

Scheme of Learning: Health & the Human Body

Topic Sequence:

1	2	3	4	5	6	7	8	9	10
SKILLS	Particles and separation	Forces	Cells and organisation	Atomic structure and the Periodic Table	Energy	Health and human body	Chemical reactions	Electricity and magnetism	Reproduction

Topic Overview:

The national curriculum requirements for this topic are to cover the following:

- Content of a healthy human diet: carbohydrates, lipids (fats and oils), proteins, vitamins, minerals, dietary fibre and water, and why each is needed
- Calculations of energy requirements in a healthy daily diet
- The consequences of imbalances in the diet, including obesity, starvation and deficiency diseases
- The tissues and organs of the human digestive system, including adaptations to function and how the digestive system digests food (enzymes simply as biological catalysts)
- the structure and functions of the gas exchange system in humans, including adaptations to function
- The mechanism of breathing to move air in and out of the lungs, using a pressure model to explain the movement of gases, including simple measurements of lung volume
- The impact of exercise, asthma and smoking on the human gas exchange system
- The effects of recreational drugs (including substance misuse) on behaviour, health and life processes.

Lesson Sequence:

Starting with the respiratory system, we learn the parts and functions of different organs. We then move on to a healthy & unhealthy diet before learning about the digestive system. We focus on the structure and function of these two system.

Sequence of Lessons:

1	Hierarchy recap & Function of breathing/respiration
2	Respiratory system structure & function
3	Ventilation / Breathing
4	Alveoli & diffusion
5	Lung health
6	Healthy diet
7	Unhealthy diet. Dietary disease. Food tests 1: Fats
8	Food tests 2: Starch, glucose, protein.
9	Energy in food (linked to L7)
10	Digestive system structure & function
11	Enzyme function
12	What is a drug: Effects & dangers
13	Effects of alcohol
14	Assessment

Resources:

1	Torso including respiratory & digestive systems. CO ₂ test: limewater, straw, chilled mirrors (ice), stop-clocks. Handouts.
2	Handouts. Torso model (lungs), pluck demo. Rubber tubing, disinfectant, dissecting equipment, gloves for class.
3	Bell jar (diaphragm), Demo: 2 litre drinks bottles, large basins, clean tubing & disinfectant, cotton wool, marker pens.
4	Pink phenolphthalein; 0.5M Hydrochloric acid; Beakers / boiling tubes; Timers
5	Stop-clock, measuring tape, smokers lung vs non-smokers lung laminated sheets. Smoking machine video clip.
6	Laminated nutrient cards; Colouring pencils; true/false sheets for highlighting.
7	Laminated sheets diet info. Greaseproof paper, pre-weighed crisps or balances (depending on class): low fat, high fat, crackers, rice, etc. 1x1cm squared paper. Instruction sheets. Ethanol & water, pestle & mortar, test tubes, filter paper, funnels.
8	Test stations with food samples. Starch, spotting tiles, iodine, potato, rice, crisps, cake, etc, Benedicts, kettles/water-bath at 90oC, beakers, boiling tubes, biuret solution, bungs.
9	Corks with pins, balances, puffy crisps, etc, timers, boiling tubes, thermometers, measuring cylinders, food packets with energy info.
10	Human torso with digestive system. Diagrams to label/sequence. Tape measure.
11	Demo mesh/orange netting & molymods. Amylase, starch, iodine, visking tubing, benedicts reagent, glucose solution, water-bath at 90oC or kettle, Hydrogen peroxide 30% vol, Mn IV oxide (catalyst) potato cubes. Optional tights & fake faeces demo.
12	Card-sort or whiteboards. Photos of legal/illegal drugs. 4 white powders (see lesson) labelled: A = Table salt; B = citric acid crystals; C = Sugar; D = Talcum powder. UI indicator solution. Benedicts solution.
13	Reaction times drop-sticks. Data sheets.
14	Assessment sheets.

Supportive Reading:

Comprehension activity

TBC

Assessment:

Knowledge:

20 question multiple choice knowledge test

Application of Knowledge:

Extended writing answer describing the journey of oxygen & carbon dioxide through the respiratory system