Claremont Primary and Nursery School Science Curriculum

Year 4: How can living things be classified?

NC link: Living Things and their Habitats

- **Objectives:**
- Identify and sort animals into groups based on their features
- Identify vertebrates and invertebrates
- Use classification keys to sort animals
- Group plants in different ways
- Use classification keys to group plants
- Collect data in order to explore how seasonal changes influence plant and animal life (AUTUMN)
- Analyse data in order to explain how seasonal changes influence plant and animal life (AUTUMN)
- Collect data in order to explore how seasonal changes influence plant and animal life (SPRING)
- Analyse data in order to explain how seasonal changes influence plant and animal life (SPRING)
- Collect data in order to explore how seasonal changes influence plant and animal life (SUMMER)
- Analyse data in order to explain how seasonal changes influence plant and animal life (SUMMER)

Substantive Knowledge:

- recognise that living things can be grouped in a variety of ways
- explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment

Disciplinary knowledge (Think like a scientist):

- asking relevant questions and using different types of scientific enquiries to answer them
- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- 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.
- Talk about criteria for grouping, sorting and classifying (non-statutory).

Key Vocabulary:

Mammal, bird, fish, amphibian, reptile, vertebrate, invertebrate, exoskeleton, insect, spider, soft-bodied invertebrate, flowering plant, non-flowering plant, stamen, pistil, pollination, fern, moss, pictogram, bar chart, data, prediction

Claremont Primary and Nursery School Science Curriculum

Year 4: How do solids, liquids and gases differ?

NC link: States of Matter

Objectives:

- Explore solids, gases and liquids
- Think differently about solids, gases and liquids
- Understand how some materials change states between solids, gases and liquids
- Use equipment correctly in order to complete investigations
- Investigate whether the temperature of the water affects the time it takes for ice to melt in it.
- Understand and explain the water cycle
- Investigate whether the temperature of the air affects the time it takes for water to evaporate

Substantive Knowledge:

- compare and group materials together, according to whether they are solids, liquids or gases
- observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)
- identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.

Disciplinary knowledge (Think like a scientist):

- asking relevant questions and using different types of scientific enquiries to answer them
- setting up simple practical enquiries, comparative and fair tests
- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- identifying differences, similarities or changes related to simple scientific ideas and processes
- using straightforward scientific evidence to answer questions or to support their findings.

Key Vocabulary:

Solid, liquid, gas, volume, states of matter, pouring solid, oobleck, flow, freezing, boiling, condensation, evaporation, thermometer, stopwatch, beaker, temperature, independent variable, dependent variable, controlled variable, melting, melting point, the water cycle, precipitation, atmosphere, petri dish, observe, data, conclusion

Claremont Primary and Nursery School Science Curriculum

Year 4: How do we hear?

NC link: Sound

Objectives:

- explain vibrations work in sound
- explain the different parts of the ear and how they work
- Investigate sound
- Explore volume
- Explore pitch
- Investigate whether distance has an effect on the volume of a sound

Substantive Knowledge:

- identify how sounds are made, associating some of them with something vibrating
- recognise that vibrations from sounds travel through a medium to the ear
- find patterns between the pitch of a sound and features of the object that produced it
- find patterns between the volume of a sound and the strength of the vibrations that produced it
- recognise that sounds get fainter as the distance from the sound source increases.

Disciplinary knowledge (Think like a scientist):

- asking relevant questions and using different types of scientific enquiries to answer them
- setting up simple practical enquiries, comparative and fair tests
- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- identifying differences, similarities or changes related to simple scientific ideas and processes
- using straightforward scientific evidence to answer questions or to support their findings.

Key Vocabulary:

Vibration, ear, sound, volume, pitch, outer ear, ear canal, ear drum, cochlea, ear bones, decibel (dB), decibel meter, insulate, high-pitched, low-pitched, background noise, independent variable, dependent variable, controlled variable, evaluate

Claremont Primary and Nursery School Science Curriculum

Year 4: How does electricity make things work?

NC link: Electricity

Objectives:

- Identify common appliances that run on electricity
- Build and draw series circuits
- Identify what has gone wrong in a circuit that does not work
- Identify which materials are electrical conductors or insulators
- Explore how a conductor/insulator affects a circuit

Substantive Knowledge:

- identify common appliances that run on electricity
- construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers
- identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery
- recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit
- recognise some common conductors and insulators, and associate metals with being good conductors.

Disciplinary knowledge (Think like a scientist):

- asking relevant questions and using different types of scientific enquiries to answer them
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions

Key Vocabulary:

Appliance, plug, socket, cell, electrocuted, circuit, switch, cell, battery, buzzer, conductor, insulator, metal, material,

Claremont Primary and Nursery School Science Curriculum

Year 4: Why do animals and plants choose a habitat?

NC link: Animals including humans

Objectives:

- Explore habitats and the animals that live in them
- Use classification keys for animals
- Use classification keys for plants
- Explore the impact that humans have on different habitats

Substantive Knowledge:

- Recognise that living things can be grouped in a variety of ways.
- Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.
- Recognise that environments can change, and that this can sometimes pose dangers to living things.

Disciplinary knowledge (Think like a scientist):

- Asking relevant questions and using different types of scientific enquiries to answer them.
- Gathering, recording, classifying and presenting data in a variety of ways, to help in answering questions.
- Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.

Key Vocabulary

Habitat, rural habitat, urban habitat, biodiversity, classification key, vertebrate, invertebrate, habitat, flowering plant, non-flowering plant, natural resources, deforestation, rewilding, nature reserve

Claremont Primary and Nursery School Science Curriculum

Year 4: Where does my food go?

NC link: Animals including Humans

Objectives:

- Explore how an animal's diet influences the structure of its teeth
- Identify why humans have more than one type of tooth
- Explain the layers of the teeth
- Be able to identify and examine different types of teeth
- investigate the effects different liquids have on the egg.
- Explain the process of digestion
- Demonstrate the process of digestion on a model
- Examine the results from our tooth decay investigation

Substantive Knowledge:

- 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

Disciplinary knowledge (Think like a scientist):

- asking relevant questions and using different types of scientific enquiries to answer them
- setting up simple practical enquiries, comparative and fair tests
- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- reporting on findings from enquiries, including oral and written explanations, displays or presiet influencentations of results and conclusions
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- identifying differences, similarities or changes related to simple scientific ideas and processes
- using straightforward scientific evidence to answer questions or to support their findings.

Key Vocabulary:

Teeth, carnivore, herbivore, omnivore, incisors, canines, premolars, molars, germs, enamel, root, plaque, decay, digestive system, mouth, intestines, saliva, oesophagus, stomach, intestines, rectum,

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<table>
<tr><th colspan="2">Year 4: What is a food chain?
NC link: Animals including Humans</th></tr>
<tr><td colspan="2">Objectives:
Explain what a food chain is
Interpret food chains
Draw food chains
explore the potential impact of human activity on food chains</td></tr>
<tr><td>Substantive Knowledge:
Construct and interpret a variety of food chains, identifying producers, predators and prey.</td><td>Disciplinary knowledge (Think like a scientist):
Using straightforward scientific evidence to answer questions or to support their findings.
Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.
Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</td></tr>
<tr><td colspan="2">Key Vocabulary:
Food chain, producer, predator, prey, consumer, habitat, farming, overfishing, hunting</td></tr>
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