

Science Insight 5

Teacher's Resource Book

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Introduction

Welcome to Science Insight 5: Teacher's Resource Book!

This Teacher's Resource Book serves as a guide to making science education an engaging and impactful experience for young learners. It is designed to complement the **Science Insight 5: Coursebook**, offering essential tools for effective teaching.

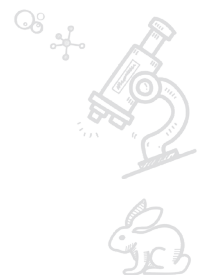
This **Science Insight 5: Teacher's Resource Book** contains all the essentials for delivering engaging science lessons. It includes lesson overviews that summarise each chapter, offering a clear structure for planning and reviewing lessons with ease. Detailed plans are included to achieve learning objectives and ensure that key scientific concepts are well understood by students. Answer keys for all coursebook exercises are also provided to save preparation time and maintain consistency in evaluations. These resources work together to support the delivery of meaningful and enjoyable science lessons.

We hope this Teacher's Resource Book becomes an essential companion throughout the teaching journey, offering the necessary support to create meaningful and enjoyable science lessons. Suggestions and constructive feedback are always welcome to help us improve and make this series even better for educators and students.

— The Publishers

Contents

CHAPTER 1 Respiratory System	1
CHAPTER 2 Digestive System	2
CHAPTER 3 Human Reproductive System	4
CHAPTER 4 Ecosystem	5
CHAPTER 5 Adaptation of Living Things	7
CHAPTER 6 Light and Sight	9
CHAPTER 7 Sound and Hearing	10
CHAPTER 8 Water Cycle	12
MODEL TEST PAPER Model Test Paper 1	13
Model Test Paper 2	14



1. Respiratory System

Overview of Lesson

By this level, students are aware that we breathe to stay alive, but many may not yet understand how breathing happens, which organs are involved, and how the system keeps us energised. They learn about human respiratory organs: the nose (filters and moistens air), throat (including pharynx, larynx, and trachea), and lungs (where gas exchange occurs). Detailed diagrams support the explanation. The breathing process is explained clearly through chest breathing and abdominal breathing, with the roles of the diaphragm and intercostal muscles illustrated. Students are guided to distinguish breathing (mechanical) from respiration (chemical process in cells). The chapter ends by discussing common respiratory disorders (asthma, influenza, tuberculosis, bronchitis, and lung cancer), and how to care for the system through clean air, masks, nutrition, and avoiding smoking.

Plan for Achieving the Learning Objectives

- Step 1.** Introduce the term “respiratory system”. Use a diagram of human respiratory organs to label and discuss the nose, throat, trachea, bronchi, and lungs.
- Step 2.** Describe how air travels through the nose to the lungs. Emphasise the nose’s function in filtering, warming, and moistening the air.
- Step 3.** Conduct the “Try and Learn” activity to make a simple lung model. Guide students step-by-step and discuss the result.
- Step 4.** Introduce and describe common respiratory illnesses. Discuss symptoms and causes, using visuals (e.g. inhaler for asthma, lungs for TB).
- Step 5.** Emphasise healthy habits such as breathing clean air, avoiding smoke, and exercising. Use “Think Green” to link cycling or walking with clean air.
- Step 6.** Conclude by reviewing key vocabulary. Ask students to reflect on one new thing they learned and how they will protect their lungs in daily life.

Answers to Exercises in Coursebook

Remember and Recall (Page 8)

1. Nose, throat, and lungs
2. The nose (specifically, the tiny hairs and mucus in the nose)
3. In the alveoli (Alveolus)
4. The trachea (also known as the windpipe)
5. The epiglottis

Assess Yourself

- A. 1. a 3. c 5. c 7. b 9. c
2. d 4. d 6. a 8. c 10. c
- B. 1. T 2. T 3. F 4. F 5. T
- C. 1. Bronchi are the branches of the trachea that lead to the right and left lungs.
2. Bronchioles are smaller tubes that branch off from the bronchi. They carry air to different parts inside the lungs.
3. Alveoli are tiny air sacs at the end of each bronchiole. This is where the exchange of oxygen and carbon dioxide takes place.
4. The diaphragm is a layer of muscle with a curved shape that separates the chest cavity from the abdominal cavity.
- D. 1. The respiratory system is a group of organs that help us breathe. It brings oxygen into our body and removes carbon dioxide. This is important because all parts of our body need oxygen to work properly.
2. Breathing through the nose is better because the nose filters dust and germs from the air. It also warms and moistens the air before it reaches the lungs.
3. Trees produce oxygen and clean the air by absorbing carbon dioxide. More trees mean cleaner air, which is better for our lungs and health.

Life Skills and Subject Integration

- F. 1. Breathing dirty or smoky air can irritate our lungs. It may cause coughing, breathing problems, or even serious diseases over time.
2. We can wear a mask, stay indoors, or use an air purifier. It also helps to avoid busy roads and places with lots of smoke or dust.

2. Digestive System

Overview of Lesson

This chapter introduces the organs of the digestive system, the main organs of the digestive system are explained one by one, from the mouth to the anus, including the function of each. The chapter introduces mechanical digestion (e.g. chewing) and chemical digestion (e.g. enzymes like amylase and pepsin). The structure and function of teeth are described in detail, followed by how food moves through the digestive tract with peristalsis. The chapter concludes by exploring common digestive disorders such as mouth ulcers, gastritis, constipation, and diarrhoea, and provides health tips to prevent them.

Plan for Achieving the Learning Objectives

- Step 1.** Begin the lesson with a discussion about favourite meals. Ask students what happens to food after it is swallowed to activate prior knowledge.
- Step 2.** Use a diagram to introduce the main organs of the digestive system. Label and discuss each organ's function, from mouth to anus.
- Step 3.** Introduce mechanical and chemical digestion through a class demonstration (e.g. tearing bread = mechanical, adding vinegar or lemon = chemical breakdown).
- Step 4.** Teach about different types of teeth using models or diagrams. Let students feel their own teeth and identify incisors, canines, premolars, and molars.
- Step 5.** Discuss common digestive disorders. Show visuals (e.g. cartoon of a child with a tummy ache) and link each illness to possible causes.
- Step 6.** Explore healthy practices such as washing hands, brushing teeth, eating fibre-rich food, and avoiding junk food. Let students share their routines.
- Step 7.** Ask students to reflect on one thing they have learned and one healthy habit they can follow at home. Encourage them to draw or label a diagram of the digestive system as a summary.

Answers to Exercises in Coursebook

Assess Yourself

- A. 1. b 3. c 5. a 7. d 9. b
2. a 4. a 6. b 8. a 10. c

Note to teacher: Question number 2 is inaccurate. The correct version is: "How many permanent teeth are found in adults?"

- B. 1. Molars 2. Root 3. Dentine 4. Liver 5. Carbohydrates

Note to teacher: Question 5 has no correct answer in the current word bank. "Protozoans" is unrelated. The correct answer should be "carbohydrates". Please revise the word options accordingly.

- C. 1. SALIVA 2. STOMACH 3. LIVER 4. INTESTINE 5. DIGESTION

- D. 1. Chewing food properly breaks it into smaller pieces, making it easier to swallow and digest.
2. Mechanical digestion breaks food into smaller pieces, while chemical digestion uses enzymes to break it into nutrients. Both are needed for complete digestion.
3. In the small intestine, digestion is completed and nutrients are absorbed into the blood. The blood then carries these nutrients to all parts of the body.

Life Skills and Subject Integration

- E. 1. Washing hands before eating removes germs and dirt that could enter the body with food and cause illness or infection.
2. Eat slowly, chew food well, drink plenty of water, eat fruits and vegetables, avoid junk food, and wash your hands before meals.