

# Chemistry

ORBITALS Collection



Secondary Education  
Second year  
Humanities Section

Center for Educational Research and Development



National  
Textbook

New Curricula

کیمیاء  
کیمیا  
کیمیاء

# Republic of Lebanon

Ministry of National Education, Youth and Sports

## CHEMISTRY

**Secondary Education**

Second Year

Humanities Section

National Center for Educational Research and Development



**New Curricula**

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# CHEMISTRY

**Secondary Education**

Second Year

Humanities Section

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# The National Textbook Project

This is the second installment of textbooks completed by the Center as part of a three-stage effort to produce the 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 and modern learning, using sophisticated educational means and up-to-date methodology that encourage and reinforce individual thinking and research, the acquisition of skills, the 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 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 qualifications and qualities, yet last year's textbooks did contain some faults and gaps which were duly pointed out by researchers in many articles, and, indeed, we have benefited from some of them. Such is the nature of human work, no matter how good the intentions or how great the effort exerted.

Constructive criticism is a real contribution to raising the standard of authorship, minimizing errors and filling gaps. We only hope that criticism will always be objective and motivated by a desire to enhance educational reform in order to achieve better products.

A favorite adage handed down from our old scholars: "He who criticizes you is as helpful as a co-author". Let all criticism directed at the Center be of this caliber.

In closing, we hope that we all will have benefited from our experience and that the textbooks of the third and final stage be closer to realizing our hopes and more beneficial to our students. We are now preparing ourselves to assess the parts so far achieved of the new curricula and to assure that our educational movement is proceeding on the right track for achieving the best results.

June 2, 1999

**President, National Center for Educational  
Research and Development**

**Nemer FRAYHA**



# Introduction

The chemistry textbook for Grade 11, Humanities and Social Sciences, attempts to achieve the goals of the scientific literacy curriculum which are, in our opinion, to prepare citizens who are efficient decision makers in everyday situations such as participating in solving environmental problems, making consumer choices, and practicing adequate health behaviors.

The emphasis in the textbook is on helping students understand rather than memorize basic chemistry concepts without undue stress on mathematical applications in chemistry. In addition, it encourages students to relate the information acquired in the classroom to everyday events and issues. Consequently, the activities included in the textbook encourage students to be active and cooperative learners who are able to conduct research, participate in environmental campaigns and write reports on their work, participate in classroom laboratory activities, and be informed about scientific discoveries and innovations and their applications in everyday life.

The textbook includes three units, each of which contains a number of chapters. Review questions and research activities are included at the end of each chapter. Moreover, each chapter contains a document that presents an interesting topic related to the chapter. Each unit concludes with unit review questions, thinking questions, and multiple-choice questions. Finally, each unit contains a chapter on environmental applications of the concepts discussed in the unit.

It is our hope that this textbook contributes to making all our students scientifically literate. Teachers comments and suggestions about this textbook are welcome, because it is only through collaboration with all those concerned in educating our children that we can better serve them.

*The authors*





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