

Science Progression Plan

Legsby Primary School



	Year 3	Year 4
Human Body	Humans have a skeleton and muscles for movement, support and protecting organs. Major bones in the human body include the skull, ribs, spine, humerus, ulna, radius, pelvis, femur, tibia and fibula. Major muscle groups in the human body include the biceps, triceps, abdominals, trapezius, gluteal, hamstrings, quadriceps, deltoids, gastrocnemius, latissimus dorsi and pectorals. Describe how humans need the skeleton and muscles for support, protection and movement.	The digestive system is responsible for digesting food and absorbing nutrients and water. The main parts of the digestive system are the mouth, oesophagus, stomach, small intestines, large intestines and rectum. The mouth starts digestion by chewing food and mixing it with saliva. The oesophagus transports the chewed food to the stomach, where it mixes with stomach acid and gets broken down into smaller pieces. In the small intestine, nutrients from the food are absorbed by the body. In the large intestine, water is absorbed by the body. The remaining undigested waste is stored in the rectum before excretion through the anus. Describe the purpose of the digestive system, its main parts and each of their functions
Staying Safe	Light from the Sun is damaging for vision and the skin. Protection from the Sun includes sun cream, sun hats, sunglasses and staying indoors or in the shade. Explain why light from the Sun can be dangerous.	Working with electrical circuits can be dangerous. Precautions include not touching electrical components with wet hands and not putting batteries in mouths. Explain the precautions needed for working safely with electrical circuits.
Healthy Lifestyle	Humans have to get nutrition from what they eat. It is important to have a balanced diet made up of the main food groups, including proteins, carbohydrates, fruit and vegetables, dairy products and alternatives, and fats and spreads. Humans need to stay hydrated by drinking water. Explain the importance and characteristics of a healthy, balanced diet.	Regular teeth brushing, limiting sugary foods and visiting the dentist are important for good oral hygiene. Describe what damages teeth and how to look after them.
Pattern Seeking	Shadows change shape and size when the light source moves. For example, when the light source is high above the object, the shadow is short and when the light source is low down, the object's shadow is long. Find patterns in the way shadows change during the day.	Volume is how loud or quiet a sound is. The harder an instrument is hit, plucked or blown, the stronger the vibrations and the louder the sound. Compare and find patterns in the volume of a sound, using a range of equipment, such as musical instruments. Pitch is how high or low a sound is. Parts of an instrument that are shorter, tighter or thinner produce high-pitched sounds. Parts of an instrument that are longer, looser or fatter produce low-pitched sounds. Compare and find patterns in the pitch of a sound, using a range of equipment, such as musical instruments.

Science Progression Plan

Legsby Primary School



Changes	Fossils form over millions of years and are the remains of a once living organism, preserved as rock. Scientists can use fossils to find out what life on Earth was like in prehistoric times. Fossils form when a living thing dies in a watery environment. The body gets covered by mud and sand and the soft tissues rot away. Over time, the ground hardens to form sedimentary rock and the skeletal or shell remains turn to rock. Describe simply how fossils are formed, using words, pictures or a model.	Heating or cooling materials can bring about a change of state. This change of state can be reversible or irreversible. The temperature at which materials change state varies depending on the material. Water changes state from solid (ice) $\rightleftharpoons$ liquid (water) at 0°C and from liquid (water) $\rightleftharpoons$ gas (water vapour) at 100°C . The process of changing from a solid to liquid is called melting. The reverse process of changing from a liquid to a solid is called freezing. The process of changing from a liquid to a gas is called evaporation. The reverse process of changing from a gas to a liquid is called condensation. Observe and explain that some materials change state when they are heated or cooled and measure or research the temperature in degrees Celsius ($^{\circ}\text{C}$) at which materials change state.
Earth	Soils are made from tiny pieces of eroded rock, air and organic matter. There are a variety of naturally occurring soils, including clay, sand and silt. Different areas have different soil types. Investigate soils from the local environment, making comparisons and identifying features.	The water cycle has four stages: evaporation, condensation, precipitation and collection. Water in lakes, rivers and streams is warmed by the Sun, causing the water to evaporate and rise into the air as water vapour. As the water vapour rises, it cools and condenses to form water droplets in clouds. The clouds become full of water until the water falls back to the ground as precipitation (rain, hail, snow and ice). The fallen water collects back in lakes, rivers and streams. Evaporation and condensation are caused by temperature changes. Describe the water cycle using words or diagrams and explain the part played by evaporation and condensation.
Phenomena	A shadow is formed when light from a light source, such as the Sun, is blocked by an opaque object. Transparent objects allow light to pass through them and do not create shadows. Explain, using words or diagrams, how shadows are formed when a light source is blocked by an opaque object. Dark is the absence of light and we need light to be able to see. Describe the differences between dark and light and how we need light to be able to see.	Explain how sounds are made and heard using diagrams, models, written methods or verbally

Science Progression Plan

Legsby Primary School



Forces	An object will not move unless a pushing or pulling force is applied. Some forces require direct contact, whereas other forces can act at a distance, such as magnetic force. Explain that an object will not move unless a push or pull force is applied, describing forces in action and whether the force requires direct contact or whether the force can act at a distance (magnetic force).	A series circuit is a simple loop with only one path for the electricity to flow. A series circuit must be a complete loop to work and have a source of power from a battery or cell. Predict and describe whether a circuit will work based on whether or not the circuit is a complete loop and has a battery or cell.
Modelling	Make working models with simple mechanisms or electrical circuits.	Electrical components include cells, wires, lamps, motors, switches and buzzers. Switches open and close a circuit and provide control. Construct operational simple series circuits using a range of components and switches for control.
Report and Conclude	Results are information that has been discovered as part of an investigation. A conclusion is the answer to a question that uses the evidence collected. Use suitable vocabulary to talk or write about what they have done, what the purpose was and, with help, draw a simple conclusion based on evidence collected, beginning to identify next steps or improvement	Results are information, such as data or observations, that have been found out from an investigation. A conclusion is the answer to a question that uses the evidence collected. Use scientific vocabulary to report and answer questions about their findings based on evidence collected, draw simple conclusions and identify next steps, improvements and further questions.
Gather and Record Data	Data can be recorded and displayed in different ways, including tables, charts, graphs and labelled diagrams. Data can be used to provide evidence to answer questions. Gather and record findings in a variety of ways (diagrams, tables, charts and graphs) with increasing accuracy	Data can be recorded and displayed in different ways, including tables, charts, graphs, keys and labelled diagrams. Gather, record, classify and present observations and measurements in a variety of ways (pictorial representations, timelines, diagrams, keys, tables, charts and graphs).
Questioning	Questions can help us find out about the world and can be answered in different ways. Ask questions about the world around them and explain that they can be answered in different ways.	Questions can help us find out about the world and can be answered using scientific enquiry. Ask relevant scientific questions, independently, about the world around them and begin to identify how they can answer them.

Science Progression Plan

Legsby Primary School



Measurement	Equipment is used to take measurements in standard units. Examples include data loggers plus sensors, timers (seconds, minutes and hours), thermometers (°C) and metre sticks (millimetres, centimetres and metres). Taking repeat readings can increase the accuracy of the measurement. Take measurements in standard units, using a range of simple equipment.	Equipment is used to take measurements in standard units. Examples include data loggers plus sensors, timers (seconds, minutes and hours), thermometers (°C), and metre sticks, rulers or trundle wheels (millimetres, centimetres, metres). Take accurate measurements in standard units, using a range of equipment.
Investigation	prediction is a best guess for what might happen in an investigation based on some prior knowledge. Set up and carry out some simple, comparative and fair tests, making predictions for what might happen.	prediction is a statement about what might happen in an investigation, based on some prior knowledge or understanding. A fair test is one in which only one variable is changed and all others remain constant. Begin to independently plan, set up and carry out a range of comparative and fair tests, making predictions and following a method accurately.
Observation	An observation involves looking closely at objects, materials and living things, which can be compared and grouped according to their features. Make increasingly careful observations, identifying similarities, differences and changes and making simple connections.	An observation involves looking closely at objects, materials and living things. Observations can be made regularly to identify changes over time. Begin to choose which observations to make and for how long and make systematic, careful observations and comparisons, identifying changes and connections.
Identification and Classification	Light can be reflected from different surfaces. Some surfaces are poor reflectors, such as some fabrics, while other surfaces are good reflectors, such as mirrors. Group and sort materials as being reflective or non-reflective.	Materials can be grouped according to whether they are solids, liquids or gases. Solids stay in one place and can be held. Some solids can be squashed, bent, twisted and stretched. Examples of solids include wood, metal, plastic and clay. Liquids move around (flow) easily and are difficult to hold. Liquids take the shape of the container in which they are held. Examples of liquids include water, juice and milk. Gases spread out to fill the available space and cannot be held. Air is a mixture of gases. Group and sort materials into solids, liquids or gases.

Science Progression Plan

Legsby Primary School



Properties and Uses	There are three different rock types: sedimentary, igneous and metamorphic. Sedimentary rocks form from mud, sand and particles that have been squashed together over a long time to form rock. Examples include sandstone and limestone. Igneous rocks are made from cooled magma or lava. They usually contain visible crystals. Examples include pumice and granite. Metamorphic rocks are formed when existing rocks are heated by the magma under the Earth's crust or squashed by the movement of the Earth's tectonic plates. They are usually very hard. Examples include slate and marble. Compare and group rocks based on their appearance, properties or uses	Electrical conductors allow electricity to flow through them, whereas insulators do not. Common electrical conductors are metals. Common insulators include wood, glass, plastic and rubber. Describe materials as electrical conductors or insulators.
Identification and Classification	Some animals have skeletons for support, movement and protection. Endoskeletons are those found inside some animals, such as humans, cats and horses. Exoskeletons are those found on the outside of some animals, such as beetles and flies. Some animals have no skeleton, such as slugs and jellyfish. Identify and group animals that have no skeleton, an internal skeleton (endoskeleton) and an external skeleton (exoskeleton)	Scientists classify living things according to shared characteristics. Animals can be divided into six main groups: mammals, reptiles, amphibians, birds, fish and invertebrates. These groups can be further subdivided. Classification keys are scientific tools that aid the identification of living things. Compare, sort and group living things from a range of environments, in a variety of ways, based on observable features and behaviour.
Parts and Functions	Water is transported in plants from the roots, through the stem and to the leaves, through tiny tubes called xylem. Investigate how water is transported within plants. The plant's roots anchor the plant in the ground and transport water and minerals from the ground to the plant. The stem (or trunk) support the plant above the ground. The leaves collect energy from the Sun and make food for the plant. Flowers make seeds to produce new plants. Name and describe the functions of the different parts of flowering plants (roots, stem, leaves and flowers).	There are four different types of teeth: incisors, canines, premolars and molars. Incisors are used for cutting. Canines are used for tearing. Premolars and molars are used for grinding and chewing. Carnivores, herbivores and omnivores have characteristic types of teeth. Herbivores have many large molars for grinding plant material. Carnivores have large canines for killing their prey and tearing meat. Identify the four different types of teeth in humans and other animals, and describe their functions.

Science Progression Plan

Legsby Primary School



Nutrition	Animals cannot make their own food and need to get nutrition from the food they eat. Carnivores get their nutrition from eating other animals. Herbivores get their nutrition from plants. Omnivores get their nutrition from eating a combination of both plants and other animals. Compare and contrast the diets of different animals.	Food chains show what animals eat within a habitat and how energy is passed on over time. All food chains start with a producer, which is typically a green plant. The producer is eaten by a primary consumer (prey), which is eaten by a secondary consumer (prey), which is eaten by a tertiary consumer. All food chains end with a top or apex predator. Changes within a food chain, such as an abundance or lack of one food type, have an impact on the entire food chain. Construct and interpret a variety of food chains and webs to show interdependence and how energy is passed on over time.
Survival	Plants need air, light, water, minerals from the soil and room to grow, in order to survive. Different plants have different needs depending on their habitat. Examples include cacti, which need less water than is typical, and ferns, which can grow in lower light levels. Describe the requirements of plants for life and growth (air, light, water, nutrients and room to grow) and how they vary from plant to plant.	An adaptation helps an animal or plant survive in its habitat. If living things are unable to adapt to changes within their habitat, they are at risk of becoming extinct. Explain how adaptations help living things to survive in their habitat.
Habitats	Environments are constantly changing due to natural influences, such as seasons, extreme weather, population changes and availability of food. Living things must adapt to these changes in order to survive. Describe how environments can change due to natural influences and how living things need to be able to adapt to these changes.	Humans can affect habitats in negative ways, such as littering, pollution and land development, or positive ways, such as garden ponds, bird boxes and wildflower areas. Describe how environments can change due to human and natural influences and the impact this can have on living things.
Physical Things	Magnets have two poles (north and south). Opposite poles (north and south) attract each other, while like poles (north and north, or south and south) repel each other. Investigate and compare a range of magnets (bar, horseshoe and floating) and explain that magnets have two poles (north and south) and that opposite poles attract each other, while like poles repel each other.	Electricity is a type of energy. It is used to power many everyday items, such as kettles, computers and televisions. Electricity can also come from batteries. Batteries eventually run out of power and need to be recycled or recharged. Batteries power devices that can be carried around, such as mobile phones and torches. Compare common household equipment and appliances that are and are not powered by electricity.

Science Progression Plan

Legsby Primary School



Phenomena	Friction is a force between two surfaces as they move over each other. Friction slows down a moving object. Smooth surfaces usually generate less friction than rough surfaces. Compare how objects move over surfaces made from different materials	Sounds are louder closer to the sound source and fainter as the distance from the sound source increases. Compare how the volume of a sound changes at different distances from the source.
Living Things	Flowers are important in the life cycle of flowering plants. The stages of a plant's life cycle include germination, flower production, pollination, fertilisation, seed formation and seed dispersal. Insects and the wind can transfer pollen from one plant to another (pollination). Animals, wind, water and explosions can disperse seeds away from the parent plant (seed dispersal). Draw and label the life cycle of a flowering plant.	Habitats change over time, either due to natural or human influences. Natural influences include extreme or unseasonable weather. Human influences include habitat destruction or pollution. These changes can pose a risk to animals and plants that live in the habitat. Explain how unfamiliar habitats, such as a mountain or ocean, can change over time and what influences these changes.



Science Progression Plan

Legsby Primary School

