

**Science Intent**

Our Science curriculum aims to develop our pupils’ inquisitive natures and a curiosity in how the world works. Our curriculum is taught through our themed topics, which immerse pupils into learning, giving it purpose, focus and context. Content is carefully planned to be progressive, with an aim to consolidate learning and build upon prior knowledge and skills. We strive to go beyond the National Curriculum to ensure that our pupils have a foundation of knowledge which is then developed and deepened. Science is assessed through Enquiry Questions which have been written to encourage pupils to draw on their science learning to formulate a structured, informed and scientifically accurate response.

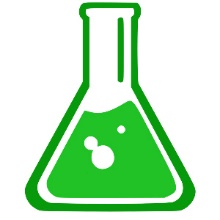
Working scientifically is a theme which runs throughout our Science Curriculum. We support pupils to work scientifically, carrying out tests and experiments with increasing accuracy and precision.

We teach science weekly as well as dedicating a term to a science topic. Our annual ‘Science week’ is an additional opportunity for pupils to engage in a range of experiments and have fun!

You can follow our Science learning by searching on Twitter #LindenScience

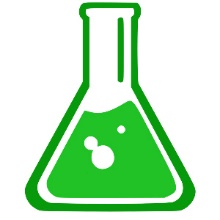
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| **Working**  **Scientifically** | **Related imageAnimals including humans** | **Living things and their habitats** | **Image result for brick cartoonProperties and changes of materials** | **C:\Users\a.dewar\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\FE38EC64.tmpRocks and Evolution** | **Electricity** | **Sound** | **Light** | **Forces** | **Earth and Space** | **Autumn, fall, season, seasonality, spring, summer, winter iconSeasonal changes** |

**Our Science Themes**

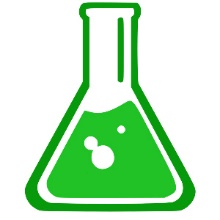
**Science Progression and Programme of Study**

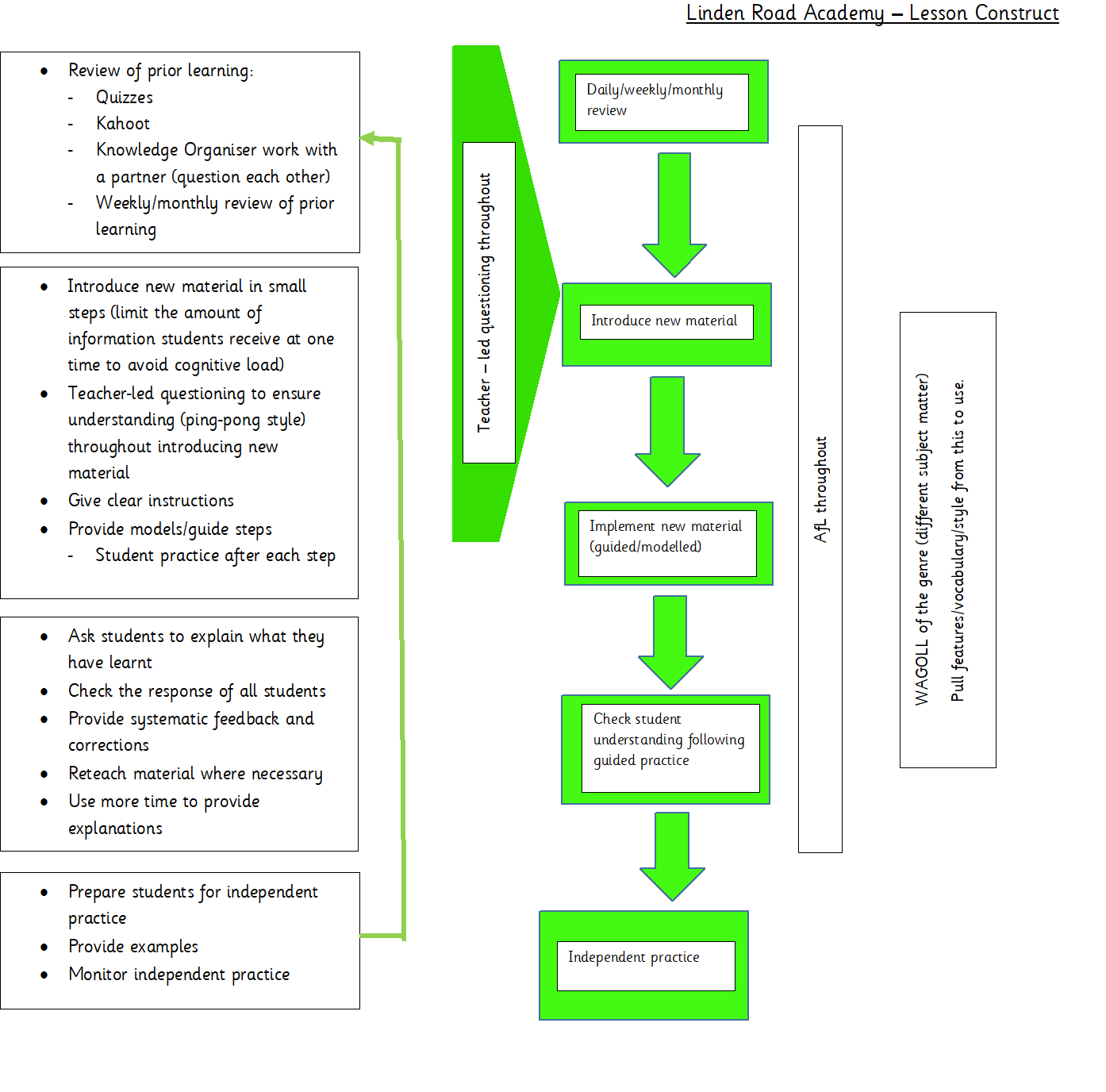
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| **Working Scientifically** | **EYFS** | | **Year 1** | **Year 2** | | **Year 3** | | **Year 4** | **Year 5** | **Year 6** | |
| **FS1** | **FS2** |
|  | asking simple questions and recognising that they can be answered in different ways  performing simple tests  observing closely, using simple equipment  identifying and classifying  gathering and recording data to help in answering questions  using their observations and ideas to suggest answers to questions | | asking simple questions and recognising that they can be answered in different ways  performing simple tests  observing closely, using simple equipment  identifying and classifying  gathering and recording data to help in answering questions  using their observations and ideas to suggest answers to questions | | | asking relevant questions and using different types of scientific enquiries to answer them  setting up simple practical enquiries, comparative and fair tests  making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers  identifying differences, similarities or changes related to simple scientific ideas and processes  gathering, recording, classifying and presenting data in a variety of ways to help in answering questions  reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions  recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables  using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions  using straightforward scientific evidence to answer questions or to support their findings. | | | planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary  taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate  using test results to make predictions to set up further comparative and fair tests  recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs  reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations  identifying scientific evidence that has been used to support or refute ideas or arguments | | |
| **Key Vocabulary** | Describe, same, different, test, watch, pattern, group, measure, predict | | Compare, describe, similar, different, test, classify, notice  Patterns, group, measure, record  Data, gather, predict, observe | | Compare, describe, similar, different, test, hypothesis, classify, categories, notice  Patterns, group, measure, record, data, bar chart, gather  Predict, observe | Compare, describe, similar, different, investigate, test  Hypothesis, classify, categories  Notice, patterns, group, measure, record, data, scattergram, table, bar chart  Gather, predict, observe  Research, identification key, survey, database, fair test  Sort, theory | Compare, describe, question, similar  Different, investigate, test, hypothesis  Classify, branching database, identify  Categories, notice, patterns, group  Measure, record, data, scattergram  Table, bar chart, gather, predict, observe  Research, identification key, survey  Database, fair test, sort, theory | | Compare, describe, question, similar, different  Investigate, test, hypothesis, classify, branching database, identify, categories, notice, patterns  Group, measure, record, data, scattergram, table, bar chart, gather, predict, observe, research, identification key, survey, database  fair test, sort, theory, line graph, causal relationship, opinion/fact, variables, accuracy  precision, scatter graphs, enquiry, degree of trust, support/refute, model | | Compare, describe, question, similar, different, investigate, test, hypothesis, classify, branching, database, identify, categories, notice, patterns  Group, measure, record, data, scattergram, table  bar chart, gather, predict, observe, research, identification key, survey, database, fair test  sort, theory, line graph, causal relationship, opinion/fact, variables, accuracy, precision  scatter graphs, enquiry, degree of trust, support/refute, model, cladogram, findings |
| **Animals including humans** | **EYFS** | | **Year 1**  **King of the Jungle** | **Year 2**  **Africa** | | **Year 3**  **Amazing South America** | | **Year 4**  **Egyptians** | **Year 5**  **PSHE** | **Year 6**  **Is it Worth the Risk?** | |
| **FS1** | **FS2** |
| Related image | **Understanding the World:**  **The World:**  Comments and asks questions about aspects of their familiar  world such as the place where they live or the natural world.  Talks about why things happen and how things work.  • Developing an understanding of growth, decay and changes  over time.  • Shows care and concern for living things and the environment. | **Understanding the World:**  **The World:**  They know about similarities and differences in  relation to places, and living things.  \*They make observations of animals and  explain why some things occur, and talk about  changes.  \*They make observations of animals and  explain why some things occur, and talk about  changes. | identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals | notice that animals, including humans, have offspring which grow into adults | | 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 | | describe the simple functions of the basic parts of the digestive system in humans | describe the changes as humans develop to old age. | identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood | |
| identify and name a variety of common animals that are carnivores, herbivores and omnivores | find out about and describe the basic needs of animals, including humans, for survival (water, food and air) | | identify that humans and some other animals have skeletons and muscles for support, protection and movement. | | identify the different types of teeth in humans and their simple functions | describe the ways in which nutrients and water are transported within animals, including humans. | |
| describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) | describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. | | construct and interpret a variety of food chains, identifying producers, predators and prey. | recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function | |
| identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. |
| **Key Vocabulary** | Baby, adult, child, changes,  Growing, centimetre, millimetre, ears, senses, taste, touch, sight, smell, hear, taste, tongue, sensory, behaviour, habitat, living things, damp, dry, hot, cold, birds, fish, amphibians, reptiles, mammals | | Baby, adult, child, changes,  Growing, centimetre, millimetre, ears, senses, taste, touch, sight, smell, hear, taste buds, classify, tongue, sensory, behaviour, habitat, living things, damp, shady, dry, vertebrate, invertebrate, backbone, birds, fish, amphibians, reptiles, mammals | Egg, chick, hatch, baby, adult, grow, change, feathers, young, old, change, adults, basic needs, food, water, shelter, air, breathing, heart, beating, healthy, exercise, fruit, vegetables, bread, rice, potatoes, pasta, milk, dairy, food high in fat, sugar, meat, fish, beans | | Herbivore, carnivore, omnivore, nutrition, diet, food chain, carbohydrates, proteins, dairy, fats, sugars, vitamins, minerals, fibre  Growth, repair, health  Energy, vertebrate, invertebrate, bone, skeleton, skull, ribcage, pelvis, femur, muscles, joints, tendons, contract, relax, biceps, triceps, lungs  Diaphragm lung, capacity | | Teeth, incisors, molars, canines, jaw, evidence, digestion, chew, saliva, digestive system, nutrition, mouth, teeth, saliva, oesophagus, stomach, small intestine, large intestine, rectum, anus, faeces  Diet, herbivore, omnivore, carnivore  food chain, producer, predator, prey, consumer, impact | Gestation, life cycle, sperm, egg, foetus, development, nutrition, uterus, baby, child, growth, development, centile, healthy, adolescence, adolescent, puberty, teenager, reproduction, testicles, pubic hair, vagina, penis, scrotum, genitals, period, menstruation, pregnancy, aging, old age, elderly, adult, death | Blood, blood vessels, ventricle, atrium, plasma, platelets, red blood cells, white blood cells, arteries, veins, capillaries, heart, pumps  Oxygen, carbon dioxide, lungs, nutrients  Water, circulatory system, double circulation  Exercise, diet, health, drugs, lifestyle, addiction, disease, medicine, alcohol, cigarettes, stimulant, depressant, analgesic  hallucinogen | |
| **Living things and their habitats (including plants)** | **EYFS** | | **Year 1**  **King of the Jungle** | **Year 2**  **It’s a Bug’s Life** | | **Year 3**  **Amazing South America** | | **Year 4**  **Save our World** | **Year 5**  **Survival** | **Year 6**  **Is it Worth the Risk?** | |
| **FS1** | **FS2** |
|  | **Understanding the World: The World:**  Comments and asks questions about aspects of their familiar  world such as the place where they live or the natural world.  • Developing an understanding of growth, decay and changes  over time.  • Shows care and concern for living things and the environment. | **Understanding the World – The World**  ELG:  \*They 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 another.  \*They make observations of animals and  plants and explain why some things occur, and talk about  changes. | identify and name a variety of common wild and garden plants, including deciduous and evergreen trees | explore and compare the differences between things that are living, dead, and things that have never been alive | | identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers | | recognise that living things can be grouped in a variety of ways | describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird | 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 | |
| Identify and describe the basic structure of a variety of common flowering plants, including trees. | 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 | | 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 | | explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment | describe the life process of reproduction in some plants and animals. |
| identify and name a variety of plants and animals in their habitats, including microhabitats | | investigate the way in which water is transported within plants | | recognise that environments can change and that this can sometimes pose dangers to living things | give reasons for classifying plants and animals based on specific characteristics. | |
| 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. | | explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal | |
| 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. | |
| **Key Vocabulary** | Plant, leaf, grow, change, living, water, healthy, seeds, pollen, flower, roots, stem, leaves, tree, trunk, bark | | Plant, leaf, grow, weed, change, living, water, healthy, potato, chit, seeds, pollen, flower, deciduous  Evergreen, roots, stem, leaves, tree, trunk, bark | Seed, disperse, wind, pollination, bulb, hydroponics, produce, harvest, water, warmth, nutrients, soil, dry, wet, moist, growth, germination, leaves, stem, roots, living, dead, never been alive, needs, air, feeds, grows, reproduces, gets rid of waste, microhabitat damp/dry/wet, dark/light/shady, features  Habitat, savannah  Rainforest, tundra  food chain, predators  dependence, energy transfer  seasons, sun, mini-beasts | | Plants, growth, light, warmth, air, soil, water  Seedlings, height, root  Stem, leaves, flowers, petals, buds, fruits, seeds  Classify, light level, temperature, wilting, yellowing, requirement, male, female, stigma, stamens, style, ovary  Ovules, carpel, pod, seeds  Berry, seed head, pollination, fertilisation  Reproduction, dispersal, germination | | Alive, dead, never been alive, movement, reproduction, sensitivity  Nutrition, excretion, respiration, growth, habitat, local, living thing, animal, insect, natural, manmade, vertebrate, invertebrate, arachnid, variety, question, explore, key, environment, change, danger, adapt, threat, climate, greenhouse, thermometer, carbon dioxide | Gamete, stamen, stigma, carpel, pistil, pollination, germination, flowering, sexual reproduction, asexual reproduction, life cycle, seed, pollen, anther, filament, style, ovary, botanical, dissection, corm, bulb, spores, cutting, fern, moss, liverwort, tubers, asexual  non-flowering, propagation, artificial, natural  metamorphosis, amphibian, insect, mammal  bird, gestation, foetus, sperm, egg, uterus, chick, baby, adult, natural scientist, naturalist  conservation, endangered | Classification, kingdom, phylum, class, order  Family, genus, species, Linnaeus, micro-organism, organism, taxonomy | |
| **Properties and changes of materials** | **EYFS** | | **Year 1**  **Pirates** | **Year 2**  **Explorers** | | **Year 3** | | **Year 4**  **Save our World** | **Year 5**  **Survival** | **Year 6** | |
| **FS1** | **FS2** |
| Image result for brick cartoon | **Understanding the World: The World:**  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.  Talks about why things happen and how things work.  **Expressive Arts and Design:**  • Beginning to be interested in and describe the texture of  things.  • Uses various construction materials.  • Beginning to construct, stacking blocks vertically and  horizontally, making enclosures and creating spaces.  • Joins construction pieces together to build and balance.  • Realises tools can be used for a purpose. | **Understanding the World – The World**  ELG:  \*They know about similarities and differences in  objects and materials.  \*They make observations  and explain why some things occur, and talk about  changes.  **Expressive Arts and Design**  They safely use  and explore a variety of materials, tools and techniques,  experimenting with texture, form and function. | distinguish between an object and the material from which it is made  . | identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses | |  | | compare and group materials together, according to whether they are solids, liquids or gases | 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 |
| identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock | find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching  . | | 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) | decide how mixtures might be separated, including through filtering, sieving and evaporating |
| describe the simple physical properties of a variety of everyday materials | identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. | give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic |
| compare and group together a variety of everyday materials on the basis of their simple physical properties | use knowledge of solids, liquids and gases to  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. |
| **Key Vocabulary** | rough/smooth, flat/bumpy, sharp/blunt, wood, metal, plastic, glass, rock, materials, properties, magnetic, non-magnetic, waterproof  absorbent, easy to breaks/tears, hard to break/tear, water  ice, melts, frozen, puddle  bigger, smaller | | rough/smooth, flat/bumpy, sharp/blunt, wood, metal, plastic, glass, rock, materials, properties, magnetic, non-magnetic, waterproof  absorbent, lightweight  breaks/tears, water  ice, melts, frozen, puddle  evaporation, bigger, smaller | Material, properties, absorbency, waterproof, strong, weak, resist, flexible  Rigid, stiff, hard, soft, twist/twisting, squash/squashing, bend/bending, stretch/stretching, melting  Particles, changing shape  Tear, rip, weight, grams | |  | | Solid, liquid, state, matter, particle, grain, category, classify, group, evidence, question, discuss, gas, evidence  Proof, explain, solidifying, freezing, melting, condensing/condensation, evaporating/evaporation, particles, thermometer, temperature, Celsius, Farenheit  Degrees, precipitation, ice  Rain, clouds, vapour, transpiration, cycle | material names, property names, thermal insulator/conductor, solid, liquid, gas, dissolve, soluble, solute, solution, line graph, insoluble, filter, sieve, magnetism, evaporation, reversible, irreversible, not usually reversible, gas released, chemical reaction, mixture, heating, burning, reaction |  | |
| **Rocks and evolution** | **EYFS** | | **Year 1** | **Year 2** | | **Year 3**  **Invaders** | | **Year 4** | **Year 5**  **Survival** | **Year 6**  **Where did it all Begin?** | |
| **FS1** | **FS2** |
| C:\Users\a.dewar\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\FE38EC64.tmp | **Understanding the World:**  **The World**  Developing an understanding of growth, decay and changes  over time. | **Understanding the World – The World**  ELG:  \*They know about similarities and differences in  relation to places, objects, materials and living things.  .  \*They make observations of animals and  plants and explain why some things occur, and talk about  changes.  **Expressive Arts and Design**  ELG:  They safely use  and explore a variety of materials, tools and techniques,  experimenting with texture, form and function. |  |  | | compare and group together different kinds of rocks on the basis of their appearance and simple physical properties | |  | Classify different rocks: sedimentary, metamorphic and igneous. | recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago | |
| describe in simple terms how fossils are formed when things that have lived are trapped within rock | | Explain how fossils are formed. | recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents | |
| recognise that soils are made from rocks and organic matter. | | identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. | |
| **Key Vocabulary** | Rock, sand, chalk, granite, slate, marble, brick, concrete, fossil, soil | |  |  | | Rock, sandstone, limestone, chalk, granite, slate, marble, petrologist  man-made rocks, brick, tile, concrete, igneous, sedimentary, metamorphic, permeable, mpermeable, acid, erosion, fossil, ichthyosaur, plesiosaur, ammonite, sediment  minerals, mould, cast, soil, micro-organisms, organic matter, particles, sand, silt | |  |  | Offspring, characteristics, vary/variation  inherit/inheritance, environmental variation, suited/suitable, environment  adaptation/adapted, characteristics  natural selection, evolution, fossils | |
| **Electricity** | **EYFS** | | **Year 1** | **Year 2** | | **Year 3**  **DT** | | **Year 4**  **Super Senses** | **Year 5** | **Year 6**  **Where did it all Begin?** | |
| **FS1** | **FS2** |
|  | **Understanding the World:**  **The World**  Talks about why things happen and how things work. | |  |  | | An introduction into electricity  During DT Torch Project | | 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 |  | associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit . | |
| 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 | 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 | |
| recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit | use recognised symbols when representing a simple circuit in a diagram | |
| recognise some common conductors and insulators, and associate metals with being good conductors. |
| **Key Vocabulary** | Wire, plug, socket, switch, battery, light bulb, power, danger, safety, electric | |  |  | |  | | Electricity, circuit, switch, battery, plug, mains, appliance  Device, wire, crocodile clip, bulb, buzzer, connection, power  Cell, danger, electrocute, socket, safety, energy, flow  Current, conductor, insulator |  | Electricity, appliances/device, electrical circuit, complete circuit, parallel circuit  circuit symbol, components, cell, battery  positive/negative, connect/connection  loose connection, short circuit, wire  crocodile clip, bulb, bright/dim, switch  buzzer, volume, motor, fast(er)/slow(er)  voltage, current, conductor, insulator  metal/non-metal, resistance | |

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| **Sound** | **EYFS** | | **Year 1**  **Deaf Awareness** | **Year 2**  **Deaf Awareness** | **Year 3**  **Deaf Awareness** | **Year 4**  **Super Senses** | **Year 5**  **Deaf Awareness** | **Year 6**  **Deaf Awareness** |
| **FS1** | **FS2** |
|  | **Understanding the World:**  **The World:**  Talks about why things happen and how things work.  **Expressive Arts and Design**  Explores and learns how sounds can be changed. | | **During deaf awareness week (May 2021)**  Identify different sounds. and their sources.  Create different sounds using a variety of objects/untuned instruments  Recognise ‘louder’ and ‘quieter’ sounds.  Illustrate that we use our ears to hear sounds. | **During deaf awareness week (May 2021)**  Categorise sounds  Compare and contrast using own criteria.  Suggest ways to protect our ears from loud sounds. | **During deaf awareness week (May 2021)** | identify how sounds are made, associating some of them with something vibrating | **During deaf awareness week (May 2021)** | **During deaf awareness week (May 2021)** |
| Listen to and describe a range of sounds from  different sources. | recognise that vibrations from sounds travel through a medium to the ear | Experiment with, explain and demonstrate  the pattern between pitch of sound and the  features of the object that produced it. | Relate your understanding of pitch to musical  instruments. |
| Identify the source of sounds. | find patterns between the pitch of a sound and features of the object that produced it | Experiment with, explain and demonstrate  the pattern between the volume of a sound  and the distance from its source. | Relate your understanding of volume to a range of  orchestral instruments. |
| Complete experiments and record findings that  demonstrate how a tuning fork is vibrating when it  makes a sound. | find patterns between the volume of a sound and the strength of the vibrations that produced it | Experiment with, explain and demonstrate  the pattern between the volume of a sound  and the strength of the vibrations that  produced it. | Why might (suggest, reason) a thunderclap sound loud to some and feint to others? |
| recognise that sounds get fainter as the distance from the sound source increases. |
| **Key Vocabulary** | Ear, louder, quieter, instrument, music, sound | | Ear, senses, louder, quieter, instrument, music, string, sound | Defenders, sound, ear, ear drum, loud, quiet, repeated, deaf, senses | Deaf, hearing aid, radio aid, cochlea, implant, sign language, sound, vibration, senses | Sound, listen, hear, ears, noise, loud  Quiet, silent, vibrations, transmit, medium, air, water, solid, source, sound waves, particles, travel, volume, loudness, amplitude, pitch  Frequency, sign language, muffle | Deaf, hearing aid, radio aid, cochlea, implant, sign language, sound, vibration , pitch, source, distance, sound wave | Sound, listen, hear, ears, noise, loud  Quiet, silent, vibrations, transmit, medium, air, water, solid, source, sound waves, particles, travel, volume, loudness, amplitude, pitch  Frequency, sign language, muffle  Deaf, hearing aid, radio aid cochlea, implant, sign language, source, distance, lip reading |
| **Light** | **EYFS** | | **Year 1**  **Pirates** | **Year 2** | **Year 3**  **Defy the Force** | **Year 4** | **Year 5** | **Year 6**  **WW2** |
| **FS1** | **FS2** |
|  | **Understanding the World:**  **The World:**  Talks about why things happen and how things work. | | Day/night season and shadows  Describe day and night – similarities and differences.  Identify light sources. |  | recognise that they need light in order to see things and that dark is the absence of light |  |  | recognise that light appears to travel in straight lines |
| 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 | 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 |
| recognise that shadows are formed when the light from a light source is blocked by an opaque object | 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 |
| find patterns in the way that the size of shadows change. | use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. |
| recognise that they need light in order to see things and that dark is the absence of light |
| **Key Vocabulary** | Sun, moon, shadow, light, dark, stars, | | Sun, moon, shadow, light, dark, stars, block, light source |  | Light, white light, visible light, colour, spectrum, refraction, light source  Energy, reflector, reflect/tion  reflective materials, mirror  image, concave, convex, transparent, translucent  opaque, shadow |  |  | Light, energy, natural, manmade, light source, names of light sources, dark  Reflect, reflective, refract, mirror, shadow, block, absorb, direct/ direction  Transparent, opaque, translucent, straight, rainbow, colours, bend, iris  Sclera, pupil |
| **Forces** | **EYFS** | | **Year 1**  **Heroes/DT** | **Year 2** | **Year 3**  **Defy the Force** | **Year 4** | **Year 5**  **Out of this World** | **Year 6** |
| **FS1** | **FS2** |
|  | **Understanding the World:**  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  Talks about why things happen and how things work. | | Identify push and pull forces. |  | compare how things move on different surfaces |  | explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object |  |
| 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 | identify the effects of air resistance, water resistance and friction, that act between moving surfaces |
| 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 | recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect |
| predict whether two magnets will attract or repel each other, depending on which poles are facing. |
| **Key Vocabulary** | Push, pull, fall, float, sink, fast, slow, magnet, air | | Push, pull, force, resistant |  | Force, push, pull, gravity, contact, magnet, magnetism, magnetic, non-magnetic, attraction, attract, repel, repulsion, poles, north, south |  | Support, fall, Earth, gravity, air, resistance, friction, balancing force  Weight, newtons, resistance force  Variables, moving surfaces, mechanisms, levers, pulleys, transfers  Gears, water resistance |  |
| **Earth and Space** | **EYFS** | | **Year 1**  **Heroes** | **Year 2**  **Explorers**  (Space in Neil Armstrong history) | **Year 3**  **Defy the Force** | **Year 4** | **Year 5**  **Out of this World** | **Year 6** |
| **FS1** | **FS2** |
|  | **Understanding the World:**  **The World:**  Talks about why things happen and how things work. | | Name times of the day.  Observe and describe the sun’s position in the sky at different times of the school day.  Name the four seasons.  Notice and name the key features of each season.  Observe and record weather over four seasons.  Describe weather in a named season.  Describe how daylight length varies in each season. | Show how might you know (apply) roughly  what time it is in a day by looking at the position of the sun.  Organise images or objects from each season into categories. Explain your categories  Compare and contrast weather and day length across the four seasons.  Identify patterns in day length across the four seasons | Describe the movement of the Earth relative to the Sun.  Label and describe our solar system.  Answer questions about the scientists who first  Observed the Earth’s movement around the Sun.  Describe how the movement of the Earth gives  rise to seasonal changes.  Identify and label the Moon and Earth.  Describe the Moon’s movement relative to the  Earth.  Answer questions about the Moon’s movement  relative to the earth.  Observe, name and record the phases of the  Moon. |  | Describe the movement of the Earth, and other planets, relative to the Sun in the solar system (effect of Earth’s movement on seasons and link to temperature near the equator). |  |
| Describe the movement of the Moon relative to the Earth (effect of the moon on tides of oceans and seas) |
| 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. |
| **Key Vocabulary** | Sunrise, sunset, sun, Spring, Summer, Autumn, Winter, leaves, weather, hot, cold, snow, frost, rain, hail, fog, breeze, wind, blossom, lambs, daffodils | | Sunrise, sunset, north, south east, west, sun, Spring, Summer, Autumn, Winter, leaves, weather, hot, cold, snow, frost, rain, hail, fog, breeze, wind, blossom, lambs, daffodils | | Earth, Sun, Solar System, planets, orbit, moon, phases, eclipse, waning, waxing |  | Earth, planets, Sun, solar system, Moon, celestial body, sphere/spherical, rotate/rotation, spin, axis, night & day, shadow, locks, sundials, astronomical clocks, orbit, Mercury, Venus, Mars, Jupiter  Saturn, Uranus, Neptune, Pluto, 'dwarf' planet, geocentric & heliocentric models, orrery, time-zone  Greenwich Meantime, lunar, solar  Eclipse, light, reflection, telescope  Satellite, tide, mass, gravity |  |

**Science Assessment**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Animals including humans** | **Year 1** | | | **Year 2** | | | **Year 3** | | | **Year 4** | | | **Year 5** | | | **Year 6** | | |
| **Question** | **Enquiry** | | **Question** | **Enquiry** | | **Question** | **Enquiry** | | **Question** | **Enquiry** | | **Question** | **Enquiry** | | **Question** | **Enquiry** | |
| Related image | Are we all the same or are we all different? | Chn discover what is the same and what is different about their bodies. | | Is all food good for us? | Chn look at a variety of food labels (looking at the traffic light nutrition), comparing which are healthy and why. | | How does our body move and stand up? | Chn use information from science encyclopaedias / textbooks to label a human skeleton and answer simple questions about it. | | How can we know things about a dinosaur when they have been extinct for 65 million years? | Following learning about human teeth, chn use information and pictures of different teeth from dinosaurs to try to work out what they might have eaten, justifying their answers. (Use language of carnivore, omnivore and herbivore.) | | What is it like to be old in the UK? | Chn use the office for national statistics information to discuss some of the challenges that face older citizens of the UK. Other secondary sources used to find out about general changes to body and health as people age. | | Is our heart rate always the same? | Chn to investigate the effect of exercise on heart rate and how long it takes for their pulse to return to the resting rate after exercising for a minute. | |
| Are all animals totally different? | Using pictures of animals, chn find out if they can find anything that is the same for all of the animals, thinking about what they do and how they look. Show smaller and larger versions of each animal. | | Do all animals start off small? | Chn pair up pictures of a variety of animals with their very young and juvenile forms. | | How long does it take to get fitter? | Over the course of a month, chn investigate whether some volunteers (who do consistent exercise at break time) can lower their resting heart rate. | |
| **Living things and their habitats (including plants)** | **Year 1** | | | **Year 2** | | | **Year 3** | | | **Year 4** | | | **Year 5** | | | **Year 6** | | |
| **Question** | **Enquiry** | | **Question** | **Enquiry** | | **Question** | **Enquiry** | | **Question** | **Enquiry** | | **Question** | **Enquiry** | | **Question** | **Enquiry** | |
|  | Are all plants the same? | Children put different plants (pictures of real) into two groups, explaining why (e.g. petals vs no petals, leaves vs no leaves, etc) | | What do plants need to grow? | Chn compare two plants growing from seed. (Some are given water and some aren’t.) | | How does water get through a plant to where it is needed? | Chn place carnations / celery in ink and observe the changes | | Are some animals more alike than others? | Children to use pictures and descriptions to put animal into groups in different ways (e.g. where they live, what they eat, how they move, how many legs, etc) moving on to using keys to differentiate between closely related animals. | | If life has existed for billions of years, why are there still people alive today? | Chn use a variety given information and online resources to research and describe the life cycles of different animals, looking for the similarities between each. | | Is it absolutely clear whether something is alive or not? | Chn use given resources and online research to investigate whether bacteria, viruses and fungi are definitely living things. (Whether viruses are alive is open to debate.) | |
| What parts is a plant made of? | Chn use pages from a science encyclopaedia to draw and label different plants, spotting similarities and differences. | | Do plants grow the same amount every day? | Chn measure the height of a growing plant over a period of days and weeks | | Do all plants need exactly the same things? | Chn give both a parsley plant and a small cactus miminal water over a two week period and observe the changes (perhaps drawing the result) | | What make bread rise? | Chn are shown how yeast, sugar and warm water causes a reaction; they then investigate what happens to this reaction when they change particular variables of their choice (sugar/no sugar, water temperature, adding chemicals, etc) | |
| In what ways are living things the same and in what ways are they different? | Chn to use advanced keys to classify a variety of insects. Chn to create their own key to allow others to identify specimens found on the school grounds. | |
| **Properties and changes of materials** | **Year 1** | | | **Year 2** | | | **Year 3** | | | **Year 4** | | | **Year 5** | | | **Year 6** | | |
| **Question** | | **Enquiry** | **Question** | | **Enquiry** | **Question** | | **Enquiry** | **Question** | | **Enquiry** | **Question** | | **Enquiry** | **Question** | | **Enquiry** |
| Image result for brick cartoon | Are all materials the same? | | Chn compare a variety of materials, deciding which are hard, soft, strong, weak, smooth, rough, etc. Chn undertake actions to test whether each material has the property (e.g. touching, weighing, etc) | What materials could be used to make a good raincoat? | | Chn test whether different materials are waterproof, flexible and light. |  | | | Is it always easy to tell the difference between solids, liquids and gases? | | Chn make cornflour slime and discuss the properties to determine whether it is a solid, liquid or a gas. | Is it possible to separate even very small things like sand, salt and stones? | | Chn use filtering and evaporation to separate a mixture of sand, salt and stones. |  | | |
| Does water always melt at the same speed? | | Chn to observe and record as ice melts in different conditions (e.g. outside vs radiator, wrapped in insulation vs not) |
| **Rocks and evolution** | **Year 1** | | | **Year 2** | | | **Year 3** | | | **Year 4** | | | **Year 5** | | | **Year 6** | | |
| **Question** | | **Enquiry** | **Question** | | **Enquiry** | **Question** | | **Enquiry** | **Question** | | **Enquiry** | **Question** | | **Enquiry** | **Question** | | **Enquiry** |
| C:\Users\a.dewar\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\FE38EC64.tmp |  | | |  | | | Are all rocks made in the same way? | | Using criteria, chn sort rock samples (and pictures) into the three types. |  | | |  | | | Why do animals often have colours that match their environment? | | Chn hunt for coloured wool on the school field over a minute. The different colours are counted and a discussion is had about the easiest colours to spot. |
| **Electricity** | **Year 1** | | | **Year 2** | | | **Year 3** | | | **Year 4** | | | **Year 5** | | | **Year 6** | | |
| **Question** | | **Enquiry** | **Question** | | **Enquiry** | **Question** | | **Enquiry** | **Question** | | **Enquiry** | **Question** | | **Enquiry** | **Question** | | **Enquiry** |
|  |  | | |  | | |  | | | Does electricity flow easily through all objects? | | Chn to create a small circuit to test whether objects are conductors or insulators (e.g. circuit with bulb which lights when a gap in the circuit is bridged.) |  | | | Does electricity flow easily through all objects? | | Chn to create a small circuit to test whether objects are conductors or insulators (e.g. circuit with bulb which lights when a gap in the circuit is bridged.) |

**Science Lesson Construct**

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The immersive classroom, outdoor learning and trips should be used to enhance the cultural capital and engagement of our pupils.

This construct does not mean every lesson must look the same – components of lessons can be moved and altered in duration to suit the needs of the children.

Be as creative and innovative as you like!