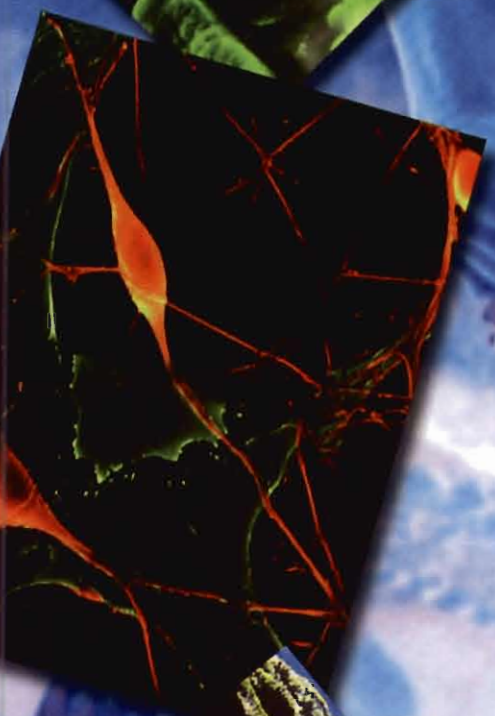

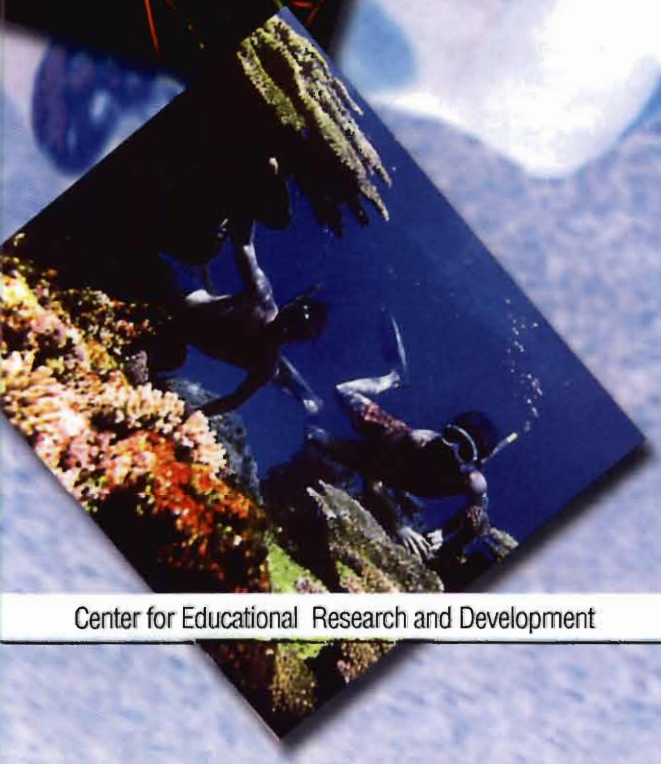

Life and Earth Sciences

basic education

9th grade

غير متخصص تسيع

SPECIMEN

Center for Educational Research and Development

National Textbook

New Curricula

Republic of Lebanon

Ministry of Education and Higher Education

LIFE AND EARTH SCIENCES

Basic Education

Grade Nine

Center for Educational Research and Development

National Textbook

New Curricula

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The National Textbook Project

By issuing the textbooks for the third year of each educational cycle, the Educational Center for Research and Development will have completed the third and last installment of books called for by the New Curricula. We are placing these books in the hands of students with the great hope that we are moving, step by step, toward the goal of acquiring sound learning, using sophisticated educational means and up-to-date methodology that encourage and reinforce individual thinking and research, acquisition of skills, development of ethical and national attitudes, the feeling of national belonging as well as the feeling of belonging to humanity at large.

The on-going revolution in information, communication and educational-aids technology has undoubtedly limited the role of the textbook and lowered the rank it used so recently to occupy. However, in our society and in many other societies, the textbook remains the basic means of education, and it is our duty to exert our utmost effort and care to come up with the best product as to form and content. Yet we should not lose sight of the fact that the textbook is not sufficient by itself but should rather be used as a stepping stone to access other sources of information. What is important is to keep a clear vision and maintain the right course toward our objective. The means should not turn into the end and the student should always remain the focus of the learning/teaching process.

No one ignores or denies the fact that textbook writing requires very high academic and educational qualifications and very wide field experience. The authors committees undeniably possess such qualities. Yet the textbooks of the last two years contained some negative aspects. Such is the nature of human work, no matter how good the intentions or how great the effort extended. Here constructive criticism constitutes a real contribution to raising the standard of authorship, minimizing errors and filling gaps. We say that, with all due appreciation and respect to all those who have contributed to the success of this project.

The Educational Center for Research and Development is embarking this year on a process of evaluating the New Curricula and related textbooks, teacher training courses and student achievement. This is a natural and necessary step now that the new system has been put into effect. This process aims at identifying the curricular objectives that have been achieved as well as those that have not been achieved, with a view to proceeding with the positive aspects and correcting the negative ones.

As part of this correction process, we plan to review the versions that have been issued in order to secure good textbooks for our students, who always deserve the best.

March 13, 2000

President, Educational Center for Research and Development

Nemer FRAYHA

Foreword

This book of Life and Earth Sciences is intended for Basic Education, grade nine students. It is designed to conform, in content and spirit, to the official program and the pedagogical instructions of the curriculum. It includes the following topics:

- Nutrition and Metabolism
- Nervous Communication and Human Behavior
- Reproduction and Genetics

It is intended to attain three fundamental goals:

◆Provide students with scientific knowledge on the functioning of the human body.

◆ Help students acquire methodological and cognitive competencies such as the practice of scientific reasoning and the mastering of communication techniques and experimentation.

◆Develop in students a responsible attitude towards their own health, their own family, and their own society.

In order to meet these goals, this book follows a pedagogical student -centered approach based on solving scientific problems within the activities of each chapter which rotates around a main focus problem.

Teaching relies on activities rich in documents that favor the development of observation, reflection and experimentation. The main objective is to provide students with autonomous learning situations.

The book contributes to developing the students' scientific spirit, capacities of oral and written expression as well as graphic analysis.

To facilitate its usage, the book is designed in a clear and simple presentation; it is divided into parts, each made up of a number of chapters, all organized in the same manner:

- A double front page states the main focus problem and the questions-problems to be solved.
- Activity pages include a selection of documents, used as studying aids (pictures, texts, diagrams, data tables, and charts). The studying aids are followed by questions that help students to use them and to find answers to the stated problems. A glossary of new terms, indicated by an asterisk, is added.
- "Summing Up" sections summarize the main ideas covered in the activities.
- "Concept Map" which visually illustrates these ideas.
- "Solved Exercises" teach the student how to write proper answers.
- "Exercises" help check and verify the acquired knowledge. The number of such exercises depends on the requirements of the program and satisfies the wishes of teachers to be provided with sufficient choices to support their teaching.
- Supplementary readings provide insight into current events.

We hope that this book will be a reliable support for the teacher, an attractive tool of work for the students and that it will stimulate and enhance their interest in Life and Earth Sciences.

The authors

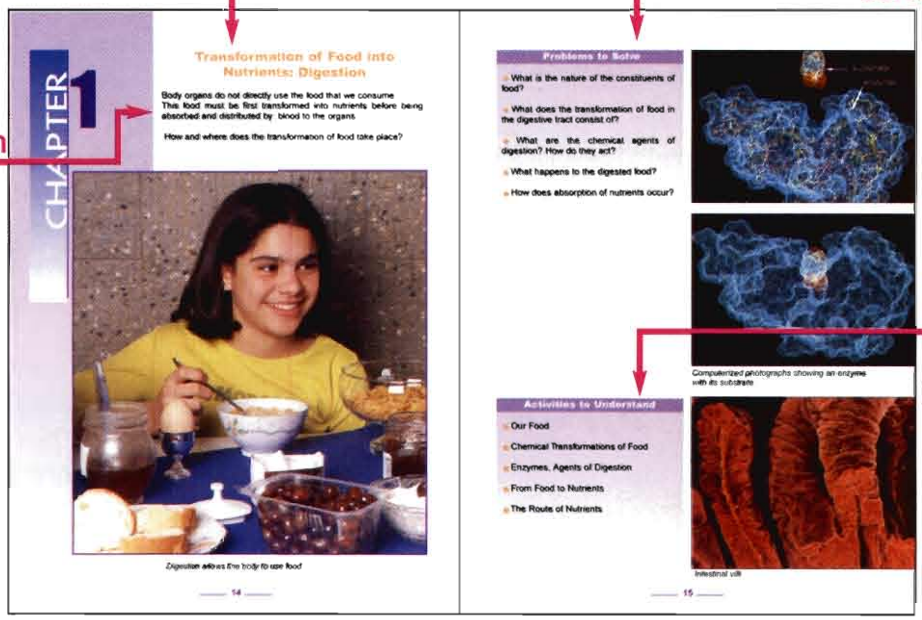
I Discover my Book

Double front page of the chapter

Title of the chapter

Problems to solve

Presentation of the chapter



Activities to understand

Activity pages to extract important notions

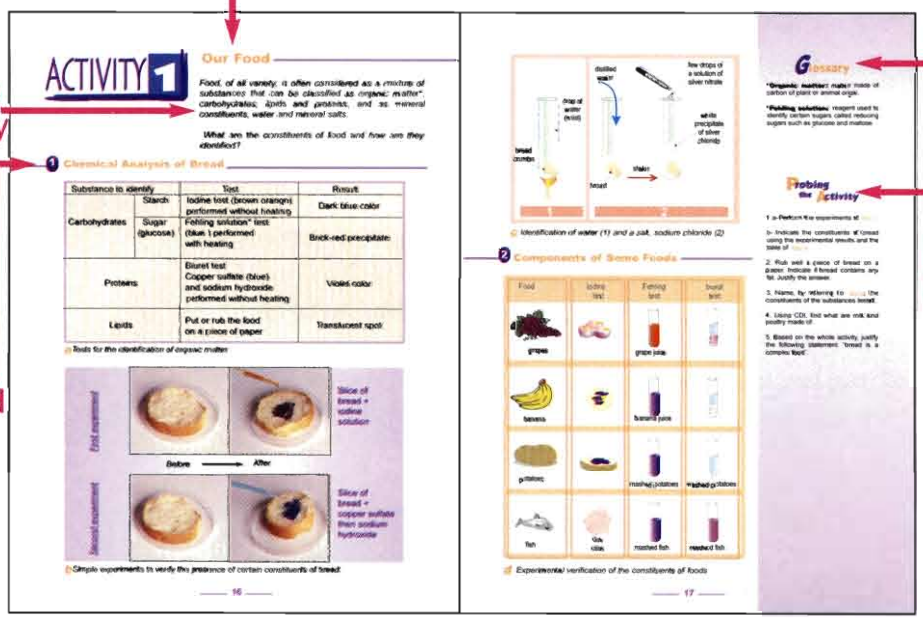
Title of the activity

Glossary

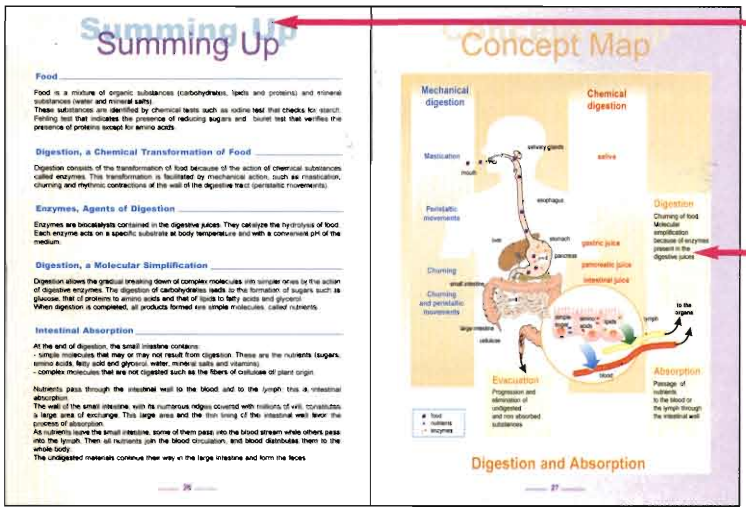
Presentation of the activity

Probing the activity

Documents to understand the topic



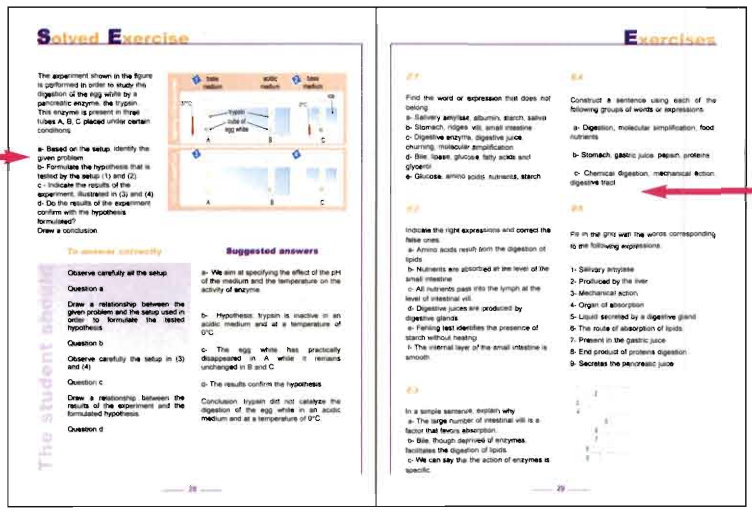
Summing up and concept map



Summary to remember

A concept map visually illustrates the essential notions

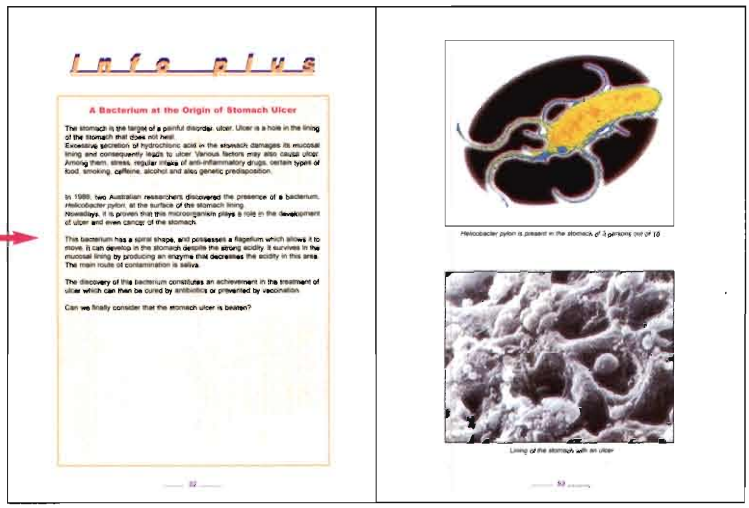
Exercises pages to evaluate acquired knowledge



Solved exercise to help the student answer correctly

Evaluation exercises

Pages for an opening on current events



Info plus

PART 1

NUTRITION AND METABOLISM

Chapter 1 Transformation of Food into Nutrients: Digestion

Activities
1. Our Food
2. Chemical Transformations of Food
3. Enzymes, Agents of Digestion
4. From Food to Nutrients
5. The Route of Nutrients

Summing Up — Concept Map
Solved Exercise — Exercises
Info-plus

Chapter 2 From Nutrients to Energy: Respiration

Activities
1. Organization of the Respiratory System
2. Pulmonary Ventilation
3. Respiratory Gas Exchange
4. Transport of Respiratory Gases

Summing Up — Concept Map
Solved Exercise — Exercises
Info-plus

Chapter 3 Transport and Distribution of Nutrients and Oxygen Gas to Organs

Activities
1. Heart and Cardiac Activity
2. Blood Vessels and the Dynamics of Circulation
3. Cardiovascular Accidents
4. Adaptation of the Body to a Physical Activity
5. Usage of Nutrients and Oxygen Gas by the Cells

Summing Up — Concept Map
Solved Exercise — Exercises
Info-plus

Chapter 4 Regulation of the Internal Medium: Renal Function

Activities
1. The kidneys, Site of Urine Formation
2. Renal Functions

Summing Up — Concept Map
Solved Exercise — Exercises

Chapter 5 Nutrition and Health

Activities
1. Variety of Food
2. Food Ration
3. A Balanced Diet

Summing Up — Concept Map
Solved Exercise — Exercises
Info-plus