CURRICULUM CONTENT

Biology

1. Variation
   - Understand that organisms inherit characteristics from their parents through genetic material that is carried in cell nuclei.
   - Describe the human reproductive system, how genes control development
   - Describe how selective breeding can lead to new varieties
   - Instincts and learned behaviors
   - Using genes in drug development
   - Know about the role of micro-organisms in the breakdown of organic matter, food production and disease

2. Extremes
   - Explore the role of the skeleton and joints and the principle of antagonistic muscles.
   - Recognize the basic components of the respiratory system and know their functions
   - Recognize and model the basic components of the circulatory system and know their functions.
   - Define and describe aerobic respiration, and use the word equation.

3. Interdependence
   - Understand what is meant by a species.
   - Investigate variation within a species.
   - Classify animals and plants into major groups, using some locally occurring examples.
   - Describe how organisms are adapted to their habitat, drawing on locally occurring examples.
   - 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.
   - Understand the importance of water and mineral salts to plant growth.
Chemistry

4. The carbon cycle
   • Diamond and its properties
   • Diamond detectives (Evidence and theory)
   • Explain why the proportion of carbon dioxide in air is increasing, and why this is important.
   • Compounds, the air, Photosynthesis
   • Oil and methane formation
   • Burning hydrocarbons
   • Making limestone and marble
   • Carbon in living things
   • The carbon cycle
   • Estimating carbon stored in plants
   • Scientists collaborating
   • Scientists developing new products

5. Transport of the future
   • Using data to compare material properties
   • The reactivity series
   • Using science to reduce car CO$_2$ emissions
   • Using data to compare cars
   • How clean are new car technologies
   • Using secondary data to make travel decisions
   • The benefits and drawbacks of new train fuels
   • Making diesel
   • Investigating health risks

6. The cost of your drink
   • Obtaining iron
   • Fizzy drinks solutions
   • Minerals in water
   • Cleaning drinking water
   • Foams
   • Calculating alcohol units
   • Fermentation and distillation