

Introduction

It is important for all students to have a basic understanding of general science concepts and how science works in the world around them. The *PCI General Science Series* is PRO-ED's answer to the growing need for general science teaching materials. This basic, comprehensive series provides teachers with a low-reading-level, age-appropriate resource to teach general science to students who are struggling with reading.

This unique series was designed for middle-school and high-school students who need help learning the basic concepts covered in general science courses. In order to help struggling readers understand complex science concepts, the student text, worksheets, laboratory activities, reviews, and tests in each program are written at a 3.0–4.5 reading level.

The Student Texts and Teacher's Guides in the *PCI General Science Series* are effective tools for students with learning differences, attention or behavior problems, and limited reading skills. This program is also helpful for at-risk students, ESL students, and adult learners.

Each program in the *PCI General Science Series* features a Student Text, activity sheets, demonstrations, laboratory activities, reviews, and tests. The *Life Science* Student Text was developed as an abbreviated version of a traditional textbook. The Student Text covers information that all students should know, and the activity sheets and other activities in the *Life Science* Teacher's Guide reinforce that information.

The *Life Science* program features a 92-page, full-color Student Text and a 208-page, reproducible Teacher's Guide. Provide each student with a Student Text, and reproduce the accompanying worksheets from the Teacher's Guide to reinforce the information in the Student Text. Perform the demonstrations for the students and guide them through the laboratory activities to further enhance student learning.

The ten chapters in the Student Text are divided into short sections. Each section features a list of vocabulary words; full-color visual aids, such as charts and diagrams; and full-color photographs and illustrations.

The corresponding worksheets in the Teacher's Guide allow students to practice reading-comprehension skills while answering content-area recall questions. The worksheets include a variety of activities, including multiple choice, true/false, matching, fill-in-the-blank, short answer, and crossword-puzzle activities.

For visual learners, one teacher demonstration is included for each chapter. The demonstrations include materials lists and directions on how to perform the demonstration. These can be used at the beginning of a chapter as an introduction to the material, at the end of a chapter as a way to tie key concepts together, or in any way the teacher wishes.

This program has a hands-on component. One laboratory activity is included for each chapter. Students will practice the steps of the scientific method including hypothesis,

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procedure, data collection, analysis, and conclusion, while they synthesize what they have learned from reading the Student Text.

Since laboratory safety is one of the first things taught and reinforced in every science course, PRO-ED assumes that all students will demonstrate safe practices during laboratory investigations. Teachers and students should follow school district safety guidelines and common sense while performing the demonstrations and laboratory investigations described in this Teacher's Guide.

For assessment purposes, each of the ten chapters has a corresponding review and test. Once students have read a chapter and completed the accompanying worksheets, you can test their knowledge of the information in the chapter by having them complete the review and test. Students can use the review worksheets to prepare for the test.

Life Science contains age-appropriate examples and high-interest demonstrations to pique students' interest in science concepts. The program has been written with state standards and the National Science Education Standards in mind.

The *Life Science* Student Text and Teacher's Guide focus on the most basic, general concepts of life science. Students will learn about cells, heredity, reproduction, bacteria, viruses, protists, fungi, plants, animals, and the systems of the human body.

OBJECTIVES

After completing this program, the student will be able to:

- explain that all organisms are composed of cells whose functions sustain life.
- analyze organisms' responses to external and internal stimuli.
- explain a body's need to maintain homeostasis.
- understand that organisms adapt to their environment.
- describe organisms as producers, consumers, and decomposers.
- describe and compare the characteristics of organisms such as bacteria, viruses, protists, fungi, plants, and animals.
- identify the parts of an animal cell and the parts of a plant cell.
- explain which chemicals are used to carry out various cell activities.
- describe the processes of endocytosis and exocytosis.
- explain the different ways that organisms get and make energy, including photosynthesis.
- understand the difference between eukaryotes and prokaryotes.
- explain how different types of cells divide in different ways, including binary fission, mitosis, and meiosis.

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- understand that each organism is classified into seven levels of taxonomy.
- list the six different kingdoms into which organisms are divided.
- explain that inherited traits are contained in genetic material.
- analyze changes in traits that can occur over several generations.
- explain how dominant and recessive genes influence inherited traits.
- analyze genotypes of parents and make predictions about possible traits passed on to offspring.
- compare reproductive processes and identify organisms that reproduce sexually and asexually.
- list the causes of mutation.
- describe the theory of natural selection.
- explain the methods of dating fossils.
- understand that bacteria can be both harmful and helpful.
- identify and describe different types of organisms, including bacteria, viruses, protists, fungi, lichen, plants, and animals.
- compare nonvascular and vascular plants, as well as gymnosperms and angiosperms.
- understand the plant life cycle.
- list the parts of a plant and describe their functions.
- describe animals as carnivores, herbivores, and omnivores.
- compare different types of invertebrates and vertebrates.
- explain the difference between radial and bilateral symmetry.
- define “metamorphosis,” “molting,” “migration,” and “hibernation.”
- describe the difference between cold-blooded and warm-blooded animals.
- explain the difference between innate and learned behaviors.
- define “tissue,” “organ,” and “organ system.”
- describe the various organ systems of a human.

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HOW TO USE

Student Text

Provide each student with a copy of the Student Text. Depending on the type of classroom setting and the comfort level of the students, the Student Text can be read aloud in class or read silently by individual students. Students should read a section of the Student Text and then complete the worksheets in the Teacher's Guide that correspond to that section.

Worksheets

Each set of worksheets in this reproducible Teacher's Guide corresponds to a section in the Student Text. Students can refer to the Student Text while completing the worksheets. Each set of worksheets lists the pages in the Student Text to which students can refer. Remind students that some of the activities review material from previous sections. Students can complete the worksheets individually, in pairs, or in small groups.

Demonstrations

A teacher demonstration suggestion is included for each chapter. Each simple demonstration requires minimal preparation time and only a few materials. You can use the demonstrations as a catalyst for classroom discussion.

Laboratory Activities

A laboratory activity is included for each chapter. Guide students through each laboratory activity after they have read the corresponding chapter and completed the worksheets. Each laboratory activity has a page with instructions to help facilitate the investigation.

Chapter Reviews

To help students study for each chapter test, a set of review worksheets is provided. Allow the students to use the Student Text when they answer the review questions. The completed review worksheets should be taken home and studied before the chapter test.

Chapter Tests

A chapter test is provided for each chapter of the Student Text. The tests assess the most important information covered in each chapter and determine whether students have mastered each objective.

Answer Key

For your convenience, an answer key for the worksheets, reviews, and tests is included at the end of the Teacher's Guide. Answers for the laboratory activities are included on each laboratory activity teacher notes page.