About the Book

In simple words, Science can be defined as the knowledge about the natural world that is based on facts learnt through experiments and observation. Spectrum Science is the reflection of this basic definition for the young, curious and enthusiastic learners.

The series triggers children's intellect to ask why and how about the everyday phenomenon around them. The colourful layout of the books attracts children. Easy language, interesting colourful illustrations and hand-on activities in each chapter engage their enquiring minds. Concepts of Biology, Chemistry, Physics and Space Sciences progress from one level to the next in a very logical and rational manner.

Besides the curriculum, a window to further knowledge is opened through the information under the heading of “Do You Know?”. There is an exercise section at the end of each chapter to assess what a child has learnt and gained from the knowledge shared in the chapter.

**Spectrum Science** follows the Pakistan National Curriculum for Science and also keeps in view the recommendations of some international curricula for Science.

**Key Features of the Series**
- In line with the National Curriculum of Pakistan for Science
- Incorporates recommendations from some international curricula for Science
- Covers various dimensions of scientific concepts
- Ensures logical progression from one level to the next
- Follows a child-centred approach along with a teacher-friendly style
- Focuses on developing children’s critical thinking skills and boosting their creativity
- Attractive design with a colourful layout
- Eye-catching illustrations supplemented by real life photographs
- Hands-on activities
- Variety of exercises to assess the children’s understanding of the concepts
Instructions for Teachers and Parents

Following items have been included in the book to enhance the students’ learning as well as their engagement with the text and thereby enrich the syllabus content to be covered at each level. Teachers and parents are advised to understand these items well to make the most of their experience with Spectrum Science.

**Objectives**

Clear and specific learning objectives have been listed at the beginning of the book. The idea is to help the teacher stay focused on achieving these goals effectively.

**THINK**

Each unit begins with some food for thought for students. This activity is mainly based on their everyday observations so that they can refer to Science as part of their lives.

**EXPLORE**

Each unit contains an icebreaking activity under the icon “Explore” to stimulate students’ interest in the information that the unit contains and its implications around them. Here children may use their common sense or general knowledge to answer the simple questions.

**KNOW**

Here you will find an explanation of the core concepts with lots of interesting illustrations and colourful photographs to develop students’ interest in the concepts.

**ACTIVITY**

To retain pupils’ interest in the theory and acknowledge the concepts as part of their lives, several hands-on activities have been suggested.

**Discover KNOW**

Some interesting information about the concept is provided to encourage children go beyond the textbook and explore further.

**Proud to Know**

The Islamic integration (in the form of Quranic verses, Hadith, Islamic values and history) with the concepts has been provided under “Proud to Know” icon to strengthen the children’s bond with the Almighty Allah and the Prophet ﷺ and also give them a pride and confidence over their faith, Islamic culture and values.

**Exercise**

At the end of each unit, children are assessed on what they have grasped and retained from the knowledge shared in the unit.

Please always remember to start any lesson or activity with the name of the Almighty Allah by saying ﷽ Likewise finish each activity after finishing it and encourage the students to do the same, too.
Contents

Unit 1  Our Body Parts
Unit 2  Our Sense Organs
Unit 3  Healthy Body
Unit 4  Cleanliness
Unit 5  Living Things and Non-living Things
Unit 6  Plants around Us
Unit 7  Uses of Plants
Unit 8  Animals around Us
Unit 9  Animal Food and Homes
Unit 10  Objects in Our Surroundings
Unit 11  Force and Movement
Unit 12  Sound
Unit 13  What is Light?
Unit 14  Planet Earth
Unit 15  Objects in the Sky
Objectives

The student should be able to:

- **Recall** parts of the human body.
- **Tell** functions of parts of the human body.
- **Identify** sense organs.
- **Understand** the functions of sense organs.
- **Understand** that a healthy body needs healthy diet, regular exercise and proper sleep.
- **Understand** the importance of cleanliness.
- **Recognize** healthy habits of cleanliness that keep germs and diseases away.
- **Identify** the characteristics of living things that separate them from non-living things e.g. growth, feeding movement.
- **Identify** the basic needs of a plant to stay alive.
- **Recognize** different plants.
- **Identify** the different parts of a plant.
- **Recognize** the importance of plants as a source of food, shade and shelter.
- **Identify** some ways in which we use plants.
- **Identify** the differences between the animals.
- **Recognize** the needs of animals.
- **Recognize** animals as an important source of food and transport.
- **Identify** the food animals eat.
- **Identify** the homes animals live in (e.g. a nest).
- **Differentiate** between wild and domestic animals.
- **Sort** objects on the basis of colour, shape, size, texture, weight and softness or hardness.
- **Recognize** that forces make things move.
- **Understand** that the amount of force needed to move an object depends on the object’s mass.
- **Discuss** different types of sounds that surround them.
- **Differentiate** between loud and soft sounds.
- **Understand** a noise.
- **Understand** what light is.
- **Identify** the various (natural and man-made) sources of light around.
- **Know** that light can be bright or dim.
- **Identify** the shape of the Earth.
- **Recognize** that the Earth is covered with land and water.
- **Identify** objects in the sky during the day and at night.
- **Recognize** that the Sun shines during the day and gives us light and heat.
- **Recognize** that the Moon and stars shine at night.
Tick (✓) the bear that is living and can move.

**EXPLORE**

Let us make some observations.
Put your hand on your belly and feel it rise and fall when you breathe. Now, put your hand on your bag. Does it breathe as well?

- Yes
- No

You like to have food when you are hungry, and water when you feel thirsty. Does your bag feel the same?

- Yes
- No

Once you were a small baby. But, now you have grown-up. Has your bag grown as well?

- Yes
- No
We see many things around us. Some of the things are living. Other things are non-living.

**Living Things**

Have you ever observed how we are different from non-living things?

We breathe, eat and drink and grow. Humans, animals, and plants are all living things.

- Living things need air to breathe.
- They also need water and food to live.
- Living things also have babies.
- Humans and animals give birth to their young ones.
- Plants give seeds from which baby plants grow.

Proud to Know

Allah said in the Holy Quran, “Allah is the Creator of all things.”

(Surah Az-Zumar: 62)
- Humans and animals can move from one place to another.
- Plants cannot move like humans and animals. They can, sometimes, move their parts.

**Non-living Things**
The chair or bench we sit on is non-living. We use many non-living things all the time.

- Non-living things do not breathe.
- They do not eat or drink, and cannot grow like living things.
- They cannot have babies.
- Non-living things can only move by an outside force.
1. Answer the following questions.
   a. Name any five animals you see at a zoo.
   b. Name any five non-living things found at your home.
   c. Write any two characteristics of living things.

2. This is Ahmed’s toy mouse. It moves forward when he pushes it. He calls it a living thing because it moves.

   Is Ahmed right?
   a. Yes
   b. No

3. A non-living thing has the following features:
   a. It requires ________ for movement.
   b. It does not need ________ and ________ to live.
   c. It does not ________.
   d. It does not have _______________.

4. Draw a circle ○ around living things and a square □ around non-living things.
Take a paper and pencil and go for a nature walk around your school. Find living and non-living things. Write their names in the relevant columns.
In simple words, Science can be defined as the knowledge about the natural world that is based on facts learnt through experiments and observation. Spectrum Science is the reflection of this basic definition for the young, curious and enthusiastic learners.

The series triggers children’s intellect to ask why and how about the everyday phenomenon around them. The colourful layout of the books attracts children. Easy language, interesting colourful illustrations and hand-on activities in each chapter engage their enquiring minds. Concepts of Biology, Chemistry, Physics and Space Sciences progress from one level to the next in a very logical and rational manner.

Besides the curriculum, a window to further knowledge is opened through the information under the heading of “Do You Know?” There is an exercise section at the end of each chapter to assess what a child has learnt and gained from the knowledge shared in the chapter.

Spectrum Science follows the Pakistan National Curriculum for Science and also keeps in view the recommendations of some international curricula for Science.