BISHOP LONSDALE CHURCH OF ENGLAND PRIMARY SCHOOL AND NURSERY

BECOMING INDEPENDENT SUCCESSFUL HONEST OPEN-MINDED PEOPLE

Science: Progression grid and vocabulary

Working scientifically							
Nursery	**Reception**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
UTW Place 2-3 items in order based on length, height or capacity. Talk about some of the things they have observed. **PSED** Follow simple rules with the help of an adult. **CL** Begin to offer simple explanations for why things happen. Ask or answer a simple scientific question. **Exp & AED** Find different ways to do things when playing and exploring using all their senses in hands on exploration of materials. Comments and asks questions about aspects of their familiar world such as the place where they live or the natural world. Essential knowledge to be introduced each year.	**UTW** With support, use simple equipment such as timers, rulers and containers to measure length, height, capacity or time. With support, observe, record and talk about materials and living things. Offer explanations for how things work or why things happen, making use of vocabulary such as because, then and next. **PSED** Follow instructions when in different environments and when handling simple equipment, such as scissors. **CL** Represent scientific observations by mark-making, drawing or creating simple charts and tables. Ask a relevant scientific question to find out more. **Exp & AED** Observe how activities are going and adapt their ideas if necessary. **Maths** Record data in simple tables and pictograms. Looks closely at similarities, differences and change *EXC: They are familiar with basic scientific concepts such as floating, sinking, experimentation.*	With help, talk about what they have done and what they think they have found out. Ask simple scientific questions and begin to recognise that they can be answered in different ways. With support, follow instructions to perform simple tests and begin to talk about what they might do or what might happen. With support, observe closely using simple equipment and take simple measurements. With support, observe, identify, group and sort objects, materials and living things based on their features. With support, gather and record simple data to help in answering questions. With support, gather and record simple data in a range of ways (data tables, diagrams, Venn diagrams). With support, begin to use their observations and ideas to suggest answers to questions.	Explain what they have done and found out using simple scientific language. Ask and answer simple scientific questions and explain when they can be answered in different ways. Follow instructions to perform simple tests, making simple predictions for what might happen and suggesting ways to answer their questions. Observe closely, using simple equipment to make observations and take measurements. With support, observe, identify, classify, group and sort objects, materials and living things based on their features, explaining their reasoning. Gather and record data to help in answering questions. Use a range of methods (tables, charts, diagrams and Venn diagrams) to gather and record simple data with some accuracy. Begin to notice patterns and relationships in their data. Use their observations and ideas to suggest answers to questions and make simple explanations.	Use suitable vocabulary to talk or write about what they have done and its purpose. Ask and answer scientific questions and begin to use different types of enquiries to answer them. With guidance, set up simple practical enquiries and fair tests, making predictions for what might happen. With guidance, make careful observations and take measurements using standard units, with simple equipment. Observe, classify and compare to identify similarities, differences and changes, making connections to simple scientific ideas and processes. Gather, record, classify and present data in a variety of ways (tables, diagrams, charts and graphs) to help in answering questions. Record findings using scientific language, drawings, labelled diagrams, keys, bar charts, and tables. With guidance, begin to report on findings from enquiries, in a range of ways (e.g. oral and written explanations, displays and presentations). With guidance, find scientific evidence to answer questions or to support their findings. With guidance, use results to draw simple conclusions, make predictions, suggest improvements and raise further questions.	Use scientific vocabulary to report and answer questions about their findings based on evidence collected. Ask relevant questions then suggest different types of enquiries to use to answer them. Begin to independently set up simple practical enquiries, comparative and fair tests, following a method, making predictions for what might happen. With help, identify which observations to make and for how long, taking accurate measurements using standard units, with a range of equipment. Make careful observations and comparisons, identifying differences, similarities or changes and connections to scientific ideas and processes. Begin to choose how best to gather, record, classify and present observations, data and measurements in a variety of ways, to help in answering questions. Record findings, choosing relevant scientific language, drawings, labelled diagrams, keys, bar charts, and tables. Report on findings from enquiries in a range of ways, including oral and written explanations, displays or presentations of results. Use straightforward scientific evidence to answer questions or to support findings. Use results to draw simple conclusions, make predictions, suggest improvements and raise further questions.	Use relevant scientific vocabulary to report on their findings and ask and answer questions based on evidence collected. Plan and set up scientific enquiries to answer questions, with help to recognise and control variables where necessary to ensure fair tests, making predictions based on prior knowledge. Begin to independently decide which observations to make, when and for how long, using a range of scientific equipment to take measurements with increasing accuracy, and repeat readings when appropriate. Make careful observations, using them to make comparisons, identify changes, and begin to making links between cause and effect and scientific ideas and processes. Record data and results using a range of methods, e.g. scientific diagrams, classification keys, tables, scatter graphs, bar and line graphs. Report and present findings from enquiries, including conclusions, that begin to show causal relationships, in a range of oral and written forms, displays and other presentations, using relevant scientific language. Begin to identify scientific evidence that has been used to support or refute ideas. Justify conclusions based on evidence collected. Use results to identify improvements, further questions and predictions, and begin to suggest further comparative and fair tests.	Use precise scientific vocabulary to report on their findings and ask and answer questions based on evidence collected. Plan and set up different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary to ensure fair tests, making predictions based on prior knowledge. Independently decide which observations to make, when and for how long, using a range of scientific equipment to take measurements with accuracy and precision, and repeat readings when appropriate. Make systematic observations, using them to make comparisons, identify changes, making links between cause and effect and scientific ideas and processes. Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. Use test results to make predictions to set up further comparative and fair tests. Report and present findings from enquiries, including conclusions, that show causal relationships and the degree of trust in the results, in a range of oral and written forms, displays and other presentations, using precise scientific language. Identify scientific evidence that has been used to support or refute ideas or arguments. Report on and validate their findings, answer questions and justify their methods, opinions and conclusions. Use their results to suggest improvements to their methods, separating facts from opinions, and pose further questions, making predictions for what they might observe.

BISHOP LONSDALE CHURCH OF ENGLAND PRIMARY SCHOOL AND NURSERY

BECOMING INDEPENDENT SUCCESSFUL HONEST OPEN-MINDED PEOPLE

Science: Progression grid and vocabulary

look, see, hear, change, world, order Vocabulary to be introduced in each year.	look, see, hear, change, world, order, read, describe, similar, different, science, scientist	scientific, observe, equipment, test, identify, compare, sort, group, classify, record, data, similarities, differences, changes, measure, question, answer	scientific, observe, equipment, test, identify, compare, sort, group, classify, record, data, similarities, differences, changes, measure, question, answer patterns, relationships, results, explanation, investigation, method, prediction, observation, measurement, present, information	scientific, observe, equipment, test, identify, compare, sort, group, classify, record, data, similarities, differences, changes, measure, question, answer patterns, relationships, results, explanation, investigation, method, prediction, observation, measurement, present, information, scientific enquiry, fair test, units, values, diagram, classification key, findings, process, conclusion, source, evidence, evaluate.	scientific, observe, equipment, test, identify, compare, sort, group, classify, record, data, similarities, differences, changes, measure, question, answer patterns, relationships, results, explanation, investigation, method, prediction, observation, measurement, present, information, scientific enquiry, fair test, units, values, diagram, classification key, findings, process, conclusion, source, evidence, evaluate, process, support	scientific, observe, equipment, test, identify, compare, sort, group, classify, record, data, similarities, differences, changes, measure, question, answer patterns, relationships, results, explanation, investigation, method, prediction, observation, measurement, present, information, scientific enquiry, fair test, units, values, diagram, classification key, findings, process, conclusion, source, evidence, evaluate, process, support, report, causal relationship, refute, justify, hypothesis, control / dependent / independent variables	scientific, observe, equipment, test, identify, compare, sort, group, classify, record, data, similarities, differences, changes, measure, question, answer patterns, relationships, results, explanation, investigation, method, prediction, observation, measurement, present, information, scientific enquiry, fair test, units, values, diagram, classification key, findings, process, conclusion, source, evidence, evaluate, process, support, report, causal relationship, refute, justify, hypothesis, control / dependent / independent variables degree of trust

BISHOP LONSDALE CHURCH OF ENGLAND PRIMARY SCHOOL AND NURSERY

BECOMING INDEPENDENT SUCCESSFUL HONEST OPEN-MINDED PEOPLE

Science: Progression grid and vocabulary

Plants							
Nursery	**Reception**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
UTW Care for growing seeds and plants and describe observable features of different plants and trees. Begin to talk about and draw plants with attention to their parts. Begin to talk about ways to care for a plant or animal. Can talk about some of the things they have observed e.g. plants. Develops an understanding of growth, decay and changes over time. Shows care and concern for living things and the environment. Essential knowledge to be introduced each year.	**UTW** Begin to name and group plants and trees according to their observable features. Name and describe basic features of plants and trees. Describe some ways that plants or animals should be cared for in order for them to survive. Looks closely at similarities, differences, patterns and change in plants. They make observations of plants and explain why some things occur and talk about changes. *EXC - Children know that the environment and living things are influenced by human activity*	Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. Identify and describe the basic structure of a variety of common flowering plants, including trees.	Observe and describe germination and 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, and how this varies from plant to plant.	Describing the functions of different parts of flowering plants; the root, stem and trunk, leaves (photosynthesis) flowers. Exploring the requirements of plants for life and growth and how they vary from plant to plant. Investigate how water is transported in plants. Explore the parts of the flower in relation to the life cycle of flowering plants (pollination, seed formation, seed dispersal).	Identifying and classifying flowering and non-flowering plants.	Different types of reproduction including sexual and asexual reproduction in plants. Label and describe the parts of a flower involved in sexual reproduction in plants (stamen, filament, anther, pollen, carpel, stigma, style, ovary, ovule and sepal). Group and sort plants by how they reproduce.	Classifying plants based on specific characteristics. Introduced to micro-organisms. How plants are adapted to suit their environment and links to evolution.
plant, living thing, grow, change, earth, water, wet, dry Vocabulary to be introduced in each year.	plant, living thing, grow, change, earth, water, wet, dry soil, wild, leaves, stem, petals, seed, tree, flower	wild, flower, tree, leaves, petals, seed, stem, growth, familiar, habitat, environment, garden, common, rare, bush, deciduous, evergreen, flowering plant, flowers, blossom, fruit, roots, bulb, trunk, branches, bud, season, changes	seed, bulb, store, mature, light, temperature, germination, reproduce	water, soil, reproduce, flowering plant, structure, function, requirements, air, light, nutrients, fertiliser, transport, support, life cycle, pollination, seed formation, seed dispersal	environment, flowering plant, non-flowering plant, organism, features, habitat, deforestation	life cycle, seed dispersal, seed formation, pollination, bulb, process, sexual / asexual reproduction, parent plant, root cuttings, tubers, pollinators, pollen, anther stigma, stamen, ovule, petal, sepal, stem, style, ovary, filament, gametes (sex cells), scent	organism, flowering plant, non-flowering plant, deciduous, evergreen, habitat, environment, conditions, evolution, adaptations, characteristics

BISHOP LONSDALE CHURCH OF ENGLAND PRIMARY SCHOOL AND NURSERY

BECOMING INDEPENDENT SUCCESSFUL HONEST OPEN-MINDED PEOPLE

Science: Progression grid and vocabulary

Seasonal changes							
Nursery	**Reception**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
UTW Talk about the weather as being warm or cold. Talk about things they can do on summer / winter evenings and begin to notice the difference in day length. Say what the daily weather is like. Notice and describe natural phenomena, such as the weather, rainbows and clouds. **The World** Comments and asks questions about aspects of their familiar world such as the natural world. Can talk about some of the things they have observed such as plants, animals, natural and found objects. Essential knowledge to be introduced each year.	**UTW** Notice and begin to describe patterns of weather in summer and winter. Notice and talk about difference in day length between the seasons. Describe simply how the weather changes as the seasons change. Name and describe natural phenomena, such as the size of shadows, colours of a rainbow, the speed of clouds and the strength of a wave. **The World** They make observations of animals and plants and explain why some things occur, and talk about changes e.g. seasons	Observe changes across the four seasons. Observe and describe weather associated with the seasons Observe and describe how the day length changes across the year. Observe the local environment throughout the year and ask and answer questions about living things and seasonal change.	Describe typical seasonal UK weather patterns.				
weather, nature, change, day, night, season, spring, summer, autumn, winter, Sun, warm, cold, wet, dry, plant, animal Vocabulary to be introduced in each year.	weather, nature, change, day, night, season, spring, summer, autumn, winter, Sun, warm, cold, wet, dry, plant, animal, harvest, holiday, similar, different, windy, sunny, rain, snow	season, weather, day, night, week, spring, summer, autumn, winter, Sun, nature, plant, animal, warm, cold, wet, dry, rain, snow, windy, sunny, harvest, holiday, similar, different, seasonal changes, month, year, length, hours, daylight, midday	season, seasonal changes, weather, day, night, week, month, year, length, spring, summer, autumn, winter, Sun, hours, daylight, midday, nature, plant, animal, warm, cold, wet, dry, rain, snow, windy, sunny, harvest, holiday, hibernate, migrate, temperature				

BISHOP LONSDALE CHURCH OF ENGLAND PRIMARY SCHOOL AND NURSERY

BECOMING INDEPENDENT SUCCESSFUL HONEST OPEN-MINDED PEOPLE

Science: Progression grid and vocabulary

Animals, including humans							
Nursery	**Reception**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
UTW Identify some of the different body parts from pictures. Name a variety of domestic and wild animals. Begin to talk about and name the body parts of common animals including pets. Describe what a familiar animal or pet eats. Begin to talk about ways to care for a plant or animal. **PSED** Wash and dry hands after going to the toilet and before eating. Can talk about some of the things they have observed e.g. animals. Shows care and concern for living things and the environment. Looks closely at and talks about change. Essential knowledge to be introduced each year.	**UTW** Draw pictures of the human body and name some of the different body parts. Identify common features for different groups of animals, including wild and domestic animals. Match animals to the foods that they eat. Match animals to their young. Describe some ways that plants or animals should be cared for in order for them to survive. **PSED** Wash and dry hands regularly and explain why this is important. Looks closely at similarities, differences, patterns and change in animals. *EXC - Children know that the environment and living things are influenced by human activity* Eats a healthy range of food and understands the need for a variety in food.	Identify, name, draw and label the basic parts of the human body and say which part of the human body is associated with each sense. Identify, group, compare and sort a variety of common animals including fish, amphibians, reptiles, birds, invertebrates and mammals. Label and describe the basic structures of a variety of common animals including fish, amphibians, reptiles, birds, invertebrates and mammals. Identify and name a variety of common animals that are carnivores, herbivores and omnivores. Describe how to care for plants and animals, including pets. Explain why handwashing and cleanliness are important.	Notice that animals including humans have offspring that grow into adults. Find out about and describe the basic needs of animals including humans for survival (water, food, air). Describe the importance for humans of exercise, eating the right amounts of food and hygiene. Describe the importance of a healthy lifestyle, including exercise, a balanced diet, good quality sleep and personal hygiene. Describe the stages of human development (baby, toddler, child, teenager, adult and elderly). Describe the basic life cycles of some familiar animals (butterfly, chicken, frog).	Identify that animals including humans need the right type and amount of nutrition and that they cannot make their own food; they get nutrition from what they eat. Compare and contrast the diets of different animals. Identify that humans and other animals have skeletons and muscles for support, protection and movement. Identify and group animals that have no skeleton, and internal skeleton (endoskeleton) and an external skeleton (exoskeleton). Explain the importance and characteristics of a healthy, balanced diet.	Describe the simple functions of the basic parts of the digestive system in humans. Identify the four different types of teeth in humans and other animals and their simple functions. Describe what damages teeth and how to look after them. Construct and interpret a variety of food chains, identifying producers, predators and prey. Interpret food chains and webs to show interdependence and how energy is passed on over time.	Describe stages in the growth and development of humans. Describe the changes as humans develop to old age. Describe the process and label the body parts involved in sexual reproduction in humans. Describe the changes experienced during puberty.	Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. Explain the impact of positive and negative lifestyle choices on the body. Explain that the circulatory system in animals transports oxygen, nutrients and water around the body.
animal, human, living things, life, alive, wild, pet, food Vocabulary to be introduced in each year.	animal, human, living things, life, alive, wild, pet, food similar, different, change, activity, healthy	animal, wild, pet, identify, group, fish, reptiles, birds, mammals, amphibians, dinosaurs, meat-eater /carnivore, plant-eater / herbivore, omnivore, features, structure, common, rare, extinct, endangered, senses, body parts (head, neck, arms, elbows, legs, knees, face, ears, eyes, hair, mouth, teeth)	animal, human, offspring, parent, young, baby, toddler, child, teenager, adult, reproduce, growth, basic needs, survival, exercise, hygiene, egg, chick, chicken; egg, caterpillar, pupa, butterfly; spawn, tadpole, frog; lamb, sheep.	animal, human, skeleton, bones, muscle, internal organs, support, protection, movement, vertebrate, invertebrate, food groups, nutrition, diet, healthy eating, exercise	internal organs (including mouth, tongue, oesophagus, stomach, liver, small and large intestine, anus), digestive system, functions, teeth, gums, incisors, canine, molar, premolar (including their parts), plaque, decay, calcium, ecosystem, food chains, food webs, producer, consumer, predator, prey.	offspring, parent, baby, young, adult, juvenile, old age, puberty, gestation period, sexual reproduction	nutrients, diet, exercise, internal organs, function, circulatory system, heart, blood vessels, blood, red/white blood cells, lungs, veins, arteries, oxygen, carbon dioxide, gas exchange, drugs, lifestyle

BISHOP LONSDALE CHURCH OF ENGLAND PRIMARY SCHOOL AND NURSERY

BECOMING INDEPENDENT SUCCESSFUL HONEST OPEN-MINDED PEOPLE

Science: Progression grid and vocabulary

Living things and their habitats

Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
UTW Begin to observe and talk about living things in the local environment. Say how a living thing has changed over time. Developing an understanding of growth, decay and changes over time. Can talk about some of the things they have observed e.g. animals. Shows care and concern for living things and the environment. Looks closely at and talks about change. Essential knowledge to be introduced each year.	**UTW** Observe and describe living things and their habitats within the local environment. Explore the natural world around them and give simple descriptions of changes. Looks closely at similarities, differences, patterns and change. Know about similarities and differences in relation to places and living things. They talk about the features of their own immediate environment and how environments might vary from one to another. They make observations of animals and plants and explain why some things occur and talk about changes. *EXC: Chn know that the environment and living things are influenced by human activity. They can describe some actions which people in their own community do that help to maintain where they live.*	Observe the local environment throughout the year and ask and answer questions about living things and seasonal change. Describe, following observations, how plants and animals change over time.	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. Describe a range of different habitats beyond their locality (beaches, rainforests, deserts, oceans and mountains) and that all habitats provide for the basic needs of things that live there. Identify and name a variety of plants and animals in their habitats, including microhabitats. 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. Interpret and construct simple food chains to describe how living things depend on each other as a source of food.	Describe how environments can change due to natural influences and how living things need to be able to adapt to these changes.	Recognise that living things can be grouped in a variety of ways. Compare, sort and group living things from a range of environments, in a variety of ways, based on observable features and behaviour. 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 due to human and natural influences and that this can impact on and sometimes pose dangers to living things. Explain how unfamiliar habitats, such as a mountain or ocean, can change over time and what influences these changes.	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. Research and describe different farming practices in the UK and how these can have positive or negative effects on natural habitats.	Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals. Give reasons for classifying plants and animals based on specific characteristics. Use and construct classification systems to identify plants and animals from a range of habitats. Research unfamiliar animals and plants from a range of habitats, deciding upon and explaining where they belong in the classification system.
plant, animal, human, living things, life, grow, change, place, care for, look after Vocabulary to be introduced in each year.	plant, animal, human, living things, life, grow, change, place, care for, look after similarity, difference, patterns		living, dead, never alive, habitat, micro-habitat, environment, suited, needs, depend, shelter, conditions, survival, food source, food chain, prey, predator		habitat, micro-habitat, environment, organism, features, group, classify, classification key, vertebrate (fish, amphibian, reptile, bird, mammal), invertebrate (mollusc, worm, crustacean, insect, arachnid), flowering plant (grasses) non-flowering plant (ferns, mosses), pollution, litter, deforestation, nature reserve, common, rare, endangered, extinct	fish, mammal, amphibian, reptile, insect, bird, vertebrate, invertebrate, life cycle, process, sexual, asexual, reproduction, hatching, rearing, egg, baby, offspring, parent, live young, birth, gestation period, adult, mating, reproduce, growth, development, stages, naturalist	habitat, micro-habitat, environment, organisms, micro-organisms, invertebrate (worm, mollusc, crustacean, insect, arachnid), vertebrate (fish, amphibian, reptile, bird, mammal), flowering plant (grasses), non-flowering plant (ferns, mosses), deciduous, evergreen, similarities, differences, classify, classification key, adaptation, conditions, evolution, Carl Linnaeus, characteristics

BISHOP LONSDALE CHURCH OF ENGLAND PRIMARY SCHOOL AND NURSERY

BECOMING INDEPENDENT SUCCESSFUL HONEST OPEN-MINDED PEOPLE

Science: Progression grid and vocabulary

Evolution and inheritance							
Nursery	**Reception**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
							Recognise that living things have changed over time, using specific examples and evidence. Explain that fossils provide information about living things that inhabited the Earth millions of years ago. Describe some significant changes that have happened on Earth and the evidence, such as fossils, that support this. Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. Describe how animals and plants can be bred to produce offspring with specific and desired characteristics (selective breeding). Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.
Vocabulary to be introduced in each year.							parents, offspring, generations, advantage, characteristics, descend, descendants, ancestors, environment, adaptations, inheritance, evolution, variation, natural selection, 'survival of the fittest', naturalist, palaeontologist, fossil, fossilisation, preserve

BISHOP LONSDALE CHURCH OF ENGLAND PRIMARY SCHOOL AND NURSERY

BECOMING INDEPENDENT SUCCESSFUL HONEST OPEN-MINDED PEOPLE

Science: Progression grid and vocabulary

Forces							
Nursery	**Reception**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
UTW Talk about and play with objects that float and sink and describe different forces they can feel. **The World** Talks about why things happen and how things work. Essential knowledge to be introduced each year.	**UTW** Describe, predict and sort things that float and sink and talk about the forces that they can feel. **The World** Looks closely at similarities, differences, patterns and change. *EXC: They know the properties of some materials and can suggest some of the purposes they are used for.* *They are familiar with basic scientific concepts such as floating, sinking, experimentation.*			Compare how objects move over surfaces of different materials. Explain that an object will not move unless a push or pull force is applied. Describe forces in action and that some forces need direct contact between two objects, but some can act at a distance (magnetic forces). 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.		Explain 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. Describe and demonstrate how simple levers, gears and pulleys assist the movement of objects.	
push, pull, turn Vocabulary to be introduced in each year.	push, pull, turn, similar, different, force			force, push, pull, turn, movement, surface, material, contact, non-contact, distance, magnet, magnetism, magnetic, attract, repel, poles, metal, metallic		force, contact, non-contact, friction, upthrust, air/water resistance, thrust, balanced, unbalanced, force meter, Newtons, reaction, streamline, weight, mass, gravity, machine, mechanism, lever, load, fulcrum, effort, pivot, gear, pulley, mechanical advantage	

BISHOP LONSDALE CHURCH OF ENGLAND PRIMARY SCHOOL AND NURSERY

BECOMING INDEPENDENT SUCCESSFUL HONEST OPEN-MINDED PEOPLE

Science: Progression grid and vocabulary

Light							
Nursery	**Reception**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
UTW Play with objects or their own bodies outside to create shadows. **The World** Talks about why things happen and how things work. Essential knowledge to be introduced each year.	**UTW** Make a shadow bigger or smaller using toys, play equipment and a light source. Explore and describe electrical and non-electrical light sources. **The World** Looks closely at similarities, differences, patterns and change. *EXC: Know the properties of some materials and can suggest some of the purposes they are used for.*			Recognise that they need light in order to see things and that dark is the absence of light. 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 an opaque object. Find patterns in the way that the size of shadows change during the day.			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. Explain, using words, diagrams or a model, why shadows have the same shape as the objects that cast them and how shadows can be changed. Describe, using scientific language, phenomena associated with refraction of light. Describe using diagrams how light behaves when reflected off a mirror or when passing through a lens (plain, convex or concave).
light, dark Vocabulary to be introduced in each year.	light, dark, shine, similar, different			light, dark, shine, light source, travel, straight line, absence, shadow, cast, block, reflect, reflective, mirror, surface, opaque, transparent, distance, size			light, dark, light source, travel, shine, absence, shadow, distance, size, block, cast, reflect, reflective, mirror, surface, opaque, transparent, translucent, spectrum, rainbow, visible, invisible, eye, cornea, iris, pupil, lens, rods, cones, optic nerve

BISHOP LONSDALE CHURCH OF ENGLAND PRIMARY SCHOOL AND NURSERY

BECOMING INDEPENDENT SUCCESSFUL HONEST OPEN-MINDED PEOPLE

Science: Progression grid and vocabulary

Electricity							
Nursery	**Reception**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
UTW Play with and explore battery-powered toys and models. Essential knowledge to be introduced each year.	**UTW** Explore and describe electrical and non-electrical light sources.				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. Explain the precautions needed for working safely with electrical circuits.		Create circuits using a range of components and record diagrammatically. Use recognised symbols for electrical components when representing a simple circuit in a diagram. 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.
Vocabulary to be introduced in each year.					electricity, electrical, appliance, circuit, components, cell, battery, bulb, wire, switch, buzzer, motor, circuit diagram, complete, incomplete, break, insulator, conductor, plug, socket, energy source, renewable, fossil fuels		electricity, electrical, appliance, circuit, components, cell, battery, bulb, wire, switch, buzzer, motor, circuit diagram, complete, incomplete, break, insulator, conductor, plug, socket, energy source, renewable, fossil fuels, open / closed switch, series circuit, parallel circuit, symbol, voltage, current

BISHOP LONSDALE CHURCH OF ENGLAND PRIMARY SCHOOL AND NURSERY

BECOMING INDEPENDENT SUCCESSFUL HONEST OPEN-MINDED PEOPLE

Science: Progression grid and vocabulary

Sound							
Nursery	**Reception**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Explores and learns how sounds can be changed Essential knowledge to be introduced each year.	Explores the different sounds of instruments				Identify how sounds are made, associating some of them with something vibrating Recognise that vibrations from sounds 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 how the volume of a sound changes at different distance from the source. Compare and find patterns in the volume and pitch of a sound using a range of equipment such as musical instruments.		
sound, music, noise, loud, quiet Vocabulary to be introduced in each year.	sound, music, noise, loud, quiet, soft, instrument,				sound, loud, soft, vibration, vibrate, medium, air, ear, pattern, pitch, volume, strength, distance, faint, source, insulate, amplify, outer/middle/inner ear, ear drum, ossicles, hammer, anvil, stirrup, ear canal, cochlea, auditory nerve		

BISHOP LONSDALE CHURCH OF ENGLAND PRIMARY SCHOOL AND NURSERY

BECOMING INDEPENDENT SUCCESSFUL HONEST OPEN-MINDED PEOPLE

Science: Progression grid and vocabulary

Earth and space							
Nursery	**Reception**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
The World Comments and asks questions about aspects of their familiar world such as the natural world. Can talk about some of the things they have observed such as plants, animals, natural and found objects. Essential knowledge to be introduced each year.	**The World** They talk about the features of their own immediate environment and how environments might vary from one to another.					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 this knowledge to understand the phases of the moon and eclipses. Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.	
world, sun, moon, Earth, night, day Vocabulary to be introduced in each year.	world, sun, moon, Earth, night, day, planet, space					world, sun, moon, Earth, night, day, planet, space, solar system, orbit, satellite, geocentric, heliocentric, Mercury, Venus, Mars, Jupiter, Saturn, Neptune, Uranus, rotation, sphere, spherical, axis, surface, hemisphere, time zone, lunar phases, quarter, waxing, waning, crescent, gibbous, eclipse.	

BISHOP LONSDALE CHURCH OF ENGLAND PRIMARY SCHOOL AND NURSERY

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Science: Progression grid and vocabulary

Properties and changes of materials							
Nursery	**Reception**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
UTW Explore and sort everyday items, with support, into groups of the same material. Explore and talk about materials which are waterproof. Make simple comparisons between objects and materials, such as bigger or smaller; softer or harder. Essential knowledge to be introduced each year.	**UTW** Name and sort everyday items into groups of the same material. Identify that materials have different properties and explore and sort magnetic and non-magnetic materials through play and exploration. Compare and group objects and materials according to simple given criteria.	**Everyday materials** Distinguish between an object and the material from which it is made. 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. Compare and group together a variety of everyday materials on the basis of their simple physical properties, such as natural or man-made; recyclable or non-recyclable. Investigate and describe the simple physical properties of some everyday materials, such as hard or soft; stretchy or stiff; rough or smooth; opaque or transparent; bendy or rigid; waterproof or non-waterproof; magnetic or non-magnetic.	**Uses of 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. Describe how some objects and materials can be changed and how these changes can be desirable or undesirable. Observe what happens when a range of everyday materials, including foods, are heated and cooled, sorting or grouping them based on their observations.	Group and sort materials as being reflective or non-reflective. Compare and group materials based on their magnetic properties.	**States of matter** 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). Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	**Properties and changes of materials** 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. Know that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution. 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. Identify, demonstrate and compare reversible and irreversible changes. Explain the precautions needed for working safely when heating, burning, cooling and mixing chemicals.	
Vocabulary to be introduced in each year.		material, object, physical, properties, hard/soft; stretchy/stiff; shiny/dull; rough/smooth; bendy; waterproof; absorbent; magnetic, non-magnetic; opaque, transparent; natural, man-made; recyclable, non-recyclable	material, object, physical, properties, hard/soft; stretchy/stiff; shiny/dull; rough/smooth; bendy; waterproof; absorbent; magnetic, non-magnetic; opaque, transparent; natural, man-made; recyclable, non-recyclable; squash, twist, heat, cool	material, object, physical, properties, magnetic, non-magnetic; reflective, non-reflective	material, object, physical, properties, heat, cool, states of matter, particles, solid, liquid, gas, changing state, melt, solidify, evaporate, evaporation, condense, condensation, water cycle	material, object, physical, properties, heat, cool, states of matter, solid, liquid, gas, changing state, melt, solidify, evaporate, evaporation, condense, condensation, reversible / irreversible change, evaporate, filter, sieve, dissolve, burn, rust, reaction, substance, mixture, solution	

BISHOP LONSDALE CHURCH OF ENGLAND PRIMARY SCHOOL AND NURSERY

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Rocks							
Nursery	**Reception**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
				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.			
Vocabulary to be introduced in each year.				compare, group, properties, soil, rock, organic, bedrock, sedimentary, igneous, metamorphic, fossil, fossilisation, formation			