

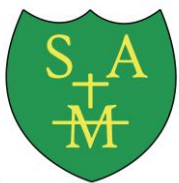
PROGRESSION OF KNOWLEDGE



Biology Unit: Living Things

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 on 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 one 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).



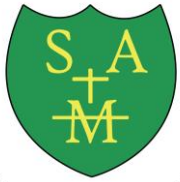
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6	• Know that living things can be grouped according to different criteria. • Know that a cell is made up of nucleus, cytoplasm and membrane. • Know that living things can be multicellular or unicellular (bacteria). • Explain in simple terms how the Linnaeus system is used to classify living things. • Explain why we need to group living things. • Explain possible difficulties with classification (penguins and whales). • 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.
7	Cells • Explain why cells are important. • Draw and label a plant and animal cell. • Identify the nucleus, cell membrane, cytoplasm and mitochondria in both cell types. • Identify the cell wall, chloroplasts and vacuoles in plants (inc. functions). • Explain how to use a microscope. • Describe how to prepare and view onion skin and cheek cell slides. • Describe the role of specialised cells namely- red blood cells, white blood cells, root hair cell, sperm, ciliated cell, muscle cell, nerve cell, HeLa cells and melanocytes. • Define and identify unicellular and multicellular organisms. • Explain what diffusion is, and why it is required in plants and animals. • Explain why multicellular organisms need organ systems to stay alive. • Explain how unicellular organisms are adapted to carry out functions that in multicellular organisms are done by different types of cells. • State the difference between cells, tissues, and organs.
8	Interdependence • Identify biotic and abiotic factors in an ecosystem. • Define the following keywords- food web, food chain, environment, population, producer, consumer, and decomposer. • Describe the adaptations that plants and animals have in hot and cold climates. • Create food webs and food chains. • Describe how a species' population changes due to predator prey interactions. • Explain how environmental change and toxic materials can affect a population. • Explain issues with human food supplies (insect pollinators) • Create a pyramid of number and a pyramid of biomass. • Suggest the effect of toxic substances accumulating in human food.



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9	Respiration • Know that respiration is a series of chemical reactions in cells, that breaks down glucose to provide energy and make new molecules. • Investigate the amount of energy contained in different foods. • Identify the 5 food groups and describe why each food group is needed to stay healthy. • Explain the issues with an unbalanced diet. • Explain why the blood is important. • Explain why diffusion is crucial for respiration to occur. • Investigate pulse rate whilst completing a range of exercises. • Define the following terms: aerobic and anaerobic respiration. • Use word equations to describe aerobic and anaerobic respiration. • Identify the mitochondria and explain its role in respiration. • Explain how certain activities involve aerobic or anaerobic respiration.