

Connect With SCIENCE

Revised and Updated

Class

Ruby Koley

Dr Tapas Kumar Koley

4

This book belongs to:

Name:

Class: Section:

School:



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Preface >>

Science is a way of learning about the natural world. It provides us the means to connect isolated facts to develop a deeper understanding of the world around us.

This latest release of **Connect With Science CISCE Edition** is a revised and enhanced edition of the series for classes 3 to 8. The series is designed as per the **latest curriculum** published by the **Council for the Indian School Certificate Examinations (CISCE)**. The books for classes 6 to 8 comply fully with the Council's guidelines for internal assessment. Through this series, a conscious attempt has been made to engage learners and help them develop a variety of scientific skills, such as observation, classification, sequencing, and referencing.

Based on feedback from teachers, the following new features have been incorporated in this edition:

- **Case Studies:** Real-life scenarios or cases accompanied by relevant questions to enable students to apply scientific principles to everyday situations
- **Know Your SDGs:** Information to introduce learners to **Sustainable Development Goals** established by the United Nations
- **Think and Discuss:** Simple questions and discussion prompts to foster critical thinking and communication skills in learners
- **Modified Exercises:** More application-based questions have been included, along with **Assertion and Reasoning** questions, to facilitate a deeper comprehension of concepts. **Self-Assessment** given at the end of each chapter will help learners analyse the depth of their conceptual understanding.
- **QR Codes:** A quick-response (QR) code has been placed on the opening page of each chapter for easy access to the digital resources of the books. Scanning each code will open a menu of the digital resources available for the respective chapter.
- **Photographs:** More photographs have been included, wherever possible, to offer learners the closest possible glimpse of science in real life.

The series is completely aligned to the recommendations of the National Education Policy (NEP) 2020 and the National Curriculum Framework for School Education (NCF SE-2023) with emphasis on key learning areas such as *subject integration, art integration, tech integration, 21st century skills, experiential learning, scientific skills, life skills, values, STEM, SDGs, and knowledge of India*. The in-text as well as end-of-chapter exercises have been tagged with **Bloom's revised taxonomy levels** to highlight a focused approach to an efficient teaching-learning framework.

We hope **Connect With Science CISCE Revised Edition** will encourage learners to think about science, understand it, and, above all, **connect** with it. We welcome valuable suggestions, comments, and feedback from users.

Authors

Ruby Koley is a postgraduate in Botany with a B.Ed degree in science teaching. She is also a qualified lecturer having cleared the CSIR-UGC NET (Life Sciences) exam. She has made her mark as an educationist in academic circles, and has a teaching experience of more than 10 years.

Dr Tapas Kumar Koley is an academician whose works are widely published at both national and international levels. He has been actively involved in academic writing for more than 25 years.



Key Features >>

- Thematic approach as per the latest CISCE curriculum
- Includes all key concepts and covers all transactional processes (look for  mentioned in the CISCE syllabus)

In the Coursebook

Learn about

- Teeth
- Types of teeth
- Parts of a tooth
- Care of teeth and gums

Learn about, at the beginning of each chapter, presents clear learning goals for the learners, specifying the key concepts covered in the chapter.

Think and Discuss

Many animals, unknowingly, waste (usually small pieces of food). Sometimes these animals are eaten by other animals as food. In this way, plastic enters the food chain. **Think and Discuss** are discussion prompts designed to nurture critical thinking and communication abilities in learners.

NEW

Know Your SDGs

SDG 13: Climate Action

(Take urgent action to combat climate change and its impacts.)

The Dibang valley, located in the state of Arunachal Pradesh, has a beautiful evergreen forest with many rare plants and animals. However, it is fast becoming a threat to forests all over the country. R

Know Your SDGs

Know Your SDGs contains information about the Sustainable Development Goals (SDGs) established by the United Nations to address important social, economic, and environmental challenges by 2030.

NEW

Questions

Names of organs of the digestive system

- Kidneys
- Small intestine
- Ureters
- Stomach
- Urinary bladder

Questions, after every major topic, assesses learning progress through objective-type and picture-based questions.

Case Study

Navin lives in Lucknow. He goes to school in the morning and afternoon. He stays at home in Dehradun. He was quite different from the goats in the afternoon.

Based on the above information,

- Mention any one feature based on their habitat.
- How does this feature help them?

Case Studies

Case Studies enable students to analyze real-life situations and answer simple questions based on them. They aid in cultivating an understanding of how scientific principles can be applied to everyday life.

Exercises

1. Which option is correct?
a. animals live in/on
b. water c. air
d. spiracles
e. moist skin
f. have moist skin to help
g. aerial animals
h. aquatic animals
i.
j.
k.
l.
m.
n.
o.
p.
q.
r.
s.
t.
u.
v.
w.
x.
y.
z.
2. Assertion and Reasoning questions help learners understand how to evaluate a statement and its corresponding justification.

NEW

Picture Study

1 Different plants are shown. 'TR' for taproot and 'FR' for fibrous root.

Picture Study, a set of picture-based questions, forms an important element of the CISCE examination pattern.

Model Test Paper 1

Maximum Marks: 50

Section A is computational. The intended marks for question paper are 50.

Model Test Papers, at the end of each book, have been revised based on the board pattern papers for each subject and aid in comprehensive revision.

My Learning Corner

A Think about

1. Pine trees growing on sand. Then how do they remain upright?

My Learning Corner enables subject integration and hones life skills.

Think about helps foster critical thinking skills through application-based questions.

Try out helps develop creativity, while also promoting experiential learning, tech integration, and STEM education through hands-on activities and projects.

Self-Assessment

Now that you have completed the chapter, rate yourself from 1 to 5 to indicate how well you have understood the concepts. Score 5 = I can definitely do this. Score 1 = I cannot do this.

Explain what nutrients do plants need? Explain the components of soil.

Self-Assessment enables learners to evaluate their learning progress, identify their strengths, and take suitable remedial action for improvement.

Self-Assessment

Now that you have completed the chapter, rate yourself from 1 to 5 to indicate how well you have understood the concepts. Score 5 = I can definitely do this. Score 1 = I cannot do this.

Explain what nutrients do plants need? Explain the components of soil.

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ALIGNMENT TO NEP 2020 AND NCF 2023

The content and features in the books are completely aligned to the guidelines of NEP 2020 and NCF 2023. To highlight this alignment, the following icons have been placed next to the relevant text and features:



FOR THE TEACHERS!

Each of the coursebooks is supported by a **Teacher's Manual** that provides additional resources and instructional guidance in the form of lesson plans, answer keys, additional worksheets and question banks, and diagnostic and peer assessments.

Teachers can also access a large number of digital resources on **Oxford Educate**.

Digital Learning

1 Human Body: Food We Eat

All living things need food to stay alive. Food gives us strength to work and play. It helps us to grow and remain healthy and strong. It is also needed for the repair of different parts of the body. It protects us against diseases.

Learn about

- What does food contain?
- Components of food
- Balanced diet
- Avoid bad sources of food

Scan the QR code given on the first page of each chapter to open a menu of the digital resources supporting the chapter content.



our digital teaching–learning solution* for **Teachers** and **Students**, includes the following:

Exclusively for teachers!



Interactive chapter-wise E-book



Videos and Animations



Interactive Exercises



Interactive Game for every chapter



Editable PPTs



Printable Worksheets



Day-wise Lesson Plan for every chapter



Practice Questions in the **Dynamic Question Bank**†

*Oxford Educate access instructions are given on page 6.

†The **Dynamic Question Bank** is a free resource that helps teachers easily generate test papers and worksheets. (Log on to the portal or contact your local sales representative for a demo of its features.)

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Step 4: Fill in Resource Details. Enter the 13-digit ISBN given at the back of this coursebook (9789361036194). Select the two checkboxes and then click Submit.

Step 5: An activation link will be sent to the email ID you entered in **Step 2**. Click this link to complete your registration and access Oxford Educate.

Step 6: To add more coursebooks/e-books after you have logged in, click Add Content at the top-right corner of the screen. Now, enter the 13-digit ISBN(s) found at the back of the coursebook(s) you wish to access. Click Submit and see the e-book(s) appear on your shelf.



Syllabus >>

Theme	Key Concepts	Learning Outcomes	Suggested Transactional Processes	Suggested Learning Resources	Life Skills	Integration
Human Body: Food we Eat	<ul style="list-style-type: none"> Revisit concepts/ skills of learnt in Class II. Food for energy, for work, food for growth (body building), food for protection from diseases. Components of food: Carbohydrates, Proteins, Fats, Vitamins, Minerals, Water and roughage as essential components. Examples of each group of food component. An idea of a balanced diet. Care of food to avoid wastage. 	<ul style="list-style-type: none"> discuss and share various kind of food items used by a family on various occasions; list out food items based on 'energy giving', 'body building' and 'protection from diseases'; classify food items into various components based on their function and cite examples of each component of food; explain the need for balanced diet in their own words; discuss the need of each food component for healthy living; infer why different groups of people require different amount and kinds of food (child, adult, elders, etc.); suggest various ways to avoid food wastage; appreciate the need and importance of plants/ environment in our life; develop a sensitivity towards plants and the environment. 	<ul style="list-style-type: none"> Revisit concepts learnt in Class III and build on previous learning. Providing opportunities to children to share their personal experiences about the food they generally eat, what they like and do not like, different kinds of food available around them etc.; Providing opportunities to children to observe various kinds of food items, and list out those that provide energy, vitamins, minerals, body building/wear & tear (actual/visuals); Organizing group activities to classify food items based on their functions (energy giving, body building and protection from diseases); Showing documentary films/ charts on balanced diet and later organizing a discussion; Conducting individual activities by asking each child to make a menu of one week keeping the need for a balanced diet in view (under supervision of elders). Discussing / interacting with the Dietician. Assigning individual/group projects to children on: 	<ul style="list-style-type: none"> Live experience of children related to food. Various kinds of food items (actual). Picture cards of different food items and their role. Documentary film on a balanced diet. Doctor and/or Dietician. Charts and visuals on food items. Magazines describing more information on food items (food of children, adults, elders). Children's portfolio Children's drawings. Worksheets provided/ prepared by the teacher. 	<ul style="list-style-type: none"> Sensitivity towards plants/ environment, appreciating the value of avoiding wastage of food. 	<p>Languages, Health and Physical Education, Social Studies (Our State – Agriculture (Types of Crops))</p> <ul style="list-style-type: none"> Conducting activities in the school (tree plantation, care of plants) to develop a habit for care and protection of plants.

Theme	Key Concepts	Learning Outcomes	Suggested Transactional Processes	Suggested Learning Resources	Life Skills	Integration
Human Body: The Teeth	<ul style="list-style-type: none"> Kind of teeth in the mouth and location. Structure and Functions of each kind of tooth. Diagram with labelling of parts of a tooth, number of teeth of each kind in: infants and adults. Care of Teeth and Gums: Causes of cavities/ deficiencies and steps to prevent them. Need for regular check-up to keep teeth healthy; importance of healthy dental care habits. Role of food in the development of healthy teeth and gums. 	<ul style="list-style-type: none"> identify and name the different kinds of teeth in human beings; draw pictures of each kind of tooth and label the parts of a tooth; discuss the need for various kinds of teeth in human beings and explain their functions; infer why the old people, adults and children have different number of teeth; demonstrate healthy habits related to taking care of their teeth; give reasons why the gums and teeth get spoilt/damaged; suggest ways to keep teeth and gums healthy and strong; appreciate the importance of regular check-up of teeth; relate healthy food habits with the development of healthy teeth and proper brushing. 	<ul style="list-style-type: none"> Providing opportunities to children to share their personal experiences (when did milk teeth first appear, how many teeth do they have, etc.) Organizing simple activities individually and in small groups with children such as: <i>Counting one's own teeth and sharing with the peer group;</i> <i>Visiting a dentist/ inviting a dentist to conduct a question answer session in the class;</i> Organizing discussion in small groups on care of teeth; Providing opportunities to draw pictures of kinds of teeth and labelling them; Making models of various types of teeth; Showing a documentary on care of teeth/steps showing the process to clean teeth followed by group activities to demonstrate healthy ways of brushing one's teeth. Maintaining children's portfolio to keep their medical report for regular check-ups. Discussing / interacting with the Dentist. 	<ul style="list-style-type: none"> Children's own experiences. Tooth brush, Tongue cleaner Pictures on the process of cleaning the teeth, tongue etc. Film on care of teeth. Magnifying glass to observe teeth/gums. Medical reports of children. 	Healthy habits for a healthy living	Health and Physical Education
	Human Body: The Digestive & Excretory Systems	<ul style="list-style-type: none"> Organs of the digestive system (mouth, food pipe, stomach, liver, small and large intestine, rectum, anus). Functions of various organs in digestion, need for chewing food well, and for regular bowel movements. 	<ul style="list-style-type: none"> Providing opportunities to children to share their own experiences. Drawing attention to the various organs in a model/chart of the digestive and excretory systems. Opportunities to draw pictures of both the systems and labelling the organs in both the systems. Discussing / interacting with the Dentist. 	<ul style="list-style-type: none"> Pictures/charts of the digestive and excretory systems. Models showing various organs of digestive and excretory systems. e-programme/content on digestive/excretory systems. 		Languages, Health and Physical Education.



Theme	Key Concepts	Learning Outcomes	Suggested Transactional Processes	Suggested Learning Resources	Life Skills	Integration
Adaptation in Animals	<ul style="list-style-type: none"> Need for water. Organs of the excretory system and their functions. Healthy habits related to digestion and excretion. 	<ul style="list-style-type: none"> give reasons for chewing of food for better digestion; name and identify organs of the excretory system; explain and functions of each organ of the excretory system; draw and label parts of the excretory system; discuss the need for the excretory system in the body; identify various habits that help to keep the digestive and excretory organs healthy. 	<ul style="list-style-type: none"> Discussing the importance of water in the process of digestion and excretion. Discussing the functions of the different organs of the digestive and excretory systems, through models/charts. Discussing healthy food habits related to digestion and excretion and relating them with the children's own experiences 	<ul style="list-style-type: none"> Cut out of the human body locating places of various organs of both the systems. Diagrams on the digestive and excretory systems made by children. Discussion on junk and healthy food items 		Languages, Health and Physical Education, Social Studies (Our State-Landforms, Climate, vegetation), Concern for the environment
				<ul style="list-style-type: none"> Pictures of animals having adaptations. Flash cards. Digital images (in animals). Web map of animals showing adaptations on land. Web map of animals showing adaptations in water. Charts prepared by children. Documentary film on adaptation in animals. 	<ul style="list-style-type: none"> Care and concern for animals 	



Theme	Key Concepts	Learning Outcomes	Suggested Transactional Processes	Suggested Learning Resources	Life Skills	Integration
Adaptation in Plants	<ul style="list-style-type: none"> Need for adaptation in plants. Examples of adaptation of plants on land with examples. Examples of adaptation of plants in water with examples. Examples of adaptation of plants in desert with examples. Examples of adaptation of plants in hilly areas with examples. 	<p>discuss the need for adaptation in plants to survive in their habitat; enlist reasons of adaptations in plants on land, water, desert and hilly areas;</p> <p>give examples of plant adaptations on land, water, desert and hilly areas;</p> <p>draw pictures of various adaptations in plants.</p>	<ul style="list-style-type: none"> Sharing/listening to the learning experiences of children related to adaptation in plants. Showing various plants having adaptations due to their habitats. Creating situations to identify various other plants having (after seeing pictures/films) adaptations. Assigning project work to: <ul style="list-style-type: none"> develop charts depicting adaptation of plants in different habitats i.e. water, land, develop scrap book on adaptation in different plants with examples Drawing of pictures by children of different adaptations seen in plants. 	<ul style="list-style-type: none"> Pictures. Flash cards. Digital images (various plants). Web map of plants showing adaptations. Examples of adapted plants. Charts prepared by children. Documentary film on adaptation in plants. 	concern for the environment	languages, social study (our state—landforms, rivers, climate, vegetation)



Theme	Key Concepts	Learning Outcomes	Suggested Transactional Processes	Suggested Learning Resources	Life Skills	Integration
Air	<p>Revision of Class III- Matter</p> <ul style="list-style-type: none"> Some properties of air i.e., occupy space, weight, expands, no colour. Composition of air (gases + water vapour). Process of breathing and burning. Causes of air pollution -dust, smoke, spitting (Germs/bacteria, Virus), preventive measures to keep air clean. 	<p>give reasons why air is important for living beings;</p> <p>demonstrate some properties of air through simple experiments (air has weight, occupies space, expands and has no colour);</p> <p>demonstrate the process of inhalation/exhalation of air; discuss causes of air pollution in the environment / surroundings; suggest ways/remedies to reduce air pollution in the environment; show concern about the environmental activities which cause air pollution.</p>	<ul style="list-style-type: none"> Revisiting concepts learnt in the earlier classes. Building on children's earlier learning. Conducting simple experiments to demonstrate that air has weight, occupies space, air expands. Arranging live demonstration to show the process of inhalation/ exhalation of air by lungs. Arranging a class activity for all children to demonstrate the process of breathing and deep breathing for healthy living. Organizing group discussions to identify causes of air pollution. Assigning projects (group work) to children to list down ways to prevent air pollution. Facilitating origami activities with children like making kites, aeroplanes, etc. Decorating the classroom by making small kites. 	<ul style="list-style-type: none"> Apparatus /objects required to conduct experiments. Project work report on causes of air pollution. Project work report on ways to prevent air pollution. Origami material. 		Languages, Health and Physical Education, Social Studies (Pollution- its impact on the environment, The Earth- Atmosphere)



Theme	Key Concepts	Learning Outcomes	Suggested Transactional Processes	Suggested Learning Resources	Life Skills	Integration
Light	Source of light: natural and artificial. • Examples of sources of natural and artificial light. • Luminous/non-luminous objects. • Properties of light. • Transparent, translucent and opaque objects. Examples of each category of objects. • Uses of these objects in daily life. • Formation of shadows (how a shadow is formed - not in technical terms).	identify various sources and uses of light in the environment; distinguish between natural and artificial sources of light; cite examples of natural and artificial sources of light; appreciate the use of natural source of light in our day-to-day life; differentiate between luminous and non-luminous objects; differentiate between transparent, translucent and opaque objects in the surroundings; cite examples of each type of object, i.e. transparent, translucent and opaque; explain the process of shadow formation in simple language appreciate the need for measurement of various things/phenomenon;	Creating situations for sharing personal experiences of children and discussing them. • Demonstrating luminous and non-luminous objects (plain paper and paper with oil drop). • Initiating discussion, asking, questions related to light and its properties, showing simple activities/experiments. • Organizing activities to identify different objects as transparent, translucent and opaque. • Conducting experiments to demonstrate how shadow is formed.	Pictures/live examples of various sources of light. • Objects depicting transparent, translucent, opaque features. • Photographs/Pictures on the process of shadow formation.		Social Studies (Motions of the Earth)
Measurement						Mathematics (Measurement)



Theme	Key Concepts	Learning Outcomes	Suggested Transactional Processes	Suggested Learning Resources	Life Skills	Integration
Push and Pull	<ul style="list-style-type: none"> The concept/ meaning of push and pull and difference between the two; • Examples of push and pull. • Force: meaning in simple terms, changes shape of objects and direction; • Meaning of various types of forces – muscular, gravitational, magnetic and frictional 	<ul style="list-style-type: none"> discuss examples of push and pull seen in day-to-day life; differentiate between push and pull and give examples of each; describe push and pull in their own words (not definition); identify various kind of forces seen in day-to-day life (muscular, gravitational, magnetic, frictional); explain each force in their own words; cite examples of each force by relating it with daily life; demonstrate push and pull situation in a group activity (with safety precautions). 	<ul style="list-style-type: none"> • Showing and discussing the difference between push and pull and citing examples of each in groups; • Sharing/showing push and pull situations as a demonstration activity and later involving students to do it in groups; • Demonstrating various kinds of forces through simple activities, • Organizing group activities for demonstration of various kinds of forces by children and explaining them in their own words 	<ul style="list-style-type: none"> • Apparatus/Objects to demonstrate push and pull • Pictures of examples of push and pull in real life situations. 		Physical Education
Friction as a Force	<ul style="list-style-type: none"> Friction – meaning, concept, • How to reduce friction (oil, powder). • Uses of friction. • Harmful effects of friction. • Examples of friction. 	<ul style="list-style-type: none"> cite examples of friction observed in daily life and explain friction in their own words; explain uses and harmful effects of friction in daily life; conduct simple activities/ experiments demonstrating friction. 	<ul style="list-style-type: none"> • Providing opportunities to children to discuss / share their experiences. • Conducting activities / experiments that demonstrate friction. • Creating situations to demonstrate friction on various kinds of surfaces. • Asking children to identify situations where friction may be harmful. 			