤ To 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. ➤ How to treat living creatures with care and sensitivity. ➤ To learn about the importance of caring for the environment.
Suggested Learning Experiences	<ul style="list-style-type: none"> ➤ To explore a range of habitats on the earth and how animals and plants adapt to them. ➤ To study a local habitat near the school. ➤ To visit a local wildlife reserve – Needham Lakes ➤ To explore food chains and webs. ➤ To create a mini-beast ‘rock pet’ and ‘cardboard box habitat’. ➤ To find out about the different kinds of plants and animals in the local environment. ➤ To relate life processes to animals and plants found in the local environment. ➤ To create a local area plant and animal local habitats book.

Title	The Secret Life of Plants
Overview	In this unit the pupils will find out everything they need to know about plants. They will learn the names of different parts of plants, and the jobs they do. The children will work scientifically and collaboratively to investigate what plants need to grow well. They will have chance to predict what will happen in an exciting investigation into the transportation of water within plants. They will work in a hands-on way to identify the parts of a flower, and will explore the different stages of the life cycle of a flowering plant.
Knowledge Acquisition	By the end of this unit the children will be able to name and label the different parts of flowering plants. The children will be able to explain the functions of the different parts of plants. They will know the stages of the life cycle of flowering plants and describe it in detail. The children will know how to set up an investigation and make predictions about water transportation. They will be able to describe, write and draw about the process of pollination and seed dispersal.
Vocabulary	flower, seed, leaf, stem, roots, petal, pollen, photosynthesis, life cycle, dispersal, pollination, fertilisation, germination, ovary, ovule, sepal, stamen, anther, filament, stigma, carpel, style, trunk, anchor, nutrients, absorb, air, light, water, nutrients, soil,
Key Learning Objectives	<ul style="list-style-type: none"> ➤ To be able to name the different parts of flowering plants and explain their function. ➤ To explore the requirements of plants for life and growth. ➤ To understand that these vary from plant to plant. ➤ To understand and describe the lifecycle of flowering plants.

	<ul style="list-style-type: none"> ➤ To investigate the way in which water is transported within plants. ➤ To understand the process of pollination. ➤ To investigate how seeds are moved through the process of seed dispersal.
Suggested Learning experiences	<ul style="list-style-type: none"> ➤ Make plant observations – drawing, measuring, facts. ➤ Create a Plants Did you know? Fact file ➤ Make comparisons between plants reinforcing parts of plants and their functions. ➤ Dissect real flowering plants using a magnifying glass to identify and label the parts. ➤ Classify different plants in our diets. ➤ Carry out experiments on water transportation in plants.

Cycle 2

Title	Material World
Overview	This unit will teach our children about the uses of everyday materials including wood, plastic, metal, glass, brick, paper and cardboard. Children then go on to compare the suitability of different everyday materials for different purposes. They explore how objects made of some everyday materials can change shape and how the recycling process is able to reuse some everyday materials numerous times. It finishes with children learning about new discoveries which have been made over time. A range of learning activities are used in this unit including, discussions, debates, sequencing and a local walk where children work scientifically to identify the uses of everyday materials in the local area.
Knowledge Acquisition	By the end of this unit the children will be able to identify and name everyday materials and their properties. They will know different uses of everyday materials and be able to distinguish between natural and man-made. They will be able to record their observations accurately giving reasons. The children will be able to explain how the shapes of some materials can be changed. The children will know what recycling means and its processes.
Vocabulary	Material, wood, metal, plastic, glass, brick, rock, paper, cardboard, rubber, waterproof fabric, absorbent, translucent, transparent, rigid, flexible, rough, smooth, dull, shiny, squashing, bending, twisting, stretching, recycle, reuse, reduce, suitable, unsuitable.
Key Learning Objectives	<ul style="list-style-type: none"> ➤ To distinguish between an object and the materials from which it is made. ➤ To describe the physical properties of a variety of everyday materials. ➤ To be able to identify and group the uses of everyday materials. ➤ To recognise, name and sort materials which are natural or man-made. ➤ To understand the terms reversible and irreversible – predict which material comes under each section ➤ To explore the concept of temperature and describe the way some materials change when they are heated or cooled

	<ul style="list-style-type: none"> ➤ To be able to explain how the shapes of objects can change ➤ To understand the process of recycling
Suggested Learning experiences	<ul style="list-style-type: none"> ➤ Materials exploring walk in the local area ➤ Sorting and grouping materials ➤ Create fact files of inventors – John Dunlop, Charles Macintosh ➤ Creating a paper bridge to test suitability ➤ PMI – P: what is positive about it? M: What is negative (minus) about it? I: What is interesting about it? Write a sentence for each letter. ➤ Testing materials for their different uses – describe why they are suitable or unsuitable. ➤ Would you rather? ➤ Visit to a local recycling centre – Suffolk CC recycling manager

Title	Forces and Magnets
Overview	This 'Forces and Magnets' unit will teach our pupils about forces, friction and magnetic attraction. They will learn about forces in the context of pushing and pulling, and will identify different actions as pushes or pulls. The children will work scientifically and collaboratively to investigate friction, by exploring the movement of a toy car over different surfaces. They will work in a hands on way to identify magnetic materials. They will conduct an investigation into the strength of different types of magnet. They will explore the way magnetic poles can attract and repel, making their own compass and using it to find hidden items. The children will use their understanding of magnetic attraction to design and create their own magnetic game.
Knowledge Acquisition	By the end of this unit they will know the difference between pushes and pulls. The children will know that friction is a force that slows objects down. They will know how to sort materials according to their magnetism. They will know that a magnet has opposing poles that repel and attract. The children will know how to use a magnetic compass with four points. Through investigations they will be able to make predictions and form conclusions based on results.
Vocabulary	force, push, pull, open, surface, magnet, magnetic, attract, repel, magnetic poles, magnetic fields, North, South, disk magnet, bar magnet, horseshoe magnet,
Key Learning Objectives	<ul style="list-style-type: none"> ➤ To recap on the types of forces. ➤ To compare how things move on different surfaces using force. ➤ To learn how forces are measured using a force meter. ➤ TO learn what magnets are and which materials are magnetic. ➤ To learn about the properties of magnets including poles, fields, attraction and repulsion. ➤ To compare and group together a variety of everyday materials that are magnetic. ➤ To carry out a fair test investigation using magnets.
Key Learning experiences	<ul style="list-style-type: none"> ➤ To sort forces vocabulary into pushes and pulls and discuss how we use them in everyday activities. ➤ Explore how force is measured in Newton's after Issac Newton and carry out a fair test using toy vehicles and ramps. ➤ Explore forces by going on a walk around the school.

	<ul style="list-style-type: none"> ➤ Give pupils time to play with magnets and take part in round robin magnet activities. ➤ Investigate different materials which are magnetic or not. ➤ Test a selection of coins making predictions and compare to results. ➤ Discuss the big magnet inside the planet and how compasses help us to find our way around. ➤ Map magnetic fields around various shaped magnets. ➤ Investigate scientific question: How can we find out which is the strongest magnet? ➤ Create and design a magnetic game in teams to be played by others. ➤ Create a magnets quiz. ➤ Watch videos: www.youtube.com/watch?v=J5YpPNEkiQ4 www.youtube.com/watch?v=rvg4UPHAuqc
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Title	Rocks and Soils
Overview	In this unit pupils will explore and name the different types of rocks and soils. They will investigate the uses and properties of rocks. Pupils will explore different soils and will identify similarities and differences between them.
Knowledge Acquisition	By the end of this unit the children will be able to recognise rocks from their features. They will be able to draw, label and write descriptions of 6 common rocks. Children will be able to identify the purposes of different rocks and recognise and order rocks according to their hardness. They will know how to test rocks to discover if they are made of dead creatures shells. The children will be able to identify rocks found in the local area. They will understand types of soils and what they are made of. They will explore soils through carrying out investigations.
Vocabulary	Rock, soil, appearance, texture, sedimentary, metamorphic, igneous, permeable, impermeable, sand, gravel, clay, chalk, flint, granite, sandstone, limestone, marble, slate, crystals, ore, volcano, magma, lava, grey, soft, rough, smooth, erosion, bedrock, subsoil, top soil, organic, humus, Earth's crust
Key Learning Objectives	<ul style="list-style-type: none"> ➤ To observe, name and identify different types of rocks. ➤ To compare and group together different kinds of rocks. ➤ To describe the appearance and simple physical properties of rocks. ➤ To describe how fossils are formed when things that have lived are trapped within rock ➤ To recognise that soils are made from rocks and organic matter. ➤ To explore the local environment for different types of rocks and soils.
Suggested Learning experiences	<ul style="list-style-type: none"> ➤ Take part in 'The Hard Rock Challenge' observing and grouping rocks. ➤ Create drawings and write descriptions of rocks. ➤ Draw a comic strip of how fossils are formed. ➤ Label the parts of the Earth's crust and the layers of soil. ➤ Explore rocks and soils in the local environment and try to identify them.

	<ul style="list-style-type: none"> ➤ Test the hardness and permeability of rocks. ➤ To explore different crystals. ➤ To make their own fossils and describe the type of fossil created. ➤ To use a hand lens or microscope to help identify and classify rocks according to whether they have grains/crystals or fossils in them..
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Title	It's Electrifying
Overview	The aim of this unit is for the children will learn about where electricity comes from, and who discovered it. They will also learn that electricity is important part of our lives and about the dangers of mains electricity. They will construct and label a basic circuit.
Knowledge Acquisition	By the end of this unit the children will recognise everyday appliances that use electricity. They will know how to stay safe around electricity. They will learn how to create simple electrical circuits and use a switch within a circuit. They will recognise and explain different electrical hazards. They will be able to draw accurate diagrams of electrical circuits. They will know which diagrams will create a complete electrical circuit and which will not. They will know the terms conductors and insulators.
Vocabulary	Electric, electricity, appliances, batteries, socket, plug, bulb, iron, kettle, microwave, toaster, heater, lamp, pylon, fuel, power, energy, volts, amps, generate, solar, wind turbine, power station, nuclear, dangers, hazard, hazardous, circuits, cells, wires, bulbs, switches, circuit,
Key Learning Objectives	<ul style="list-style-type: none"> ➤ To understand where electricity comes from, how it is generated and who discovered it (not invented it). ➤ To identify everyday appliances that use electricity ➤ To understand about the dangers of electricity. ➤ To be able to spot electrical hazards and explain why they are dangerous. ➤ To construct a simple series circuits involving batteries, wires and bulbs ➤ To draw a range of circuits including switches ➤ To understand how a switch can be used to break a circuit ➤ To create and draw a range a complete circuit
Suggested Learning Experiences	<ul style="list-style-type: none"> ➤ Children to create a fact file about electricity – who discovered it, how it is generated, draw and label simple diagram about how electricity reaches our homes. ➤ Visit from fire service to talk to children about electrical dangers / in the home ➤ Children to have pictures of the different rooms in homes and identify the dangers. ➤ Children to have pictures and identify the hazards and appliances. ➤ Children to create posters describing the dangers of electricity. ➤ Children to create electrical circuits to make a game light up.

Title	Let there be Light – Light and Shadows
Overview	In this unit we will learn what a light source is and understand what a light source is and to know examples of light sources. They will learn about natural and man-made light sources and sort these accordingly.

	The children will work scientifically and collaboratively to investigate reflective materials. They will be able to investigate how light travels and understand how shadows are formed. They will develop their scientific enquiry skills, making observations, predictions and conclusions
Knowledge Acquisition	By the end of this unit the children will know how to identify light sources and will know that dark is the absence of light. The children will know that light travels in straight lines. They will know that the sun can damage their eyes and will recognise how to protect their eyes from the sun. The children will know that a shadow is formed when a solid object blocks light and how shadows can change.
Vocabulary	light, see, dark, reflect, surface, natural, star, sun, moon, shadow, blocked, solid, artificial, torch, candle, lamp, sunlight, dangerous, protect, mirror, opaque, translucent, transparent, reflects,
Key Learning Objectives	<ul style="list-style-type: none"> ➤ To recognise that we need light in order to see things and that dark is the absence of light. ➤ To identify sources of light and those that are not sources of light. ➤ To investigate which surfaces can reflect light. ➤ To recognise that light from the sun can be dangerous and that there are ways to protect their eyes. ➤ To recognise that shadows are formed when the light from a light source is blocked. ➤ To find patterns in the way that the size of shadows change.
Suggested Learning experiences	<ul style="list-style-type: none"> ➤ Sort sources of light and explain why some are not sources of light. ➤ Experiment with a range of sources including mirrors to investigate how light is reflected. ➤ Explore making shadows on the playground and draw around them, explore how they change over time. ➤ Investigate creating shadows with objects and a torch to identify how shadows differ. ➤ BBC Bite size Light and Dark video clips