Biology Unit: Animals including humans

What does progression of knowledge look like?

Year	Progression of knowledge..
EYFS	• Help children to investigate their own signs of life and what we need to be healthy] • Learn about the importance of exercise and healthy/ non-healthy foods, this may including cooking or preparing a healthy snack • Teaching pupils how to wash their hands properly and help children go to the toilet and maintain personal hygiene • know about similarities and differences in relation to places, objects, materials 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 • Explore what animals are found on a farm which may include a visit to a local farm to see how animals are cared for • Observe chicks incubating and hatching, keeping a diary and discussing what animals need to keep healthy linking to lifecycles (linking with Living Things unit)
1	• 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
2	• 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
3	• 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
4	• 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

5	• Describe the changes as humans develop to old age • Describe the key stages in the growth and development of humans. • Recall some of the changes experienced in puberty. • Investigate the gestation periods of other animals in comparison to humans including the length and mass
6	• 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

Biology Unit: Plants

What does progression of knowledge look like?

Year	Progression of knowledge..
EYFS	• Explore the world around them by growing, watering plants and observing plant growth • Explore the garden or outdoor areas discovering a range of plants • Learn how to plant seeds • Investigate the life cycles of plants and what we use them for • Link plants to the seasons and what happens to the leaves during winter • Explore a range of flowers or leaves to observe and discuss similarities and differences • Using role play activities to set up a “flower-shop” selling different types of flowers and plants
1	● Flowering plants have a root, stem, leaves and a flower ● Trees can be deciduous which means the leaves are lost yearly- usually in the autumn ● Trees can be evergreen which means there are always leaves on the tree (leaves are continually replenished throughout the year ● Trees and plants have roots, stems and leaves but plants have a softer stem ● Trees are made of roots, trunk, branches and leaves. ● Grasses and ferns consist entirely of leaves.

	● In autumn, the leaves on deciduous trees change colour, fruits and nuts fall to the ground. Farmers can harvest the crops. ● In Spring, birds sing, trees produce leaves and flowers blossom and the landscape changes
2	● Trees are examples of plants • Plants can grow from seed or bulbs • Seeds and bulbs germinate and grow into seedlings • Seedlings grow into mature plants • Plants need light, water, space, suitable temperature in order to grow • Some plants grow best in full sun • Some plants grow best in the shade • Some plants need lots of water • Some plants don't need much water • Some plants grow quicker than others.
3	• Plants contain roots to absorb water and nutrients from the soil • Plant roots also anchor the plant to provide support • Plants contain a stem/ trunk which is responsible for transporting water and nutrients around the plant. • Plants contain flowers which contain the stamen, carpel, petal, ovule, sepal and stem • Plants need light, water, space, suitable temperature in order to grow • The level of nutrients required depends on the type of plant • Insects like bees and wasps transfer the pollen from the male part of a flower to the female part of other flowers • Seeds can also be dispersed by wind, animal fur, animals eating them (and excreting them), in water and if the seed pod explodes • The roots absorb water from the soil, the stem transports it to the leaves, water evaporates from the leaves which causes more water to be absorbed from the soil

<u>Biology Unit: Living things</u>

What does progression of knowledge look like?

Year	**Progression of knowledge.**
EYFS	• Explore the natural world around them, make observations and draw pictures of animals and plants • Plant seeds and care for growing plants • Understand the key features of the life cycle of a plant and an animal • Begin to understand the need to respect and care for the natural environment and all living things

2	• Identify the differences between things that are living, dead, and things that have never been alive, using some of the 7 life processes (movement, respiration, sensitivity, growth, reproduction, excretion, nutrition) • Identify that most living things live in habitats to which they are suited • Explain in simple terms how an animal or plant is suited to its habitat • Name a variety of plants and animals in their habitats, including micro-habitats • Explain that different conditions in a habitat and micro-habitat can affect the number and type of plants/animals that live there • Describe how plants and animals depend on each other for food and shelter • 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 • Construct a simple food chain that includes humans (e.g. grass, cow, human) with arrows pointing in the correct direction
4	• Know the 7 life processes of living organisms • Use the 7 life processes to determine if an organism is living • Describe similarities and differences between examples of plants and animals • Know the features of mammals, amphibians, fish, birds, reptiles (vertebrates) and invertebrates • Group living things in a variety of ways using key characteristics • Know and explore the work of Carl Linnaeus • Use classification keys to help group and identify a variety of living things in their local and wider environment • Use classification keys to name a variety of living things • Recognise that environments can change, and this can sometimes pose dangers to living things • Understand that human actions can impact the environment and suggest some solutions to the issues.
5	• Know that reproduction is when an animal or plant produces one or more individuals similar to itself • Explain that sexual reproduction requires both male and female DNA (sex cells) and will produce offspring that are similar, but not identical to the parents • Explain that asexual reproduction will produce offspring that is identical to the parent and only requires on parent e.g., bulbs, tubers and runners • Explain the life cycle of a mammal, amphibian, insect and a bird • Explain the process of metamorphosis using frogs and butterflies as examples • Describe the differences in the life cycles of a mammal, amphibian, insect and a bird • Use prior knowledge of parts of a flower to explain the stages involved in the reproduction process (pollination, fertilisation and germination)
	• Know that living things can be grouped according to different criteria • Know that a cell is made up of nucleus, cytoplasm and membrane • Know that living things can be multicellular or unicellular (bacteria) • Explain in simple terms how the Linnaeus system is used to classify living things • Explain why we need to group living things • Explain possible difficulties with classification (penguins and whales)

6	• Know that classification keys are used to group living things based on recognisable characteristics • Construct a classification key • Explain what microorganisms are and can name some • Give examples of some situations where microorganisms can be helpful • Give examples of some situations where microorganisms can be harmful

Biology Unit: Evolution & Inheritance

What does progression of knowledge look like?

Year	Progression of knowledge.
EYFS	• Exploring ideas around me and my friends, we are all the same and we are all different • Exploring differences between different animals or plants • Role play- families, babies and development and caring for a young baby
6	• Recognise that living things have changed over time and that fossils provide information about living • Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents • identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution • State what is meant by the term evolution • Identify work done by Charles Darwin, Alfred Wallace, Mary Anning and John Edmonstone.
KS3 (NC)	• Heredity as the process by which genetic information is transmitted from one generation to the next • A simple model of chromosomes, genes and DNA in heredity, including the part played by Watson, Crick, Wilkins and Franklin in the development of the DNA model • Differences between species • The variation between individuals within a species being continuous or discontinuous, to include measurement and graphical representation of variation • The variation between species and between individuals of the same species means some organisms compete more successfully, which can drive natural selection • Changes in the environment may leave individuals within a species, and some entire species, less well adapted to compete successfully and reproduce, which in turn may lead to extinction • The importance of maintaining biodiversity and the use of gene banks to preserve hereditary material

Biology Unit: Rocks

What does progression of knowledge look like?

Year	Progression of knowledge.
EYFS	• Exploring the natural world around them looking at soil and rocks • Discussing experiences of rocks and where they have encountered them and can talk about some of the things that they have observed • Use the creativity table to explore volcanoes and eruptions • Making models out of clay
3	• Name some types of rock and describe the physical features of each • Compare and group together kinds of rocks based on their appearance • Compare and group together different kinds of rocks based on their simple physical properties • Name the 3 types of rocks (igneous, sedimentary and metamorphic) and classify based on their appearance and physical properties (e.g. marble is metamorphic because it is hard and smooth) • Recognise that soils are made from rocks and organic matter • Describe in simple terms how fossils are formed when things that have lived are trapped in rocks
KS3 (NC)	• The composition of the Earth • The structure of the Earth • The rock cycle and the formation of igneous, sedimentary and metamorphic rocks • Earth as a source of limited resources and the efficacy of recycling • The carbon cycle • The composition of the atmosphere • The production of carbon dioxide by human activity and the impact on climate.