Secondary Stage 7 Science for Year 7

Scientific enquiry

Ideas and evidence

- Be able to talk about the importance of questions, evidence and explanations.
- Make predictions and review them against evidence.

Plan investigative work

- Suggest ideas that may be tested.
- Outline plans to carry out investigations, considering the variables to control, change or observe.
- Make predictions referring to previous scientific knowledge and understanding.
- Identify appropriate evidence to collect and suitable methods of collection.
- Choose appropriate apparatus and use it correctly.

Obtain and present evidence

- Make careful observations including measurements.
- Present results in the form of tables, bar charts and line graphs.
- Use information from secondary sources.

Consider evidence and approach

- Make conclusions from collected data, including those presented in a graph, chart or spreadsheet.
- Recognise results and observations that do not fit into a pattern, including those presented in a graph, chart or spreadsheet.
- Consider explanations for predictions using scientific knowledge and understanding and communicate these.
- Present conclusions using different methods.

Biology

Plants

- Recognise the positions, and know the functions of the major organs of flowering plants, e.g. root, stem, leaf.

Humans as organisms

- Explore the role of the skeleton and joints and the principle of antagonistic muscles.
- Recognise the positions and know the functions of the major organ systems of the human body. Secondary sources can be used.
- Research the work of scientists studying the human body.

Cells and organisms

- Identify the seven characteristics of living things and relate these to a wide range of organisms in the local and wider environment.
- Know about the role of micro-organisms in the breakdown of organic matter, food production and disease, including the work of Louis Pasteur.
- Identify the structures present in plant and animal cells as seen with a simple light microscope and/or a computer microscope.
- Compare the structure of plant and animal cells.
- Relate the structure of some common cells to their functions. Secondary sources can be used.
- Understand that cells can be grouped together to form tissues, organs and organisms.

Living things in their environment

- Describe how organisms are adapted to their habitat, drawing on locally occurring examples. Secondary sources can be used.
- Draw and model simple food chains.

- Discuss positive and negative influence of humans on the environment, e.g. the effect on food chains, pollution and ozone depletion.
- Discuss a range of energy sources and distinguish between renewable and non-renewable resources. Secondary sources can be used.

Variation and classification

- Understand what is meant by a species.
- Investigate variation within a species. Secondary sources can be used.
- Classify animals and plants into major groups, using some locally occurring examples.

Chemistry

States of matter

- Show in outline how the particle theory of matter can be used to explain the properties of solids, liquids and gases, including changes of state.

Material properties

- Distinguish between metals and non-metals.
- Describe everyday materials and their physical properties.

Material changes

- Use a pH scale.
- Understand neutralisation and some of its applications.
- Use indicators to distinguish acid and alkaline solutions.

The Earth

- Observe and classify different types of rocks and soils.
- Research simple models of the internal structure of the Earth.
- Examine fossils and research the fossil record.
- Discuss the fossil record as a guide to estimating the age of the Earth.
- Learn about most recent estimates of the age of the Earth.

Physics

Forces and motion

- Describe the effects of forces on motion, including friction and air resistance.
- Describe the effect of gravity on objects. Secondary sources can be used.

Energy

- Understand that energy cannot be created or destroyed and that energy is always conserved.
- Recognise different energy types and energy transfers.

The Earth and beyond

- Describe how the movement of the Earth causes the apparent daily and annual movement of the sun and the stars.
- Describe the relative position and movement of the planets and the sun in the solar system.
- Discuss the impact of the ideas and discoveries of Copernicus, Galileo and more recent scientists.
- Understand that the sun and other stars are sources of light and that planets and other bodies are seen by reflected light.