



## Axiological aspects of education and research activities in teaching mathematics at the primary level of education

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### Abstract

This article examines value and relevance of educational material presented in the mathematics textbooks of the Soviet period. This material made it possible to really form a functionally competent personality of a student capable of applying this knowledge throughout his life. Confirmation of data is reflected in the number of tasks presented in the method of teaching and research activities, having practical orientation of these tasks also contributed to the career guidance of future generation.

**Keywords:** mathematical education, teaching and research activity (MIA), comparative characteristic, diagnostic work

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### INTRODUCTION

The formation of the primary mathematics education system begins in 1918. The basis of first programs of STEM curriculum in mathematics for primary school was based on the labor principle: the leading subject of study was human labor and all subjects were closely associated with it. In this regard, mathematics was not studied as a separate subject, but was in the form of a set of questions and topics related to the study of certain labor processes. Such a scheme of teaching mathematics was supposed to equalize knowledge of students.

The development of mathematics education is inextricably linked with the search for new methods and forms of learning. With the beginning of vocational education, for example, in the 1st class of primary school, teaching of mathematics was of a craft nature. At the 2nd stage of training, industrial and agricultural labor was based on local production.

In 1924 - 1931, schools introduced integrated teaching of subjects. Training programs in mathematics were presented in three sections: nature, labor, society. Thus, there was an attempt to integrate the complexity of learning with the project method. To improve the system of teaching mathematics, the search for methods of teaching related to practical activities was constantly conducted. Thus, on December 24, 1958, the Supreme

Soviet of the USSR adopted a law "On Strengthening the School's Relationship with Life and on the Further Development of the Public Education System in the USSR".

The goals of mathematical education fully corresponded to the goals of this historical period, but interesting in our opinion is to highlight such goals as "... who can use theoretical knowledge in practice, to be directly involved in social production, construction, agriculture, or to continue training in technical schools and other special schools, in higher educational institutions", that is, the reform of mathematical education was aimed at the formation of a functionally literate citizen of the society (Bazzi 2015).

### EDUCATIONAL - RESEARCH ACTIVITIES IS THE BASIS OF TRAINING

The methodology of teaching mathematics in this period is divided into the study of initial arithmetic and visual geometry. The training was organized so that pupils showed initiative and activity in the search for evidence in solving problems.

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Fig. 1. What is measured by meter

**Remember the length's units that you already know.  
Meter is another length's unit.**

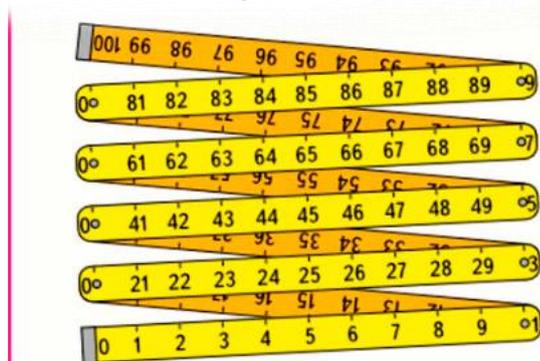


Fig. 2. Remember the length's units that you already know

For example, having considered the textbook "Arithmetic 1st class primary school", M: .1967, authors A.S. Pchelko and G.B. Polyak acquaint pupils with the concept of "meter" in the 1<sup>st</sup> class already (Fig. 1) (Pchelko and Polyak 1967). The introduction of this concept began with a visual perception of information, development of observation, and with the formulation of the problem: what profession is associated with this value and what can be measured by a meter? (Pchelko and Polyak 1967). In the process of searching for the answer to this question, the student learns to "see" in the presented content of the task its contradictory moments, which allow the child to put forward hypotheses, conduct observations and experiments, thereby he masters the logical operations (Osipenko and Karpova 2012). The use of educational and research activities made it possible not only to understand where this value could be used, but also to solve issues related to the development of literacy and the student's speech culture. The organization of UID allowed to ensure the transition from abstract thinking to practical activity - this is the stage of cognition of the surrounding reality. The tasks used in this textbook had not only an applied focus,

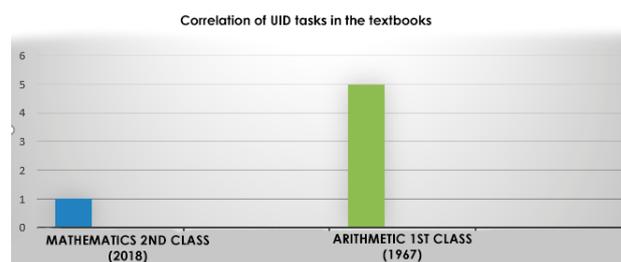


Fig. 3. Correlation of UID tasks in the textbooks

but also made it possible to form mathematical competence - "... this is education of the ability to mathematically explore the phenomena of the real world" (Arnold 2000).

Consider the study of this concept in the modern textbook on mathematics of the FSES (Federal State Education Standards), 2018, the authors M.M. Moreau and others. The concept of "meter" is introduced under this program in the 2<sup>nd</sup> class (Moreau et al 2018). Students are told the actual data (Fig. 2), there is such a value "meter".

The question of the need for the contemplation and observation moment by the student in the study of this concept naturally arises. A modern textbook should be focused on the formation of practical skills and abilities, be a tool for gaining knowledge and promote the development of students' critical thinking (Osipenko 2014).

### COMPARATIVE CHARACTERISTICS OF ACADEMIC AND RESEARCH ACTIVITY TASKS IN TEXTBOOKS OF MATHEMATICS

Since the textbook is one of the main tools in teaching students, the ratio of UID tasks when studying the topic "Meter" in these textbooks is distributed as shown in Fig. 3.

Using the concept "Meter" as an example, we wanted to show that a modern textbook should be built with due consideration of the problem approach, it should contain more tasks for the organization of MIA.

### CONCLUSIONS

In the diagnostic work on mathematics, inner scorecard education quality - 2019, for the 2nd class of the Moscow Center of Educational Quality - 3 tasks out of 14 for the 2nd class course are assigned to the verification of the "Values" section - approximately 21.4% of 100%. In our opinion, this is a fairly large percentage of assignments for this section. Based on the above, it can be concluded that the textbook "Arithmetic 1 class primary school" (1967) is the tool that allows a pupil to independently organize UID.

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