SBSP PROGRESSION OF COMPONENT KNOWLEDGE THROUGH SCIENCE UNITS

BIOLOGY – ANIMALS INCLUDING HUMANS

Early Learning Goal:

- Explore the natural world around them, making observations and drawing pictures of animals and plants.
- Explore the natural world around them.
- Understand the key features of the life cycle of an animal.

Reception component knowledge:

- I know we are all unique.
- I can name some different types of animals including colour (Brown Bear book).
- I can talk about different animals from stories and compare (pigs and wolves).
- I can talk about the lifecycle of some animals.
- I know some animals wake up at night and sleep in the day.
- I can talk about some animals and their habitats.

Working Scientifically Component Knowledge

- I can make observations of plants and animals, drawing pictures and sharing comments.

Year 1 NC links:

- identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals
- identify and name a variety of common animals that are carnivores, herbivores and omnivores
- describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets)
- identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense

Year 1 Component Knowledge

All About Animals

- Name a variety of common animals
- Describe the key characteristics of the 5 animal groups
- Name a variety of common birds and mammals
- Name and describe a variety of common birds and mammals
- Name, describe and compare a variety of common birds and mammals
- Name a variety of common amphibians, reptiles and fish
- Name and describe a variety of common amphibians, reptiles and fish
- Name, describe and compare a variety of common amphibians, reptiles and fish
- Understand that animals eat different things
- Group animals based on their diet
- Explain the difference between herbivores, carnivores and omnivores
- Know that some animals are wild and some are kept as pets
- Sort animals into those that are wild and those that are suitable for a pet
- Describe the needs of a pet
- Identify the 5 groups of animals
- Draw and label an animal and talk about its characteristics
- Draw and label an animal and write about its characteristics
- Draw and label an animal and write about its characteristics, using some scientific language

All About Me

- Understand that our eyes allow us to see
- Know the basic parts of the eye
- Know the basic parts of the eye and their functions
- Understand that our ears allow us to hear
- Know that our ears help us tell the direction sound is coming from
- Understand that sound is made up of vibrations
- Understand that our tongue allows us to taste
- Describe a range of different flavours
- Understand why our sense of taste is important
- Understand that our skin helps us to feel
- Know that our fingertips are sensitive to touch
- Understand that our sense of touch can identify different textures
- Know that our nose allows us to smell
- Understand that we can smell many different flavours
- Know that our sense of smell helps to keep us safe Identify the basic parts of the human body
- Identify the different parts of the human body
- Identify the different parts of the human body and explain what they are used for

Working Scientifically Component Knowledge

All About Animals

- Grouping and sorting
- Using their observations and ideas to suggest answers to questions

All About Me

- Identifying and classifying
- Performing simple tests
- Gathering and recording data to help in answering questions
- Using their observations and ideas to suggest answers to questions

Key Vocabulary

All About Animals

- amphibian, reptile, bird, fish, mammal
- hatchling, feather, backbone, characteristic, warm-blooded
- scale, gill, cold-blooded
- carnivore, omnivore, predator, canine, herbivore
- natural, wild, shelter, pet, veterinary
- climate, similarities, differences, unsuitable, compare

All About Me

- body, joint, skeleton, limb, head
- eye, pupil, eyelash, sight, brain
- vibration, ear, deafness, sound, sign language
- sweet, flavour, mouth, taste, tongue
- touch, brain, skin, fingertips, organ

- odour, smell, nose, nose hair, nostril

Year 2 NC links:

- notice that animals, including humans, have offspring which grow into adults
- find out about and describe the basic needs of animals, including humans, for survival (water, food and air)
- describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene

Year 2 Component Knowledge

Growth

- Understand the basic needs of animals, including humans
- Explain the basic needs of animals, including humans
- Explain how animals adapt and survive by ensuring their basic needs are met
- Understand what humans need to survive
- Explain what humans need to survive
- Know the difference between basic human needs and the things humans want
- Name the 5 food groups
- Sort food into the 5 food groups
- Explain why the 5 food groups are important for human health
- Understand the importance of a balanced diet
- Give examples of foods that form part of a healthy diet
- Understand that eating pre-cooked or processed food is not always a healthy choice
- Understand that exercising regularly is important for our health
- Know how exercise impacts our bodies
- Understand how regular exercise keeps us healthy
- Understand that we need good hygiene to remain healthy
- Explain how to have a good hygiene routine
- Explain how a good hygiene routine can stop the spread of germs

Life Cycles

- Order the stages of a human life cycle
- Identify each stage of a human life cycle
- Draw the human life cycle
- Match descriptions of each stage of the human life cycle
- Describe each stage of the human life cycle
- Compare two stages of the human life cycle
- Match offspring with their parents
- Identify features inherited from a parent
- Explain why some animals are more challenging to match
- Compare the life cycle of a chicken and a human
- Create a bar chart
- Predict the height of a chick
- Name the different stages of a butterfly's life
- Describe how a butterfly moves between the stages in its life cycle
- Explain the life cycle of a butterfly and the process of metamorphosis
- Name the stages of a frog's life cycle
- Describe how a frog moves between the stages in its life cycle
- Compare some similarities and differences between the life cycle of a frog and other animals

Working Scientifically Component Knowledge

Growth

- Using their observations and ideas to suggest answers to questions
- Identifying and classifying
- Performing simple tests

Life Cycles

- Identifying and classifying
- Using their observations and ideas to suggest answers to questions
- Gathering and recording data to help in answering questions

Key Vocabulary

Growth

- essential, oxygen, nutrition, survival, shelter
- vital, healthy, survive, grow, non-essential
- carbohydrate, calcium, dairy, protein, vitamins
- fresh food, pre-cooked food, processed food, nutrients, balanced diet
- strength, exercise, coordination, flexibility, balance
- bacteria, prevent, germs, virus, hygiene

Life Cycles

- grow, survive, adult, independent, life cycle
- helpless, toddler, womb, develop, foetus
- differences, offspring, resemble, gene, inherit
- reproduction, chick, predict, hatchling, bar chart
- transformation, chrysalis, caterpillar, metamorphosis, larva
- frog, amphibian, froglet, frogspawn, tadpole

Year 3 NC links:

- 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

Year 3 Component Knowledge

- Know that there are 5 key food groups
- Explain how many portions of food from different food groups we should eat in a day
- Explain how food from each food group is essential for human growth and health
- Understand that food labels help us make healthy choices
- Understand that food labels give in depth information about the different food groups within a product
- Understand that food labels give information on the ingredients in food
- Understand that animals have different types of skeletons
- Identify which animals have an endoskeleton, exoskeleton and a hydrostatic skeleton
- Explain how animals' skeletons help them to move and survive
- Explain the functions of the human skeleton
- Identify the main bones in the human body
- Explain the functions of the main parts of the human body
- Match animals to their skeletons
- Identify how animals' skeletons have adapted to help them move in their environment
- Explain the functions of the bones within animal skeletons
- Understand that we have voluntary and involuntary muscles
- Become familiar with the names of some muscles in the human body
- Explain how muscles work

Working Scientifically Component Knowledge

- Gathering, recording, classifying and presenting data in a variety of ways to help in answering question
- Using straightforward scientific evidence to answer questions or to support their findings
- 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
- Identifying differences, similarities or changes related to simple scientific ideas and processes

Key Vocabulary

- carbohydrate, vitamin, mineral, nutrition, protein
- energy, nutrition label, portion, diet, balanced
- vertebrate, hydrostatic skeleton, exoskeleton, endoskeleton, invertebrate
- ulna, tibia, fibular, radius, humerus
- spine, rib cage, skull
- muscle, diaphragm, biceps, contract, hamstrings

Year 4 NC links:

- describe the simple functions of the basic parts of the digestive system in humans
- identify the different types of teeth in humans and their simple functions
- construct and interpret a variety of food chains, identifying producers, predators and prey

Year 4 Component Knowledge

- Identify the main organs of the human digestive system
- Create an accurate diagram of the main organs of the human digestive system
- Explain the role of the digestive system and the organs within it
- Describe the functions of the organs in the digestive system
- Use a model of the digestive system to explain the journey of food
- Explain how the equipment used in the model relates to the digestive system
- Identify the different types of human teeth
- Explain the functions of the different types of human teeth
- Explain why humans have 2 sets of human teeth
- Observe and record the effect of each liquid
- Draw conclusions from the investigation
- Explain how to care for your teeth
- Identify the key parts of a food chain
- Create a food chain within a chosen ecosystem
- Explain why it is important to keep food chains balanced
- Research living things within a chosen ecosystem
- Create a food web for a chosen ecosystem
- Identify threats to living things within their chosen ecosystem

Working Scientifically Component Knowledge

- Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables
- Making systematic and careful observations
- Reporting on findings from enquiries, including oral and written explanations
- Setting up simple practical enquiries and comparative and fair tests
- Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions

Key Vocabulary

- small intestine, digestive system, large intestine, oesophagus, stomach
- gall bladder, absorb, saliva, liver, peristalsis
- jaw, gum, molars, canines, incisors
- plaque, enamel, tooth decay, cavity, fluoride
- consumer, predator, ecosystem, prey, producer
- tundra, threatened, interdependence, hide, food web

Year 5 NC links:

- describe the changes as humans develop to old age

Year 5 Component Knowledge

- Name the key stages of a mammal's life cycle
- Identify developments during each stage of a life cycle
- Compare the human life cycle with another mammal
- Understand what gestation is
- Learn some differences between the gestation periods of mammals
- Explore reasons behind extreme gestation periods
- Understand the stages during pregnancy
- Accurately create and plot points on a line graph
- Compare the mass and length lines
- Understand all children grow
- Learn some ways that the growth of children is measured
- Begin to link data with scientific thinking on growth
- Understand all children go through puberty
- Identify changes that take place during puberty
- Compare the changes experienced by boys and girls
- Know some key signs of ageing in humans
- Recognise that humans age differently depending on their lifestyle
- Suggest ways to stay healthy in old age

Working Scientifically Component Knowledge

- Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs and bar and line graphs
- Reporting and presenting findings from enquiries - including conclusions, causal relationships and explanations of and a degree of trust in results – in oral and written forms such as displays and other presentations
- Taking measurements using a range of scientific equipment and with increasing accuracy and precision; taking repeat readings when appropriate
- Identifying scientific evidence that has been used to support or refute ideas or arguments

Key Vocabulary

- adolescent, reproduce, dependent, puberty, foetus
- gestation, pregnant, breeding, extreme, duration
- embryo, trimester, midwife, umbilical cord, womb
- growth spurt, childhood, motor skills, milk teeth, constant
- adolescence, bloodstream, hormone, growth, appetite
- cataract, memory, neurodegenerative, lifestyle, keratin

Year 6 NC links:

- 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
- describe the ways in which nutrients and water are transported within animals, including humans

Year 6 Component Knowledge

- Describe the structure and function of the heart
- Identify oxygenated and deoxygenated blood
- Describe how the blood moves around the heart
- Define the function of different blood vessels
- Explore issues surrounding restricted arteries
- Explain the movement of blood through the heart
- Describe the composition of the blood
- Create a pie chart to explain the composition of the blood
- Explain the function of cells within the blood
- Explain how water and nutrients are transported
- Define osmosis and diffusion
- Explain the importance of diffusion and osmosis
- Accurately measure pulse
- Design an investigation associated with heart rate, diet and exercise
- Describe how lifestyle choices can affect health
- Define the uses of different drugs
- Describe the impact of drugs/alcohol on health
- Describe some drugs used to support the circulatory system

Working Scientifically Component Knowledge

- Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs and bar and line graphs
- Taking measurements and using a range of scientific equipment, with increasing accuracy and precision; taking repeat readings when appropriate
- Identifying scientific evidence that has been used to support or refute ideas or arguments
- Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary

Key Vocabulary

- ventricle, atrium, vessel, circulatory system, valves
- vein, capillary, microscope, artery, blood
- plasma, red blood cell, white blood cell, platelet, concentration
- absorb, osmosis, diffusion, nutrient, pulse
- diet, BPM - beats per minute, exercise, heart rate
- hallucinogen, painkiller, drug, stimulant, depressant

KS3 NC links:

Reproduction in humans (as an example of a mammal), male and female reproductive systems, menstrual cycle (without details of hormones), gametes, fertilisation, gestation and birth. The consequences of imbalances in the diet, including obesity, starvation and deficiency diseases. The effects of recreational drugs (including substance misuse) on behaviour, health and life processes. The structure and functions of the gas exchange system in humans, including adaptations to function. The mechanism of breathing to move air in and out of the lungs. The impact of exercise, asthma and smoking on the human gas exchange system.