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T.A. Amilbek¹ (orcid 0000-0003-2783-2387) – main author,
Serkan Kaymak² (orcid 0000-0002-9730-0987)

¹*Master of Pedagogical Sciences, ²PhD*

^{1,2}*Department of Pedagogy of Natural sciences Suleyman Demirel University
Kaskelen, Kazakhstan*

e-mail: ¹211105032@stu.sdu.edu.kz, ²serkan.kaymak@sdu.edu.kz

FEATURES AND CONTENT OF THE PROGRAM IN MATHEMATICS TEXTBOOKS FOR GRADES 7-9

Abstract. This article discusses the features of the school textbook of mathematics for grades 7-9. The content of the program in mathematics textbooks was analyzed. The article also discusses the theoretical foundations. The didactic requirements for the school textbook have been clarified. The pedagogical analysis of natural and mathematical textbooks is carried out and the advantages of textbooks are shown. The study used the methods of pedagogical analysis, observation, analysis of the content of the textbook "Algebra". As a result of the study, 4 textbooks and collections on algebra were presented.

Keywords: didactic requirements, "Algebra", pedagogical analysis, mathematics, collection.

Introduction. Among the tasks of today's school education, the position of the school textbook, which, being the main cultural product, is one of the key components of education, is of particular interest. What is the role of the school textbook in the educational system? What are its main functions? Does the textbook affect the quality of education? School textbooks may be different, but the design and effectiveness must comply with the general educational standard.

Various definitions of a textbook define its various functions and in every possible way reveal its role in the educational process. Nevertheless, the development of a certain conception of the purpose, content and structure of a school textbook, justified from a scientific and methodological point of view and taking into account the current state of psychological and pedagogical knowledge, seems to be one of the most pressing issues in the theory and practice of education. That is why, as I. Ya. Lerner rightly notes, the textbook is an independent object of didactic research.[1]

Purpose of the study. The purpose of this study is to determine the correspondence of the textbook in mathematics to didactic requirements, as well as the definition of different functions in the education process. If we consider one of the analyzes of the textbook of mathematics, according to the results of the study (Tovpinets, 1992) [2], carried out in order to clarify the level of awareness of practical teachers of the functional orientation of the textbook, several functions of the textbook were identified. Analyzing various teaching aids, I.P. Tovpinets came to the conclusion that the textbook serves to master the program material, helps to consolidate the knowledge gained in the lesson - 94%; the textbook should be available for independent reading and understanding of the content - 81%; the textbook should contain material for independent work at home - 42%; the textbook should contain educational material - 57%; the textbook should interest the student - 45%; the textbook should contain material for compulsory memorization and explanatory material - 15%. [2]

Research questions. In this paper, we will consider the following questions:

1. What is the role of the school textbook in the educational system? What are its main functions? Does the textbook affect the quality of education?
2. What is the assortment of basic and additional teaching aids in mathematics in educational institutions in Kazakhstan?
3. What are the didactic requirements for modern mathematics textbooks?
4. Do these textbooks comply with the state standard in terms of content and structure?

Materials and methods of research. For the study, methods such as analysis, synthesis and comparison were used. This article presented the theoretical foundations, which examines the didactic requirements for a school textbook, as well as the main characteristics of a school textbook in the overall structure of the educational process. In the methodological part of the study, four domestic textbooks and two foreign textbooks in mathematics were presented:

1. *Algebra Abylkasymova A. textbook for grade 7*
2. *Textbook Algebra Shynybekov A., an electronic textbook on the subject of Algebra for students in grade 7*
3. *Collection of problems in algebra. Grades 7-9 A. N. Rurukin, Guseva N.V. Shuvaeva E.A.*
4. *Collection of problems in algebra 8-9 class Galitsky, Goldman, Zvavich*

Theoretical basis. The content and construction of the textbook is determined by the tasks of the mathematics teacher and the specifics of the subject, and therefore its purpose is to promote the formation and development of dialectical and logical thinking; to give a systematic, scientifically substantiated presentation of basic theoretical information in mathematics, accessible to students of a given age, i.e. give a system of knowledge; include a sufficient number of various tasks and exercises arranged in a sequence that is expedient from a methodological point of view, i.e. provide a system of exercises. [3]

If we talk about building a structure, a mathematics textbook is built on the basis of certain principles, taking into account the age characteristics of students. The textbook must necessarily take into account the structure of the description, verbal explanations and systematicity, which, when studied, should provide motivation for learning and active cognitive activity of students. [4]

Didactic requirements for the school textbook. A school textbook must go through three stages: experimental verification, experimental verification, and local-mass implementation. And be called respectively (before becoming a textbook) an experimental textbook, a trial textbook, and a study guide. [5]

To the content and results of schooling, borrowed from the West, requires radical changes in the structure and content of the curriculum and mathematics textbooks. The widespread use of computer technologies in the modern world should be used to support human communication between a teacher and a student, a printed educational text, for the effective development of students' logical thinking and their spatial imagination by means of mathematics and computer technology, and not to replace a printed word with an electronic image, the process of solving a mathematical tasks by answers to questions of a selective test.

Didactic requirements for modern textbooks: compliance with learning objectives; scientific character; developing character; systemic organization of the material in the volume of the entire textbook and within each of its completed parts, etc.

Methodological requirements: the complexity of the goals achieved with the help of the textbook; availability of language material and its compliance with

educational tasks; the presence of a general linguistic component; methodical system of various types of exercises, etc. [5]

Analysis of school textbooks for teaching principles. In this chapter, we will consider the principles of teaching that form the basis of school mathematics textbooks, which are included in the list of recommended ones for use. The textbooks under consideration (Table 1) are based on the pedagogical and didactic principles of variable developmental education and modern didactic and psychological trends associated with variable developmental education and the requirements of the State Compulsory Standard of Preschool Education and Training.

1. Algebra of Abylkasymov A. Algebra for 7th grade students, released by Mektep publishing house in 2018, the language of instruction is Kazakh.

This textbook corresponds to all the basic components of the content of education. The design of textbooks corresponds to the age characteristics of students. The font used is very comfortable and easy to read for students, and new terms are highlighted in the text. The tasks in each paragraph are divided into three groups: for class work, exercises for repetition, for solving at home. All this allows students to form basic knowledge and skills, to implement a differentiated approach, since the tasks have varying degrees of complexity. Repetition exercises allow you to organize the learning work of students, prepare them for the perception of a new topic.

The textbook begins with an exercise to review the course of mathematics for grades 5-6. A total of 95 tasks are attached.

Each chapter is divided into paragraphs, and each chapter is accompanied by theories and explanations, questions, and various exercises. Exercises are divided into levels A, B, C. Level A exercises have an initial level of difficulty. Level B exercises are somewhat harder than Level A. Level C consists of challenging tasks. There are also exercises under the heading "Prepare to master new knowledge." At the end of each chapter, there are tasks with a choice of answers under the heading "Test yourself!". Answers to the problems are given at the end of the textbook.

2. Textbook Algebra Shynybekov A., an electronic textbook on the subject of Algebra for students in grade 7, published by Atamura publishing house in 2017, the language of instruction is Kazakh.

The textbook can be used as a continuation of any elementary school course: both traditional and developmental. The material is structured in such a way that it makes it as easy as possible for the teacher to prepare for classes. Exercises are differentiated according to the degree of difficulty into four levels. In each chapter, control tasks are formulated based on the requirements for the knowledge and skills of students in order to achieve the level of the state standard of mathematical education. In the final block of the textbook, home tests are presented that will help the teacher orient students to the level of mastering the material. The theory is presented in such a way that the teacher can apply a problem-based approach to teaching. The manual is beautifully illustrated with drawings and diagrams, which ensures the principle of clarity in teaching.

The textbook is compiled in accordance with the curriculum of secondary schools. There are many easy level training exercises on many topics. Also, this textbook has special exercises of different levels for each topic. This textbook can be used in schools with in-depth study of mathematics. All exercises are numbered double numbers. The first number denotes the section number, and the second number of the exercise.

The textbook begins with a repetition of the material covered in grades 5 and 6. Various questions and exercises are presented.

Each section consists of subsections. The necessary formulas, figures and graphs are shown. Each section deals with theories, examples and questions on the topic covered, as well as exercises at different levels. Review exercises are provided at the end of each subsection. Answers to the exercises are given at the end of the textbook.

3. Collection of problems in algebra. Grades 7-9 A. N. Rurukin, Guseva N.V. Shuvaeva E.A. This collection is intended for teachers and students of secondary and specialized schools. The manual contains tasks for all sections of algebra studied in grades 7–9. Tasks are divided into three levels of difficulty. The first level presents elementary tasks, the second - basic, the third - tasks of increased complexity, olympiad and competitive. This allows you to use the collection both for classes in the classroom and for preparing students for subject Olympiads. Answers are given for all tasks, methodological instructions are given for the most difficult ones.

The collection includes tasks for all sections of algebra studied in grades 7-9 of high school. There are about 1500 tasks in the collection. They are differentiated by three levels of difficulty (A, B and C). The first level (A) presents simple tasks designed to develop elementary problem-solving skills. In the second (B) - basic, corresponding to the compulsory level of the education program. The third level (C) includes tasks of increased complexity, olympiad and competitive ones.

Basically, the collection contains paired tasks that allow you to work out the material covered at school and consolidate it in the process of independent work at home. Problem solving is not only a means of improving the quality of students' knowledge, but also a method of deepening, consolidating, testing knowledge and skills, develops logical thinking, the ability to apply knowledge. Answers are given for all tasks, and methodological instructions are given for the most difficult ones.

4. Collection of problems in algebra 8-9 class Galitsky, Goldman, Zvavich. This manual contains tasks that contribute to the systematic deepening of the studied material and the development of skills for solving complex problems, as well as preparing for entrance exams in grade X of schools, gymnasiums and lyceums with in-depth study of mathematics.

This collection is intended for students in grades 8-9 with in-depth study of mathematics. The collection contains main topics, reference materials, additional questions and solutions to several examples. There are twenty test papers, consisting of five tasks. This problem book can also be used in general education schools to organize differentiated work in the classroom. At the end of the collection are answers, instructions and solutions to the exercises.

Table 1

Lists the following textbooks in mathematics and algebra for grades 7-9:

Textbook	Year of issue	Availability diagrams, tables, drawings	Exercises	Availability of theory, example, questions	Conclusion
<i>Algebra Abylkasymova A.</i>	2018	Textbooks are bright enough Tables,	The exercises are divided into levels A, B, C.	available	The content of the subject is aimed at developing

		diagrams, drawings with tasks are available in each textbook			students' mathematical concepts, skills, textbooks ensure successful mastery of mathematics
<i>Algebra Shynybekov A.</i>	2017	The necessary formulas, figures and graphs are shown	exercises at different levels for each topic	available	
<i>Collection problems in algebra. A. N. Rurukin, Guseva N. V. Shuvaeva E.A.</i>	2020	contains problems in all sections of algebra	differentiated by three levels of difficulty (A, B and C)	not contains theoretical materials	
<i>Collection problems in algebra Galitsky, Goldman, Zvavich</i>	2019	contains the main reference topics materials, additional questions	each chapter is offered twenty test papers, consisting of five tasks.	available	

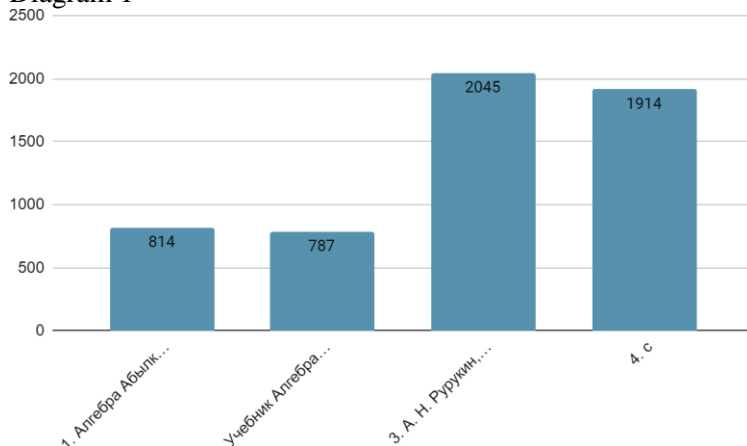
Research result. During the discussion of the compilation of a school textbook in mathematics, it was found that the material of each main textbook is given strictly according to the scheme, which should be satisfactory for students of mathematics, the development of logical thinking, the development of literate speech, the ability to accurately and concisely express their thoughts. To create all of the above textbooks, a lot of work has been done, in which one can find a reflection of the modern development of school mathematical education.

Table 2 shows the number of mathematical problems and their percentage. We can say that A. N. Rurukin, Guseva N.V. contains more tasks than other textbooks, since this is not a textbook for grades 7-9, it is a collection for teachers and students of general education and specialized schools.

Table 2

Name	number of tasks	ratio
1. Algebra of Abylkasymov A.	814	14.64%
Textbook Algebra Shynybekov A.	787	14.15%
3. A. N. Rurukin, Guseva N.V.	2045	36.78%
4. Galitsky, Goldman, Zvavich	1914	34.42%

Diagram 1



Conclusion. By virtue of its purpose in the system of teaching aids, the textbook is the core around which all other teaching aids are grouped. To create a textbook, the composition of the author's team is presented (a scientist - a professional mathematician, an experienced methodologist-mathematician). These manuals include authors such as Shynybekov A., Abylkasymova A. and others, who were recognized in Kazakhstan as professors and authors of a textbook on mathematics in the Kazakh language.

Analyzing these manuals, we can say that the textbooks meet all the didactic and methodological requirements. This means that these textbooks are available for independent reading and understanding of the content, contain all the necessary materials for compulsory memorization and independent work, as well as explanatory materials. Textbooks meet such requirements as scientific, systematic organization of the material, methodological system of various types of exercises.

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Т.А. Әмілбек, Серкан Каймак

Сүлеймен Демирел университеті, Қаскелең қ., Қазақстан

**7-9 СЫНЫПТАРҒА АРНАЛҒАН МАТЕМАТИКА ОҚУЛЫҚТАРЫНДАҒЫ
БАҒДАРЛАМАНЫҢ ЕРЕКШЕЛІКТЕРІ МЕН МАЗМҰНЫ**

Аңдатпа. Мақалада 7-9 сыныптарға арналған математика оқулығының ерекшеліктері қарастырылады. Математика оқулықтарындағы бағдарлама мазмұнына талдау жасалды. Мақалада теориялық негіздері де қарастырылады. Мектеп оқулығына қойылатын дидактикалық талаптар нақтыланды. Жаратылыстану-математикалық оқулықтарға педагогикалық талдау жасалып, оқулықтардың артықшылықтары көрсетілді. Зерттеуде «Алгебра» оқулығының мазмұнына педагогикалық талдау, бақылау, талдау әдістері қолданылды. Зерттеу нәтижесінде алгебра бойынша 4 оқулық пен жинақтар ұсынылды.

Тірек сөздер: дидактикалық талаптар, «Алгебра», педагогикалық талдау, математика, жинақ.

Т.А. Амильбек, Серкан Каймак

Университета Сулеймана Демиреля, г. Каскелен, Казахстан

ОСОБЕННОСТИ И СОДЕРЖАНИЕ ПРОГРАММЫ В УЧЕБНИКАХ ПО МАТЕМАТИКЕ ДЛЯ 7-9 КЛАССОВ

Аннотация. В данной статье рассмотрены особенности школьного учебника математики 7-9 классов. Проведен анализ содержания программы в учебниках математики. Так же в статье рассматриваются теоретические основы. Уточнены дидактические требования к школьному учебнику. Проведен педагогический анализ учебников естественноматематического направления и показаны преимущества учебников. В исследовании использованы методы педагогического анализа, наблюдения, анализ содержания учебника «Алгебра». В результате исследования были представлены 4 учебники и сборники по алгебре.

Ключевые слова: дидактические требования, «Алгебра», педагогический анализ, математика, сборник.