St Winifred's Catholic Primary School - Science curriculum

Year	Autumn	Spring	Summer	Vocabulary
EYFS knowledge and skills: by the end of Reception **To know about similarities and differences in relation to places, objects, materials and living things**.				
KNOWLEDGE - Know about similarities and differences in relation to places, objects, materials and living things. - Know about their own immediate environment and how environments might vary from one another. - Make observations of animals and plants		**SKILLS** To be able to ask simple questions To observe animals and plants and explain why some things occur They talk about the features of their own immediate environment To notice changes and talk about them		Animals including specific types eg bird, fish Plants including specific types, eg tree, flower Types of food and liquid Solids such as ice Melting Mixing
1	- Animals including humans	-Every day materials -Animals (not humans)	- Plants - Seasonal change	VOCABULARY
Year 1 Knowledge and skills: By the end of Year 1				
KNOWLEDGE - Identify and name a variety of common animals that are birds, fish, amphibians, reptiles and mammals - Identify and name a variety of common animals that are carnivores, herbivores and omnivores. - Describe and compare the structure of a variety of common animals (birds, fish, amphibians, reptiles and mammals, and including pets). - Identify, name draw and label the basic parts of the human body and say which parts of the body is associated with each sense. - Distinguish between an object and the material from which it is made. - Identify and name a variety of everyday materials, including wood, plastic, glass, water and rock. - Describe the simple physical properties of a variety of everyday materials.		SKILLS • To be able to ask simple questions • To be able to recognise that questions can be answered in different ways. • To be able to identify and classify. • To be able to observe carefully, using simple equipment. • To be able to perform simple tests. • To be able to take measurements with equipment • To be able to gather and record data in a table to help answer a question.		-Birds, fish, amphibians, reptiles, mammals and invertebrates -Feathers, scales, gills, fins, hair, land, water, backbone, skeleton -Carnivores, herbivores, omnivores -Meat, plants Types of materials: wood, plastic, glass, metal, water, rock, brick, fabric, sand, paper, flour, butter, milk, soil Properties of materials: hard/soft, stretchy/not stretchy, shiny/dull, rough/smooth, bendy/not bendy, transparent/not transparent, sticky/not sticky Verbs associated with materials: crumble, squash, bend, stretch, twist Senses: touch, see, hear, smell and taste

- Compare and group together a variety of everyday materials on the basis of their physical properties. - Identify and name a variety of common plants, including garden plants, wild plants and trees, and those classified as deciduous and evergreen - Identify and describe the basic structure of a variety of common plants including roots, stem/trunk, leaves and flowers. - Observe changes across the four seasons - Observe and describe weather associated with the seasons and how day length varies.			**Trees** - deciduous, evergreen, ash, birch, beech, rowan, common lime, oak, sweet chestnut, horse chestnut, apple, willow, sycamore, fir, pine , holly etc **Wild flowering** plants - cleavers, coltsfoot, daisy, dandelion, garlic mustard, et. **Garden plants** – crocus, daffodil, bluebells, etc **Parts of plants** – roots, branch, trunk, stalk, leaf, flower, petal, seeds, bulbs and twigs Seasons; spring, summer, autumn, winter. Year, months, days. Hot, warm, mild, cold. Sunny, cloudy, rain, sleet, snow, hail, thunder, lightning, rainbow. Wet, damp, dry. Windy, breezy, gust. Temperature – degrees, Celsius, thermometer, weather vane, anemometer.
2	Animals including humans	Uses of everyday materials	Living things and their habitats Plants
Year 2 Knowledge and skills: By the end of Year 2.			
KNOWLEDGE • 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. • 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. • 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	SKILLS To be able to: -ask questions - use science to answer questions - make careful observations - use science equipment carefully - do science tests carefully - put things into scientific groups - collect evidence and data		Vocabulary Classification - Birds, fish, amphibians, reptiles, mammals and invertebrates Classification - Carnivores, herbivores, omnivores Stages of growth of many insects – egg, larva, pupa, adult invertebrates – ladybirds, butterflies, dragonflies, etc amphibians – smooth newt, common frog, toad Stages of life –baby, toddler, child, teenager, adult Life processes – growth, nutrition (feeding), respiration (breathing is part of this) Hygiene – clean, wash, germs

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<td colspan="2">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.
• 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.</td>
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<td rowspan="3">Foods – healthy, grow, strong, energy

Types of materials: (see Year 1)

Living, dead
Habitats
Dependence
Local plants to school
Micro-habitats
Food chain
Sources of food

As for Year 1 plus:

Need of plants – water, light, heat, temperature

Vocabulary

Nutrition
Diet
Vitamins, minerals, fats, proteins and carbohydrates
Functions of skeletons – protect, support and aid movement

Magnets – bar and horseshoe
Attract, repel
North and south poles
Magnetic
Magnetic field</td>
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<td>3</td>
<td>Animals including humans</td>
<td>Forces and magnets
Light</td>
<td>Plants
Rocks</td>
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<td colspan="2">KNOWLEDGE
• 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
• Identify that humans and some animals have skeletons and muscles for support, protection and movement.
• Compare how things move on different surfaces
• Notice that some forces need contact between two objects, but magnetic forces can act at a distance
• Observe how magnets attract or repel each other and attract some materials and not others
• Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials
• Describe magnets as having two poles
• Predict whether two magnets will attract or repel each other, depending on which poles are facing.
• Recognise that they need light in order to see things and that dark is the absence of light</td>
<td colspan="2">SKILLS
To be able to:
- ask relevant questions using key words and my previous experiences in science enquiry.
- think up my own enquiries.
- set up comparative tests
- set up fair tests where appropriate
- make systematic and careful observations
- take accurate measurements using standard units.
- use a range of equipment carefully.
- use scientific language and drawings
- gather, record, classify and present data in a variety of ways.
- make labelled diagrams
- use keys.
- use bar charts.
- use tables.
- write explanations.</td>
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• Notice that light is reflected from surfaces • Recognise that light from the sun can be dangerous and that there are ways to protect their eyes • Recognise that shadows are formed when the light from a light source is blocked by a solid object • Find patterns in the way that the sizes of shadows change. • Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties • Describe in simple terms how fossils are formed when things that have lived are trapped within rock • Recognise that soils are made from rocks and organic matter. • Identify and describe the functions of different parts of plants; roots, stem, leaves and flowers. • 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. • Investigate the ways in which water is transported within plants. • Explore the role of flowers in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	- draw conclusions. - make predictions for new enquiry, suggest improvements and raise further questions. - look for differences, similarities or changes in our results - use scientific evidence to answer questions or to support my findings.	**Simple comparisons**: dark, dull, bright, very bright **Comparative vocabulary**: brighter, duller, and darker **Superlative vocabulary**: brightest, dullest, and darkest Opaque, translucent, transparent **Shadow** – block, absence of light **Reflect** – bounce, mirror, reflection **See** – light source **Sun** – sunset, sunrise, position **Names of rocks** – Chalk, limestone, granite, basalt, sandstone, flint, slate, shale, marble **Types of rock –** Sedimentary, metamorphic, igneous **Types of minerals** – Calcite, feldspar, topaz, diamond, talc, corundum **Properties of rocks** – Hard/soft, permeable/impermeable **Processes** – Heat, pressure, erosion, transportation, deposition, melt, solidify **Size of rocks** – Grain, pebbles **Rock describing words** – Crystals, layers **Early areas of land** – Gondwana, Pangea **Land formations** – Plates, volcanoes, mountains, valleys As for Years 1 and 2 plus: **Parts of a flower** – petal, stamen (anther + filament), carpel (stigma + style + ovary + ovule) **Processes** – pollination, fertilisation, germination

4	**Electricity** **Sound**	**States of matter** **Animals including humans**	**Living things and their habitats**	Vocabulary

KNOWLEDGE

- Identify common appliances that run on electricity
- Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers
- Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery
- Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit
- Recognise some common conductors and insulators, and associate metals with being good conductors

- Identify how sounds are made, associating some of them with something vibrating
- Recognise that vibrations from a sound travel through a medium to the ear.
- Find patterns between the pitch of a sound and features of the object that produced it
- Find patterns between the volume of a sound and the strength of the vibrations that produced it.
- Recognise that sounds get fainter as the distance from the sound source increases

- Compare and group materials together, according to whether they are solids, liquids or gases
- Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)

SKILLS

To be able to:
- ask relevant questions using key words and my previous experiences in science enquiry.
- think up my own enquiries.
- set up comparative tests
- set up fair tests where appropriate
- make systematic and careful observations
- take accurate measurements using standard units.
- use a range of equipment carefully.
- use scientific language and drawings
- gather, record, classify and present data in a variety of ways.
- make labelled diagrams
- use keys
- use bar charts
- use tables
- write explanations
- draw conclusions
- make predictions for new enquiry, suggest improvements and raise further questions
- look for differences, similarities or changes in our results
- use scientific evidence to answer questions or to support my findings.

Electricity
Appliances: fridge, freezer, TV, computer, iron, kettle, etc.
Series circuit
Components: battery, bulb (lamp), bulb (lamp) holder, buzzer, crocodile clip, leads, wires, switch
Describing words: brighter, duller, slow, fast, quiet, loud
Conductor, insulator
Effects of electricity: Light, sound, movement, heat
Switches – open, close

Ways to create sound – bang, blow, shake, and pluck
Loudness – quiet, quieter, quietest, loud, louder and loudest
Pitch - low, lower, lowest, high, higher, and highest
Vibrations
Source

States of matter - Solid, liquid and gas
Examples of gases (at room temperature and pressure) – Oxygen, hydrogen, helium, carbon dioxide, methane
Examples of liquids (at room temperature and pressure) – Water, milk, juice, petrol, oil

• Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. • Describe the simple functions of the basic parts of the digestive system in humans • Identify the different types of teeth in humans and their simple functions • Construct and interpret a variety of food chains, identifying producers, predators and prey • Recognise that living things can be grouped in a variety of ways • Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment • Recognise that environments can change and that this can sometimes pose dangers to living things		**Examples of solids** (at room temperature and pressure) –Wood, rocks, metal, plastic, glass, wool, leather, etc **Processes –** Melting, condensation, evaporation, solidifying, freezing Water cycle, water vapour, steam, heating, cooling Digestive system –, oesophagus, stomach, acid, small intestine Protein, vitamin, mineral, carbohydrate, fats, energy, growth, repair. Saliva Teeth – Incisors, canines, premolars, molars Function Foodchain – producer, consumer, predator, prey **As for years 1 and 2, plus** **Invertebrates** – snail, slug, woodlouse, spider, beetle, fly, etc **Pond animals** – pond skater, water slater, ramshorn snail, pond snail, leech, common frog, smooth newt, etc

5	**Animals including humans** **Earth and Space**	**Forces** **Properties and changes of materials**	**Living things and their habitats**	Vocabulary
KNOWLEDGE • Describe the changes as humans develop from birth to old age. • Describe the movement of the Earth, and other planets, relative to the Sun in the solar system • Describe the movement of the Moon relative to the Earth • Describe the Sun, Earth and Moon as approximately spherical bodies • Use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky • Know that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object • Identify the effects of air resistance, water resistance and friction, that act between moving surfaces • Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect • 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 • Understand that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution		**SKILLS** -To different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary -To take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. -To record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs -To use test results to make predictions to set up further comparative and fair tests -To report and present findings from enquiries, including conclusions and causal relationships -To give explanations of and degree of trust in results, in oral and written forms such as displays and other presentations -To identify scientific evidence that has been used to support or refute ideas or arguments		Gestation, foetus, fertilization, species, baby, toddler, adolescent, adult, elderly person, puberty, hormones, pituitary gland, testosterone, estrogen **Day and night** - Earth, axis, rotate **Solar system** – Star = Sun, Planets = Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune (Pluto was classified as Dwarf planet in 2006) **Phases of the Moon** - full moon, gibbous moon, half moon, crescent moon, new moon, waxing ,waning Moon's orbit: 29.5 days, lunar month Orbit, planets, revolve, sphere **Types of forces**: gravity, friction, air resistance, upthrust, weight Measuring forces: Newton meter, Newtons (N) Particles Surface area Push, pull Balance Mass – grams and kilograms Mechanical devices – gears, levers, pulleys, springs **Thermal conductivity** – thermal conductor, thermal insulator **Electrical conductivity** – electrical conductor, electrical insulator **Dissolving** – Solvent, solution, solute, soluble, insoluble, solid, liquid, particles, suspensions

• Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating • Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic • Demonstrate that dissolving, mixing and changes of state are reversible changes • Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda. • Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird • Describe the life process of reproduction in some plants and animals		**Separating materials** – Sieve, filter, evaporate, condense **Animals –** amphibians, reptiles, birds, mammals, insects, fish **Animal development –** egg, larva, pupa, nymph, adult, metamorphosis **Parts of a flower** – petal, stamen (anther + filament), carpel (stigma + style + ovary + ovule) **Processes** – pollination, fertilisation, germination

6	**Electricity** **Animals including humans**	**Light** **Living things and their habitats**	**Evolution and inheritance**	**Vocabulary**
KNOWLEDGE • Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit • Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches • Use recognised symbols when representing a simple circuit in a diagram. • Identify and name the main parts of the human circulatory system, and explain the functions of the heart, blood vessels and blood • Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function • Describe the ways in which nutrients and water are transported within animals, including humans. • Recognise that light appears to travel in straight lines • Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye • Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes • Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them • Describe how living things are classified into broad groups according to common observable	**SKILLS** -To use different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary -To take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. -To record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs -To use test results to make predictions to set up further comparative and fair tests -To report and present findings from enquiries, including conclusions and causal relationships -To give explanations of and degree of trust in results, in oral and written forms such as displays and other presentations -To identify scientific evidence that has been used to support or refute ideas or arguments		Electricity, Volts Series circuit **Components**: battery, bulb (lamp), bulb (lamp) holder, buzzer, crocodile clip, leads, wires, switch **Describing words**: brighter, duller, slow, fast, quiet, loud Conductor, insulator Resistance **Effects of electricity**: Light, sound, movement, heat **Circulatory system** – heart, blood, veins, arteries, pulse, clotting **Diet** – balanced, vitamins, minerals, proteins, carbohydrates, sugars, fats **Drugs** – caffeine, nicotine, alcohol, cannabis, cocaine, heroine **Lifestyle** – healthy **Simple comparisons**: dark, dull, bright, very bright **Comparative vocabulary**: brighter, duller, and darker **Superlative vocabulary**: brightest, dullest, and darkest Opaque, translucent, transparent **Shadow** – block, absence of light Reflect – bounce, mirror, reflection See – light source Sun – sunset, sunrise, position Classification Vertebrate, invertebrate Kingdoms: animal, plant, ‘micro-organism’

characteristics and based on similarities and differences, including micro-organisms, plants and animals • Give reasons for classifying plants and animals based on specific characteristics • Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. • Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents • Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.		Classes: amphibian, reptile, bird, mammal, Scales, feathers Flowering plant, non-flowering plant Evolution, evolve Natural selection Survival Reproduction Offspring, parents, siblings Environment Variation Fossils; ammonites, belemnites, micrasters, etc