Subject: Science Year6: Living things and their habitats (classification)

NC/PoS:

- describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants, and animals
- give reasons for classifying plants and animals based on specific characteristics.

Prior Learning (what pupils already know and can do)

Know there is an animal kingdom grouped into vertebrates and non-vertebrates. Vertebrates can be grouped into mammals, fish, birds, reptiles, and amphibians. Know there is a plant kingdom which can be grouped into flowering and non-flowering plants. Use of sorting tree. Know the features of living things are movement, respiration, sensitivity, growth, reproduction, excretion, and nutrition.

End Goals (what pupils MUST know and remember)

- Know Carl Linnaeus as a pioneer of classification
- Know to classify flowering plants into grasses, shrubs, cereals, and deciduous trees
- Know to classify non-flowering plants into algae, mosses, ferns, and coniferous trees
- Know to classify animals which are vertebrates – have backbones - (birds, fish, reptiles, mammals, amphibians)
- Know to classify animals which are invertebrates – no backbones- into molluscs, annelids, arachnids, crustaceans, sponges, echinoderms, and insects
- Know micro-organisms can be classified into bacteria, viruses, fungi, algae, and protozoa

Key Vocabulary

invertebrates, insects, spiders, snails, and worms, branching tree, classify, environment, representation, pooter, mosses, ferns, flowering plants, conifers, shrubs, cereal, grasses, spores, micro-organism, nucleus, unicellular, multicellular, bacteria, fungi, viruses, protists, algae, uses of, food production, cleaning products, decomposers, penicillin, yeast, antibiotics

Session 1: Review prior learning: Before starting this unit, check children can recall their Year 4 learning about living things from the unit *Science, Year 4: Classification and changing habitats*:

- What a living thing is.
- Some examples of living and non-living things.
- The seven life processes (acronym: MRS GREN).
- What a vertebrate is and some examples.
- What an invertebrate is and some examples.

LO: To explain how organisms are classified using the Linnaean system

Introduce Carl Linnaeus – all living things can be grouped – labelled all living things using binomial system (2 names). Watch the *Pupil video: Carl Linnaeus* and ask the children to answer the following questions individually in their books or write a paragraph about Carl Linnaeus using the questions as a prompt.

What was the name of the naturalist who developed a system for sorting and naming living things? (Carl Linnaeus.)

What did Linnaeus use to sort living things into groups? (Their physical structure and characteristics.)

What is the sorting system he developed called? (The Linnaean system.)

What is the naming system he developed called? (Binomial system.)

More videos about Carl Linnaeus:

https://www.youtube.com/watch?v=-LVunuIOT4w BBC Teach – Carl Linnaeus

https://www.youtube.com/watch?v=Gb_IO-SzLgk Carl Linnaeus Natural History Museum.

As a class children can place animals onto the *Resource:Linnaean system diagram* in the floorbook.
Vocabulary: binomial system, characteristic, classify, life processes, Linnaean system, organism

Session 2:
Use resources from Kapow Lesson 2: Cold-blooded vertebrates
Recap and recall: Who is Carl Linnaeus? Classifying vertebrates and invertebrates.
LO: To classify the cold-blooded vertebrate groups using their common characteristics.
Working Scientifically LO: To use a classification key to classify frog species.
Use the *Main Event* section of the lesson. Children look at the characteristics of cold-blooded vertebrates using the *Resource: Cold-blooded vertebrates research cards* and record individually in their books (worksheet can be used as a scaffold) the characteristics of fish, amphibians and reptiles focusing on skin, reproduction, breathing and blood.
Move on to the 'Branching Keys' section and as a class do all the 'Drag and drop activities' to ensure the children can use keys effectively. Children use the questions below as a prompt to write a short explanation about classification keys.
What is a classification key? (A diagram used to sort organisms using their similarities and differences.)
What are classification keys used for? (To classify living things.)
What is on each branch of a branching key? (Answers may include: a question or yes and no.)
What do the questions on a branching key focus on? (Answers may include: physical characteristics, visible features, colours or shapes.)
Vocabulary: vertebrate, fish, amphibian, reptile, classification key, cold-blooded

Session 3:
Use resources from Kapow Lesson 3: Warm-blooded vertebrates
Recap and recall: Complete the top three rows of an A3 version of *Activity: Vertebrate characteristics table* as a class for the Floorbook.
LO: To classify the warm-blooded vertebrate groups using their common characteristics.
Working Scientifically LO: To use a classification key to classify vertebrates.
Use the 'Main Event' section of the lesson to focus on the characteristics of birds. The children's task is to write a short script to accompany the video provided- they must focus on the characteristics of the birds in the video.
Vocabulary: bird, mammal, warm-blooded

Session 4:
Use resources from Kapow Lesson 4: Invertebrates
Recap and recall: Complete the next two rows of the A3 version of *Activity: Vertebrate characteristics table* as a class in the Floorbook.
LO: To classify invertebrates using their characteristics.
Working Scientifically LO: To use a classification key to classify invertebrates.
Use the 'Attention Grabber' section to explore the subdivisions of invertebrates.
Chidren use modelling clay to create one of the 4 invertebrate groups shown on the *Presentation: Invertebrate groups* they must then label the characteristics of their invertebrate. Photograph the best examples for the Floorbook.
If time allows look at the *Presentation: Number keys* in the 'Wrapping up' section of the lesson.
Vocabulary: exoskeleton, insect, invertebrate, snail, spider (arachnid), worm

Session 5:
Use resources from Kapow Lesson 5: Plants
Recap and recall: Classify vertebrates and invertebrates into the correct groups.
LO: To describe how the plant kingdom is organised (based on shared characteristics)
Working Scientifically LO: To produce a working classification key
Use the 'Attention Grabber' to introduce the plant kingdom.
Use the *Activity: Classifying leaves* from the 'Wrapping up' section. Children make their own classification keys using the leaves provided.
Vocabulary: conifer, fern, flowering plant, moss

Session 6:
Use resources from Kapow Lesson 6: Micro-organisms
Recap and recall: Do a brain dump about the different plant groups. Then discuss the following questions as a class:

- **Which plant groups have seeds?** (Flowering plants and conifers.)
- **Which plant groups have roots?** (Ferns, conifers and flowering plants.)
- **Which plant groups can have a trunk?** (Ferns, conifers and flowering plants.)
- **Which plant group has leaves that are needles?** (Conifers.)

LO: To describe and classify micro-organisms
Working scientifically LO: To use a classification key to classify bacteria
Use the 'Attention Grabber' to introduce micro-organisms
A microorganism is an organism which is microscopic, making it too small to be seen unaided by the human eye.
Move on to the 'Main Event' section of the lesson and use *Presentation: Bacteria.* Only need to use up to slide 5.
Additional resource: https://www.youtube.com/watch?v=9JW63U2mzqo
Vocabulary: micro-organism, nucleus, unicellular, multicellular, bacteria, fungi, viruses, protists, algae

Link to career scientist:
https://pstt.org.uk/application/files/7916/2851/6348/Marine_biologist_-_Dawood_Qureshi.pdf
https://pstt.org.uk/application/files/2416/2851/6697/Veterinary_Surgeon_-_Daniella_Dos_Santos.pdf
https://pstt.org.uk/application/files/6216/3525/6982/Plant_Biologist-_Angie_Burnett.pdf

Scientists who have helped develop understanding in this field: Carl Linnaeus