Year 3 – Human Body

National Curriculum Objectives

- Identify that animals, including humans, need the right types and amount of nutrition, and they cannot make their own food; they get their nutrition from what they eat.
- Know how nutrients, water and oxygen are transported within animals and humans.
- Know about the importance of a nutritious, balanced diet.

Core Knowledge

CELLS

- All living things are made up of cells, too small to be seen without a microscope.

o Cells make up tissues.
o Tissues make up organs.
o Organs work in systems.

THE DIGESTIVE SYSTEM:

- What happens to the food we eat by studying body parts and functions involved in taking in food and getting rid of waste.
- Children should become familiar with the following:
- Salivary glands, taste buds
- Teeth: incisors, canines, premolars and molars
- Oesophagus, stomach, liver, small intestine, large intestine.

TAKING CARE OF YOUR BODY: A HEALTHY DIET

- The 'food pyramid'
- Vitamins and minerals

Vocabulary

water, skeleton, bones, muscles, contract, relax, cells, tissues, organs, systems, mouth, blood, taste buds, saliva, salivary glands, omnivore, carnivore, herbivore, molar, incisor, canines, premolars, oesophagus, intestine, waste, faeces, absorbed, peristalsis, metabolism, secretes, enzymes, villi, food pyramid, diet, Nutrients, nutrition, carbohydrates, protein, fats, vitamins, minerals, fibre,

Key Scientists

Adelle Davis
(20th Century Nutritionist)

Antonj van Leeuwenhoek
(Microscope)

Linked Texts

The Story of Frog Belly Rat Bone (Timothy Basil Ering)
I Will Never Not Ever Eat a Tomato (Lauren Child)
Professor Astro-Cat's Human Body Odyssey (Dominic Walliman)
A Journey Through the Digestive System (Emily Sohn)

Prior Learning

- Introduce the idea of body systems, and have children identify basic parts of the following body systems: (Y2)
- Skeletal system: skeleton, bones, skull(Y2)
- Muscular system: muscles (Y2)
- Digestive system: mouth, stomach (Y2)
- Circulatory system: heart and blood (Y2)
- Nervous system: brain and nerves (Y2)

Key Questions

- What different types of food are there?
- Why do we need a variety of different foods?
- Do all organisms eat the same things?
- Why do some people need different diets? (weightlifter vs marathon runner)
- Why are teeth important?
- What happens to our food?
- What is our digestive system?
- How does our food turn into poo and wee?

Future Learning

THE MUSCULAR SYSTEM (Y4)

- Muscles o Involuntary and voluntary muscles.

THE SKELETAL SYSTEM (Y4)

- Skeleton, bones, marrow
- Musculo-skeletal connection o Ligaments o Tendons, Achilles tendon o Cartilage
- Skull, cranium • Spinal column, vertebrae • Joints • Ribs, rib cage, sternum • Scapula (shoulder blades), pelvis, tibia, fibula • Broken bones, X-rays

THE NERVOUS SYSTEM (Y4)

• Brain: medulla, cerebellum, cerebrum, cerebral cortex • Spinal cord • Nerves • Reflexes

Comparative & Fair tests	Identify & Classify	Observation over time	Pattern Seeking	Research	BIG Question: Assessment Opportunity
In our class, are omnivores taller than vegetarians?	What are the names for all the organs involved in the digestive system? How can we organise teeth into groups?	How does an egg shell change when it is left in cola?	Are foods that are high in energy always high in sugar?	How do dentists fix broken teeth?	What do our bodies do with the food we eat?

Year 3 – Rocks

National Curriculum Objectives	Core Knowledge	Vocabulary (Known, Taught, Extension)
• 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.	• Rocks and minerals o Formation and characteristics of different kinds of rocks: metamorphic, igneous, sedimentary o Important minerals in the Earth (such as quartz, gold, sulphur, coal, diamond, iron ore)	Rocks, igneous, metamorphic, sedimentary, permeable, impermeable, volcano, seabed, lava, magma, erosion, weathering, quartz, gold, sulphur, coal, diamond, iron ore, intrusive, extrusive, fossil, chemical fossil, body fossil, trace fossil, cast fossil, mould fossil, replacement fossil, extinct, organic matter, top soil, sub soil, base rock.

Key Scientists	Linked Texts
Mary Anning (Discovery of Fossils)	*The Pebble in My Pocket* *(Meredith Hooper)*
Inge Lehmann (Earth's Mantle)	*Stone Girl, Bone Girl* *(Laurence Anholt)*
Dr Estella Atekwana (Geologist)	*The Street Beneath My Feet* *(Charlotte Guillain & Yuval Zommer)*

Prior Learning	Key Questions	Future Learning
• Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. (Y2) • Find out how shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. (Y2)	• How are the soils different? • Which is more likely to lead to flooding? • How might the soil be different in different countries? • What types of rocks are there? • How do rocks change? • What would grow best in your soil? • Why do you think worms are important to the creation of soil? • How can we use composting to make our own soil? • How long do you think this process will take and why? • How are fossils created? • Why do fossils help us find out about historical events? • If you could fossilise an object what would it be?	• Observe that some materials change state when heated or cooled, and measure and research the temperature at which this happens in degrees Celsius. (Later in Y3 and further in Y5) • Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. (Later in Y3) • Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. (Y5) • Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. (Y5)

Comparative & Fair tests	Identify & Classify	Observation over time	Pattern Seeking	Research	BIG Question: Assessment Opportunity
How does adding different amounts of sand to soil affect how quickly water drains through it? Which soil absorbs the most water?	Can you use the identification key to find out the name of each of the rocks in your collection?	How does tumbling change a rock over time? What happens when water keeps dripping on a sandcastle?	Is there a pattern in where we find volcanos on planet Earth?	Who was Mary Anning and what did she discover?	What are rocks and soils like?

Year 3 – Forces & Magnetism

National Curriculum Objectives	Core Knowledge	Vocabulary (Known, Taught, Extension)
• Notice that some forces need contact between two objects, but magnetic forces can act at a distance. • Observe how magnets attract and 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 with attract or repel each other, depending on which poles are facing.	• Magnetism demonstrates that there are forces we cannot see that act upon objects. • Most magnets contain iron • Lodestones: naturally occurring magnets • Magnetic poles: north-seeking and south-seeking poles • Magnetic field (strongest at the poles) • Law of magnetic attraction: unlike poles attract, like poles repel. • The Earth behaves as if it were a huge magnet: north and south magnetic poles (near, but not the same as, geographic North Pole and South Pole). • Orienteering: use of a magnetised needle in a compass, which will always point to the north	magnet, magnetic force, magnetic field, pole, north, south, attract, repel, compass, metal, non-metal, lodestones, natural, manufactured, iron, steel, copper, aluminium, Force, push, pull, friction, surface, resistance, **Key Scientists**: William Gilbert (Theories on Magnetism) **Linked Texts**: *The Iron Man (Ted Hughes)*

Prior Learning	Key Questions	Future Learning
• Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. (Y2)	• What are magnetic materials? How can we find out? • How far away does a magnet have to be before it attracts a magnetic material? • How far away can the magnetic attraction between two magnets be experiences? • Is the repulsive force the same size? • How is the magnetic attraction of repulsion force affected by putting materials between the magnets? • Are bigger magnets stronger?	• Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. (Y5) • Identify the effects of air resistance, water resistance and friction, that act between moving surfaces. (Y5) • Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. (Y5)

Comparative & Fair tests	Identify & Classify	Observation over time	Pattern Seeking	Research	BIG Question: Assessment Opportunity
How does the mass of an object affect how much force is needed to make it move? Which magnet is strongest? Which surface is best to stop you slipping?	Which materials are magnetic?	If we magnetise a pin, how long does it stay magnetised for?	Do magnetic materials always conduct electricity? Does the size and shape of a magnet affect how strong it is?	How have our ideas about forces changed over time? How does a compass work?	How can we move magnets?

Year 3 – Cycles in Nature

National Curriculum Objectives	Core Knowledge	Vocabulary (Known, Taught, Extension)
• Identify and describe the functions of different parts of the flowering plant: roots, stem/trunk/leaves and flowers. • Explore the part flowers play in a flowering plants life cycle. • describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird	SEASONAL CYCLES • The four seasons and Earth's orbit around the Sun • Seasons and life processes o Spring: sprouting, sap flow in plants, mating and hatching o Summer: growth o Autumn: ripening, migration o Winter: plant dormancy, animal hibernation LIFE CYCLES • The life cycle: birth, growth, reproduction, death • Reproduction in plants and animals o From seed to seed with a plant o From egg to egg with a chicken o From frog to frog o From butterfly to butterfly: metamorphosis	Air, light, water, nutrients, soil, support, anchoring, reproduction, pollination, dispersal, transportation, flower, energy, growth, seedling, carbon dioxide, oxygen, sugar, material, , chlorophyll, petal, ovary, ovule, anther, pollen, filament, stigma, style, fertilisation, absorb, sprout, reproduce, birth, growth, death, orbit, root, shoot, sap, ripen, hatch, mature, migration, dormant, hibernation,

Key Scientists	Linked Texts
Jan Ingenhousz (Photosynthesis) Joseph Banks (Botanist) Gertrude Jekyll (Horticulturist)	*The Hidden Forest (Jeannie Baker)* *George and Flora's Secret Garden (Jo Elworthy)* *The Big Book of Blooms (Yuval Zommer)* *A Seed is Sleepy (Dianna Aston)* *Wangari's Trees of Peace: A True Story from Africa (Jeanette Winter)* *Botanicum (Kathy Willis & Katie Scott)* *Fanatical about Frogs (Owen Davey)* *Tadpole's Promise (Jeanne Willis)* *My Butterfly Bouquet (Nicola Davies)* *The Lost Words (Robert McFarlane)*

Prior Learning	Key Questions	Future Learning
• Observe and describe how seeds and bulbs grow into mature plants. (Y2) • Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. (Y2)	• Is the life cycle of a plant the same for all plants? • What is the life cycle of an amphibian or an insect? • How are life cycles represented? • Are life cycles different in different parts of the world?	• Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. (Y4) • Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. (Y5) • Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution - recognise that living things have changed over time and that fossils provide information. (Y5)

Comparative & Fair tests	Identify & Classify	Observation over time	Pattern Seeking	Research	BIG Question: Assessment Opportunity
	What are the life cycles of a mammal, an amphibian, an insect and a bird	What changes can you see in each season?	What happens to the weather as the earth orbits the sun? What happens to plants and animals during the cycle of the seasons?	How are lifecycles represented? Are lifecycles different in different parts of the world?	Can you illustrate a life cycle and use this to describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird

Year 3 – Insects

National Curriculum Objectives	Core Knowledge	Vocabulary (Known, Taught, Extension)
• Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food – they get nutrition from what they eat. • Identify that humans and some other animals have skeletons and muscles for support, protection and movement.	• Insects can be helpful and harmful to people. o Helpful: pollination; products like honey, beeswax, and silk; eat harmful insects o Harmful: destroy crops, trees, wooden buildings, clothes; carry disease; bite or sting • Distinguishing characteristics o Exoskeleton, chitin o Six legs and three body parts: head, thorax and abdomen o Most but not all insects have wings • Life cycles: metamorphosis o Some insects look like miniature adults when born from eggs, and they moult to grow (for example: grasshopper, cricket) o Some insects go through distinct stages of egg, larva, pupa, adult (for example: butterflies, ants) • Social Insects o Most insects live solitary lives, but some are social (for example: ants, honeybees, termites, wasps) o Ants: colonies o Honeybees: workers, drones, queen	Head, Antennae, Pollination, Insect, Insect Pollination, reproduce, Exoskeleton, Endoskeleton, Chitin, Thorax, Abdomen, Metamorphosis, Larvae, Cacoon, Pupea, Social, Solitary, Colonies, Drones, Hive, Nectar, Seasons, Spring, Summer, Autumn, Winter, Mating, Hatching, Growth, Migration, Animal hibernation, arachnids, species, adaptation

Key Scientists	Linked Texts
Henry Turner (Discovered insects could hear) Chris Packham (Zoologist)	*The Big Book of Bugs (Yuval Zommer)* *Bonkers About Beetles (Owen Davey)* *The Bee Book (Charlotte Milner)* *Yucky Worms (Vivian French)* *The Giant Jam Sandwich (Janet Burroway)*

Prior Learning	Key Questions	Future Learning
• Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. (Y1) • Identify and name a variety of common animals that are carnivores, herbivores and omnivores. (Y1) • Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). (Y1) • Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). (Y2)	• How many insects can you name? • What makes an insect and insect? • What are the 3 parts on an insect's body? • What is an exoskeleton? • What does it mean if an insect goes through a metamorphosis? • Where do insects live? • Do insects prefer to live alone?	• Construct and interpret a variety of food chains, identifying producers, predators and prey. (Y4) • Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution - recognise that living things have changed over time and that fossils provide information (Y5)

Comparative & Fair tests	Identify & Classify	Observation over time	Pattern Seeking	Research	BIG Question: Assessment Opportunity
Does the amount of light affect how many woodlice move around?	Which insects have an exoskeleton? Which insets have wings?	How does a caterpillar change over time?	What colour flowers do pollinating insects prefer? What conditions do ants (could be any other insect) prefer to live in?	Which insects undergo a metamorphosis?	A new animal has been discovered and scientists say that it is an insect. How would they know? Design it.

Year 3 – Matter/Water Cycle

National Curriculum Objectives	Key Knowledge	Vocabulary (Known, Taught, Extension)
• Compare and group materials together by whether they are solids, liquids or gases. • Observe that some materials change state when heated or cooled, and measure and research the temperature at which this happens in degrees Celsius. • Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	Matter • Everything is made of matter, and that all matter is made up of parts too small to see. • Basic concept of atoms • Names and common examples of three states of matter: o Solid (for example, wood, rocks) o Liquid (for example, water) o Gas (for example, steam) • Water as an example of changing states of matter of a single substance • Describe and classify objects according to what they are made of, and according to their physical properties (colour, shape, size, weight, texture, etc.) • Units of measurement: o Length: centimetre, metre o Volume: millilitre, litre • Temperature: degrees Celsius THE WATER CYCLE • Most of the Earth's surface is covered by water • The water cycle o Evaporation and condensation o Water vapour in the air, humidity o Clouds: cirrus, cumulus, stratus o Precipitation, groundwater	Solid, liquid, gas, particles, state, materials, properties, matter, melt, freeze, water, ice, clouds, water vapour, air humidity, moisture, ground water, temperature, process, condensation, evaporation, water vapour, energy, precipitation, collection, transpiration, infiltration, crystals, droplets, particles, cumulus, cirrus, stratus,

Key Scientists	Linked Texts
Anders Celsius (Celsius Temperature Scale) Daniel Fahrenheit (Fahrenheit Scale / Invention of the Thermometer)	*Once Upon a Raindrop: The Story of Water (James Carter)* *The Rhythm of the Rain (Graham Baker Smith)* *Sticks (Diane Alber)*

Prior Learning	Key Questions	Future Learning
• Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. (Y1) • Describe the simple physical properties of a variety of everyday materials. (Y1) • Compare and group together a variety of everyday materials on the basis of their simple physical properties. (Y1) • Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. (Y2) • Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. (Y2)	• How does the amount of water added to flour affect its state? • How does the amount of detergent added to water affect how slippery it is? • How does the temperature affect how viscous a liquid is (use cooking oil)? • How does the material sprinkled on ice and snow affect how quickly it melts? • What chocolate would be best to smuggle? • How does the type of chocolate affect its melting temperature? • What is the melting temperature of ice and how does it compare with the freezing temperature of water? • Is the melting temperature of wax the same as its freezing temperature?	• 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. (Y5) • Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. (Y5) • Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. (Y5) • Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. (Y5) • Demonstrate that dissolving, mixing and changes of state are reversible changes. (Y5) • 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. (Y5)

Comparative & Fair tests	Identify & Classify	Observation over time	Pattern Seeking	Research	BIG Question: Assessment Opportunity
How does the mass of a block of ice affect how long it takes to melt? How does the surface area of water affect its' evaporation time? Does seawater evaporate faster than fresh water?	Can you group these materials and objects into solids, liquids, and gases? How would you sort these objects/materials based on their temperature?	Which material is best for keeping our hot chocolate warm? How does the level of water in a glass change when left on a windowsill?	Is there a pattern in how long it takes different sized ice lollies to melt? How does evaporation rate change as you add more salt to your water?	What are hurricanes, and why do they happen?	Where do ice cubes go when they disappear? Why does it rain and hail?