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| **Autumn 1 Term Science Year 5 Change for Better**  Life cycles of mammals, amphibians, insects and birds  Life process of reproduction in some plants and animals  – UKS2 Title of area of learning: **Living Things and Their Habitats** | |
| **Prior Knowledge** | **Future Learning** |
| • Notice that animals, including humans, have offspring which grow into adults. (Y2 - Animals, including humans)  • Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. (Y3 - Plants) | Reproduction in humans (as an example of a mammal), including the structure and function of the male and female reproductive systems, menstrual cycle (without details of hormones), gametes, fertilisation, gestation and birth, to include the effect of maternal lifestyle on the foetus through the placenta. (KS3)  • Reproduction in plants, including flower structure, wind and insect pollination, fertilisation, seed and fruit formation and dispersal, including quantitative investigation of some dispersal mechanisms. (KS3) |
| **Planned outcome:**  • Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.  • Describe the life process of reproduction in some plants and animals.  **Key Learning**  As part of their life cycle, plants and animals reproduce. Most animals reproduce sexually. This involves two parents where the sperm from the male fertilises the female egg. Animals, including humans, have offspring which grow into adults. In humans and some animals, these offspring will be born live, such as babies or kittens, and then grow into adults. In other animals, such as chickens or snakes, there may be eggs laid that hatch to young which then grow to adults. Some young undergo a further change before becoming adults e.g. caterpillars to butterflies. This is called a metamorphosis. Plants reproduce both sexually and asexually. Bulbs, tubers, runners and plantlets are examples of asexual plant reproduction which involves only one parent. Gardeners may force plants to reproduce asexually by taking cuttings. Sexual reproduction occurs through pollination, usually involving wind or insects.  **Misconceptions**  Some children may think:  • all plants start out as seeds  • all plants have flowers  • plants that grow from bulbs do not have seeds  • only birds lay eggs.  **Possible Evidence**  • Can draw the life cycle of a range of animals identifying similarities and differences between the life cycles  • Can explain the difference between sexual and asexual reproduction and give examples of how plants reproduce in both ways | |
| Learning Journey – small steps in learning to meet the planned outcome  A life cycle is made up of a series of developmental changes that an organism goes through, as they are born, grow, develop to adulthood, reproduce, reach old age and die.  The stages of the life cycle and length of that cycle vary, depending on the type of animal.  **Life cycle of a mammal**  Before a mammal is born, it grows and develops inside its mother (the only exceptions to this are the duck billed platypus and spiny anteaters that are mammals that lay eggs). The gestation period depends upon the species of mammal. Mammal mothers produce milk on which to feed their young and usually look after them until they are old enough to live independently. Mammal young grow, develop and mature into adults who are then capable of reproducing. Adults age and die.    **Life cycle of an amphibian**  Amphibians spend part of their life cycle in water and part of their life cycle on land. Amphibians hatch in water from jelly-like eggs and during the early part of their life cycle breathe with gills. They then develop lungs so that the adults can breathe air and live on land. This process, which changes their appearance entirely, is known as metamorphosis. Adults then mature and are able to reproduce laying their eggs in water. Young are independent from when they hatch.    **Life cycle of a bird**  Birds lay eggs with hard shells. The parent birds sit on the eggs in the nest to keep them warm so that the embryo grows until the egg hatches. The parents look after the hatchlings until they grow feathers and are ready to leave the nest - fledge. Adult birds, when mature, are able to reproduce.    **Life cycle of an insect**  There are two versions of an insect life cycle. One is referred to as complete metamorphosis and involves a pupal stage as in the case of the honeybee. The other is incomplete metamorphosis and does not involve a pupal stage. Instead, in incomplete metamorphosis growth and development occur through a series of nymphal stages, and the insect sheds its skin a number of times as in the case of the dragonfly.    A honeybee is an example of complete metamorphosis  A dragonfly is an example of an incomplete metamorphosis  Reproduction in plants can be both asexual and sexual.    The reproductive organ of flowering plants is the flower.  Most flowering plants have flowers with both male and female parts. Some plants have separate male flowers and female flowers on the same plant. A smaller number of plants have male flowers and female flowers on separate plants.  The female part of a flower consists of the **carpels**, which is where the seeds are formed. It has three parts: the **stigma**, the **style**, and the **ovary**. The male parts of the flower are the **stamens**, which produce **pollen**. Each stamen has two parts: an **anther** and a **filament**. The **anther** contains the pollen and the **filament** supports the anther.    When the flower is **pollinated**, a pollen grain sticks to the stigma. It then travels through a narrow tube which grows down through the style to the **ovary**. In the ovary, the pollen joins with the **ovules**. This fusion of the male and female cells is called **fertilisation** and the fused cells divide to develop into **seeds**. After fertilisation, the ovary usually swells and becomes the **fruit**.    **Asexual reproduction in plants**  Many plants can also reproduce without forming seeds. This is called asexual reproduction, which results in new plants that are genetically identical to the parent.  Plants may reproduce themselves naturally:  • Below ground – rhizomes, tubers, bulbs and corms. These are underground growths on the root or stem of a plant and contain stores of food to provide for the growing young plant eg potatoes  • Above ground – the parent plant produces runners and new plants sprout along its length eg. wild strawberry | Tiered Vocabulary  Dispersal ,fertilisation, germination, weaning, adolescence, gestation period, pollination  **3**  **2**  **1**  Species, reproduce, mammal, amphibian, observe, measure, research, maturity, infant, investigate  Cycle, phase, step. , study, present, birth, death, growth, young, old, animal, plant, flower  life cycle, reproduce, sexual, fertilises, asexual, plantlets, runners, tubers, bulbs, cuttings |
| Scaffolds/Enquiry Activities | Oracy Activities |
| • Use secondary sources and, where possible, first-hand observations to find out about the life cycle of a range of animals.  • Compare the gestation times for mammals and look for patterns e.g. in relation to size of animal or length of dependency after birth.  • Look for patterns between the size of an animal and its expected life span. • Grow and observe plants that reproduce asexually e.g. strawberries, spider plants, potatoes  . • Take cuttings from a range of plants e.g. African violet, mint.  • Plant bulbs and then harvest to see how they multiply.  • Use secondary sources to find out about pollination. | • present their understanding of the life cycle of a range of animals in different ways e.g. drama, pictorially, chronological reports, creating a game  • identify patterns in life cycles  • compare two or more animal life cycles they have studied  •explain how a range of plants reproduce asexually |