

## Year 6 Scheme of Learning: Science

### Year 6 – Autumn 1 – Living Things & Their Habitats

| Lesson 1              |                                                                                                        |
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| Learning Objective    | <b>To classify animals based on their characteristics.</b>                                             |
| Declarative Knowledge | - Living things can be grouped according to their characteristics.                                     |
| Procedural Knowledge  | Asking questions.                                                                                      |
| Key Vocabulary        | Classification, characteristics, taxonomy, <b>characteristic words (e.g. sharp, fur, claws, diet).</b> |

| Lesson 2              |                                                                                                                                                                                                                                                             |
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| Learning Objective    | <b>To identify the different classes of vertebrates.</b>                                                                                                                                                                                                    |
| Declarative Knowledge | - Animals are put into 2 main groups – those with a backbone (vertebrates) and without (invertebrates).<br>- Vertebrates can be divided into 5 smaller classes – fish, amphibians, mammals, birds and reptiles.<br>- Each group has common characteristics. |
| Procedural Knowledge  | Identifying and classifying.                                                                                                                                                                                                                                |
| Key Vocabulary        | Characteristics, mammal, reptile, fish, bird, amphibian, class, vertebrate.                                                                                                                                                                                 |

| Lesson 3              |                                                                                                                                                                                                           |
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| Learning Objective    | <b>To identify plants using their characteristics.</b>                                                                                                                                                    |
| Declarative Knowledge | - Plants can be broadly divided into 2 groups – flowering plants and non-flowering plants.<br>- Within these groups, there are a range of sub-groups.<br>- Each sub-group contain common characteristics. |
| Procedural Knowledge  | Identifying and classifying.                                                                                                                                                                              |
| Key Vocabulary        | Characteristics, plants, flowering, non-flowering, <b>examples of sub-groups (e.g. moss, fern).</b>                                                                                                       |

| Lesson 4              |                                                                                                                                                                                                                                                        |
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| Learning Objective    | <b>To explain the different levels of the Linnaeus System.</b>                                                                                                                                                                                         |
| Declarative Knowledge | <ul style="list-style-type: none"> <li>- Carl Linnaeus developed the classification system we use today.</li> <li>- This system is made up of a range of levels.</li> </ul> (The only levels they should have learned in detail is CLASS and SPECIES). |
| Procedural Knowledge  | Identifying and classifying.                                                                                                                                                                                                                           |
| Key Vocabulary        | Characteristics, taxonomy, species, Linnaeus.                                                                                                                                                                                                          |

| Lesson 5              |                                                                                                                                                                                                                                                                                                                                                          |
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| Learning Objective    | <b>To describe the main groups of microorganisms using their characteristics.</b>                                                                                                                                                                                                                                                                        |
| Declarative Knowledge | <ul style="list-style-type: none"> <li>- Microorganisms are tiny living things which are only visible with a microscope.</li> <li>- They are grouped into 3 main groups – virus, bacteria and fungi.</li> <li>- Bacteria has features which are good and bad for humans.</li> <li>- Viruses are single-cell organisms which live to multiply.</li> </ul> |
| Procedural Knowledge  | Communicating findings.                                                                                                                                                                                                                                                                                                                                  |
| Key Vocabulary        | Microorganism, virus, bacteria, fungi.                                                                                                                                                                                                                                                                                                                   |

| Lesson 6              |                                                                                 |
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| Learning Objective    | <b>To investigate the conditions which affect the growth of fungi.</b>          |
| Declarative Knowledge | - Mould grows at different rates depending on the conditions which are present. |
| Procedural Knowledge  | Making observations.                                                            |
| Key Vocabulary        | Microorganism, fungi, mould, growth, conditions.                                |

## Year 6 – Autumn 2 – Animals inc. Humans

| Lesson 1              |                                                                                                                                                                        |
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| Learning Objective    | <b>To identify the main parts of the circulatory system.</b>                                                                                                           |
| Declarative Knowledge | <ul style="list-style-type: none"><li>- The heart pumps blood around to the lungs through blood vessels.</li><li>- The blood vessels are veins and arteries.</li></ul> |
| Procedural Knowledge  | Identifying and classifying.                                                                                                                                           |
| Key Vocabulary        | Vein, artery, blood vessel, heart, lungs, capillaries.                                                                                                                 |

| Lesson 2              |                                                                                                                                                                                                                                                                                                                     |
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| Learning Objective    | <b>To describe the function of the heart and the process of blood circulation around the body.</b>                                                                                                                                                                                                                  |
| Declarative Knowledge | <ul style="list-style-type: none"><li>- Blood collects oxygen from the lungs (becoming oxygenated).</li><li>- Blood is then pumped around the body from the heart.</li><li>- As they are used, they use carbon dioxide and the cycle starts again.</li><li>- This is called the human circulatory system.</li></ul> |
| Procedural Knowledge  | Communicating findings.                                                                                                                                                                                                                                                                                             |
| Key Vocabulary        | Vein, artery, oxygenated, deoxygenated, oxygen, carbon dioxide.                                                                                                                                                                                                                                                     |

| Lesson 3              |                                                                                                                                                          |
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| Learning Objective    | <b>To understand how water and nutrients are transported around the body.</b>                                                                            |
| Declarative Knowledge | <ul style="list-style-type: none"><li>- Nutrients, water and oxygen are transported in the blood to the muscles and organs as they are needed.</li></ul> |
| Procedural Knowledge  | Communicating findings.                                                                                                                                  |
| Key Vocabulary        | Nutrients, water.                                                                                                                                        |

| Lesson 4              |                                                                                                                                                                                                                                                                                              |
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| Learning Objective    | <b>To compare the effect of different activities on our heart rate.</b>                                                                                                                                                                                                                      |
| Declarative Knowledge | <ul style="list-style-type: none"><li>- We can measure how fast our heart beats by finding our pulse.</li><li>- Our heart rate is measured in BPM (beats per minute).</li><li>- Our heart rate increases when we exercise as we are required to replace oxygen that has been used.</li></ul> |
| Procedural Knowledge  | Interpreting data.                                                                                                                                                                                                                                                                           |
| Key Vocabulary        | Heart rate, pulse, BPM, exercise, aerobic.                                                                                                                                                                                                                                                   |

| Lesson 5              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
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| Learning Objective    | <b>To explain the impact of diet and exercise on the body.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Declarative Knowledge | <ul style="list-style-type: none"> <li>- Diet and exercise has an impact on the way our bodies function.</li> <li>- Some foods (saturated fat and salt) have a negative impact on our heart and increase risk of heart problems.</li> <li>- Unsaturated fats, fruit and vegetables have a positive impact on our heart and reduce risk.</li> <li>- We should exercise for at least 1 hour per day to maintain a healthy heart.</li> <li>- Some diseases are caused by deficiencies in our diet.</li> </ul> |
| Procedural Knowledge  | Communicating findings.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Key Vocabulary        | Diet, exercise, <b>food types</b> (protein, fruit/veg, fats).                                                                                                                                                                                                                                                                                                                                                                                                                                              |

| Lesson 6              |                                                                                                                                                                                                                                                                                                 |
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| Learning Objective    | <b>To describe how drugs and alcohol can have a negative impact on our bodies.</b>                                                                                                                                                                                                              |
| Declarative Knowledge | <ul style="list-style-type: none"> <li>- A drug is something that alters your mind or body after you have taken it.</li> <li>- Some drugs are legal and others are illegal.</li> <li>- Alcohol, smoking and illegal drugs have many negative side effects and can lead to addiction.</li> </ul> |
| Procedural Knowledge  | Using secondary sources.                                                                                                                                                                                                                                                                        |
| Key Vocabulary        | Legal, illegal, drugs, alcohol, side effects, addiction.                                                                                                                                                                                                                                        |

## Year 6 – Spring 1 – Light

| Lesson 1              |                                                                                                                                                                                                                                                                                 |
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| Learning Objective    | <b>To understand how light travels and identify light sources.</b>                                                                                                                                                                                                              |
| Declarative Knowledge | <ul style="list-style-type: none"><li>- Light travels in straight lines.</li><li>- We see objects when light goes from them in to our eyes.</li><li>- Light comes from light sources.</li><li>- For some objects, light must be reflected from the object to be seen.</li></ul> |
| Procedural Knowledge  | Communicating findings.                                                                                                                                                                                                                                                         |
| Key Vocabulary        | Light source, natural, artificial, reflect.                                                                                                                                                                                                                                     |

| Lesson 2              |                                                                                                                                                                                                                                                                                     |
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| Learning Objective    | <b>To understand how shadows are formed.</b>                                                                                                                                                                                                                                        |
| Declarative Knowledge | <ul style="list-style-type: none"><li>- Objects that block light will cause shadows.</li><li>- Because light travels in straight lines, the shape of the shadow is the same as the object.</li><li>- As objects get closer to a light source, the shadow will get bigger.</li></ul> |
| Procedural Knowledge  | Identifying and classifying.                                                                                                                                                                                                                                                        |
| Key Vocabulary        | Shadow, opaque, block.                                                                                                                                                                                                                                                              |

| Lesson 3              |                                                                                                                                                                                                                                                             |
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| Learning Objective    | <b>To investigate how light is refracted through different materials.</b>                                                                                                                                                                                   |
| Declarative Knowledge | <ul style="list-style-type: none"><li>- When light passes through different materials such as water or glass, it slows down.</li><li>- This causes the shape to be distorted and appear to change direction.</li><li>- This is called refraction.</li></ul> |
| Procedural Knowledge  | Observing and measuring.                                                                                                                                                                                                                                    |
| Key Vocabulary        | Refract, speed of light, transparent.                                                                                                                                                                                                                       |

| Lesson 4              |                                                                                                                                                                                                                                                                                                |
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| Learning Objective    | <b>To observe and record how light is reflected.</b>                                                                                                                                                                                                                                           |
| Declarative Knowledge | <ul style="list-style-type: none"><li>- When light hits a mirror, it 'bounces' back at the same angle on the other side.</li><li>- This is called reflection.</li><li>- The original beam of light is the 'angle of incidence' and the reflected light is the 'angle of reflection.'</li></ul> |
| Procedural Knowledge  | Observing and measuring.                                                                                                                                                                                                                                                                       |
| Key Vocabulary        | Reflect, mirror, angle of incidence, angle of reflection.                                                                                                                                                                                                                                      |

| Lesson 5              |                                                                                                                                                                                                                                                                                                          |
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| Learning Objective    | <b>To investigate which colours light is made of.</b>                                                                                                                                                                                                                                                    |
| Declarative Knowledge | <ul style="list-style-type: none"> <li>- Isaac Newton discovered that light is made up of a spectrum of colours.</li> <li>- Although it looks white, light is actually made up of red, orange, yellow, green, blue, indigo and violet.</li> <li>- You can separate the colours using a prism.</li> </ul> |
| Procedural Knowledge  | Secondary sources.                                                                                                                                                                                                                                                                                       |
| Key Vocabulary        | Spectrum, prism, Isaac Newton.                                                                                                                                                                                                                                                                           |

| Lesson 6              |                                                                                                                                                                                                                                             |
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| Learning Objective    | <b>To predict how light will appear through colour filters.</b>                                                                                                                                                                             |
| Declarative Knowledge | <ul style="list-style-type: none"> <li>- When light goes through colour filters, only the colour of the filter will travel through.</li> <li>- All other colours are blocked, making objects look the same colour as the filter.</li> </ul> |
| Procedural Knowledge  | Making predictions.                                                                                                                                                                                                                         |
| Key Vocabulary        | Colour filter, block.                                                                                                                                                                                                                       |

## Year 6 – Spring 2 – Electricity

| Lesson 1              |                                                                   |
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| Learning Objective    | <b>To identify the symbols used for electrical components.</b>    |
| Declarative Knowledge | - You can use recognised circuit symbols to draw simple diagrams. |
| Procedural Knowledge  | Identify and classifying.                                         |
| Key Vocabulary        | Circuit, battery, cell, wire, switch, motor, buzzer, component.   |

| Lesson 2              |                                                                                                                                                                     |
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| Learning Objective    | <b>To investigate how voltage affects the brightness of bulbs.</b>                                                                                                  |
| Declarative Knowledge | - Adding more cells to a complete circuit will make a bulb brighter.<br>- Electrical currents are measured in voltage – the more batteries, the higher the voltage. |
| Procedural Knowledge  | Recording data.                                                                                                                                                     |
| Key Vocabulary        | Current, voltage, cells.                                                                                                                                            |

| Lesson 3              |                                                                                                                                                                    |
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| Learning Objective    | <b>To make repairs to a circuit.</b>                                                                                                                               |
| Declarative Knowledge | - If a circuit is not complete, electricity cannot flow.<br>- Circuits are incomplete if switches are open, a source is not present or any wires are disconnected. |
| Procedural Knowledge  | Interpreting and communicating.                                                                                                                                    |
| Key Vocabulary        | Incomplete, complete, switch, source, load, wire, component.                                                                                                       |

| Lesson 4              |                                                                                                              |
|-----------------------|--------------------------------------------------------------------------------------------------------------|
| Learning Objective    | <b>To investigate how circuits can vary.</b>                                                                 |
| Declarative Knowledge | - Changing the amount of sources, loads or wires will affect the brightness of a bulb or volume of a buzzer. |
| Procedural Knowledge  | Setting up tests.                                                                                            |
| Key Vocabulary        | Source, load, wire, component.                                                                               |

| Lesson 5              |                                                                                                                                                                                                                                                                   |
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| Learning Objective    | <b>To compare renewable and non-renewable energy sources.</b>                                                                                                                                                                                                     |
| Declarative Knowledge | - Renewable sources are sources that will not run out (e.g. solar, water, wind).<br>- Non-renewable sources are sources that are limited (e.g. coal, gas, oil).<br>- Renewable sources are more environmentally friendly as they do not release greenhouse gases. |
| Procedural Knowledge  | Secondary sources.                                                                                                                                                                                                                                                |
| Key Vocabulary        | Renewable, non-renewable, solar, wind, hydro, coal, gas, oil.                                                                                                                                                                                                     |

## Year 6 – Summer 1 – Evolution

| Lesson 1              |                                                                                                                                                                                                                                                                                       |
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| Learning Objective    | <b>To understand which characteristics are inherited and how this causes variation.</b>                                                                                                                                                                                               |
| Declarative Knowledge | <ul style="list-style-type: none"> <li>- All living things have offspring of the same kind, as features in the offspring are inherited from the parents.</li> <li>- Due to sexual reproduction, the offspring are not identical to their parents and vary from each other.</li> </ul> |
| Procedural Knowledge  | Making predictions.                                                                                                                                                                                                                                                                   |
| Key Vocabulary        | Inheritance, variation, characteristics, offspring                                                                                                                                                                                                                                    |

| Lesson 2              |                                                                                                                                                                                                                                                                                                                                                    |
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| Learning Objective    | <b>To understand how animals are suited to their habitat.</b>                                                                                                                                                                                                                                                                                      |
| Declarative Knowledge | <ul style="list-style-type: none"> <li>- Plants and animals have characteristics that make them suited (adapted) to their environment.</li> <li>- If the environment changes rapidly some variations of a species may not suit the new environment and will die.</li> <li>- To name ways that animals are adapted to different habitats</li> </ul> |
| Procedural Knowledge  | Communicating findings                                                                                                                                                                                                                                                                                                                             |
| Key Vocabulary        | Habitat, suited, characteristics                                                                                                                                                                                                                                                                                                                   |

| Lesson 3              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
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| Learning Objective    | <b>To understand how animals adapt to their habitat over time.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Declarative Knowledge | <ul style="list-style-type: none"> <li>- If the environment changes slowly, animals and plants with variations that are best suited survive in greater numbers to reproduce and pass their characteristics on to their young.</li> <li>- Over time these inherited characteristics become more dominant within the population.</li> <li>- Over a very long period of time these characteristics may be so different to how they were originally that a new species is created. This is evolution.</li> </ul> |
| Procedural Knowledge  | Making observations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Key Vocabulary        | Habitat, suited, adaptation, evolution                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

| Lesson 4              |                                                                                                                                     |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Learning Objective    | <b>To explain how organisms have evolved over time using fossils.</b>                                                               |
| Declarative Knowledge | - Fossils give us evidence of what lived on the Earth millions of year ago and provide evidence to support the theory of evolution. |
| Procedural Knowledge  | Communicating findings                                                                                                              |
| Key Vocabulary        | Fossils, paleontology(ist), minerals                                                                                                |

| Lesson 5              |                                                                                                                                                                                                                                                                                                                                                                                          |
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| Learning Objective    | <b>To understand the contribution Charles Darwin and Alfred Wallace on evolution.</b>                                                                                                                                                                                                                                                                                                    |
| Declarative Knowledge | <ul style="list-style-type: none"> <li>- More recently scientists such as Darwin and Wallace observed how living things adapt to different environments to become distinct varieties with their own characteristics.</li> <li>- Darwin and Wallace concluded that species adapted and changed to suit their environment, passing on their characteristics to their offspring.</li> </ul> |
| Procedural Knowledge  | Secondary sources.                                                                                                                                                                                                                                                                                                                                                                       |
| Key Vocabulary        | Natural selection, offspring, evolution.                                                                                                                                                                                                                                                                                                                                                 |