

# PREPARING FOR SECONDARY SCIENCE - YEAR 6: PROGRESSION MAP

## National Curriculum Objectives

- Develop scientific knowledge and conceptual understanding.
- Understand the nature, processes, and methods of science.
- Be equipped with the scientific knowledge required to understand the uses and implications of science.

## Lesson Titles:

- Lesson 1: How can we improve observations?
- Lesson 2: Acid or alkali?
- Lesson 3: How can we separate colours?
- Lesson 4: What can affect photosynthesis?
- Lesson 5: How can we change sound?
- Lesson 6: How is energy transformed?

## Coherence:

**History Link:** Learning about the invention of the microscope by Hans and Zacharias Jansen enriches the understanding of scientific tools' evolution.

**Geography Link:** Studying plants and animals adapted to environments like deserts, rainforests or the Arctic connects to geography learning about different climate and habitat zones around the planet.

**Maths Link:** Recording and analysing data from experiments, such as measuring pH levels or calculating distances travelled by chromatographic substances.

**Literacy Link:** Writing detailed observations and conclusions from experiments.

**Art Link:** Using a chromatogram, mixing colours of indicators.

## Key vocabulary:

eyepiece, focus knobs, indicator, chromatography, pigments, photosynthesis, chlorophyll, sound waves, pitch, energy transformation

## Common misconceptions:

- All acids are dangerous.
- Chromatography only separates colours, not other substances.
- Sound cannot travel through solids.
- Energy can be lost.
- Photosynthesis happens at night.

## Hinterland:

- Observing objects under a magnifying glass or microscope at home.
- Noticing how vinegar and baking soda react in kitchen experiments.
- Watching colours separate in a glass of water with food colouring or ink.
- Seeing how plants grow towards light on a windowsill.
- Noticing how different devices use and transform energy (e.g., toasters, flashlights)

## Scientific enquiry:

- Lesson 1 - Identifying, classifying and grouping
- Lesson 2 - Identifying, classifying and grouping, Observing over time
- Lesson 3 - Identifying, classifying and grouping
- Lesson 4 - Identifying, classifying and grouping
- Lesson 5 - Identifying, classifying and grouping
- Lesson 6 - Identifying, classifying and grouping

## Key scientists and inventors:

1. Hans and Zacharias Jansen (Microscope)
2. Joseph Priestley (Photosynthesis)
3. Thomas Edison (Energy transformations)
4. Robert Hooke (Microscopy)
5. Mary Anning (Fossil discoveries and understanding adaptation)

## Builds on:

- Basic properties of materials (Year 2)
- Introduction to forces (Year 3)
- States of matter and changes (Year 4)
- Basic principles of light and sound (Year 5)
- Electricity and circuits (Year 6)

## Future learning at KS3:

- Year 7: Introduction to cells and body systems, more advanced properties of materials.
- Year 8: Further studies on ecosystems and energy resources.
- Year 9: Detailed exploration of chemical reactions, sound and light properties, and advanced energy transformations.