

**DIDACTIC AND METHODOLOGICAL JUSTIFICATION AND  
DEVELOPMENT OF THE AUTHORSHIP PROGRAM OF THE  
MATHEMATICS COURSE INTENDED FOR HUMANITIES  
FACULTIES**

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**Abstract**

Improving the professional training of humanities teachers requires paying serious attention to the structure and content of mathematical education for students in higher educational institutions.

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Mathematical training of students studying social and humanitarian sciences includes, on the one hand, the transfer of mathematical methods of describing reality, the development of the ability to think deductively, provide complete and reasonable arguments, and create formal models; on the other hand, the development of intelligence, intuition, the ability to use visual images, control and compare the obtained results is also of great importance.

The transition to the practice of education focused on human values creates the need to develop new approaches to selecting its content and turning it into teaching technologies. The following components of the content of mathematical education can be distinguished: typical structure of mathematical knowledge, skills, abilities and experience of creative activity.

In determining the components of mathematical education in connection with the goals of training a teacher in the humanitarian direction, V.V. The research conducted by Kraevsky was used. In his opinion, if the procedural and substantive aspects of education are considered separately, they do not form a single structural integrity. "As the basis of the scientific justification of the educational project, the basis (description of knowledge) should be holistic: regardless of which field of scientific knowledge its sources belong to, it should be developed in the science that covers the wholeness of education, in the unity of all its components" (94, 73). Mathematical science occupies a special place in the set of subjects studied by a researcher studying in the future humanitarian direction (211, 66).

D. According to Poya, great opportunities are created for students in any educational institution that includes mathematics in its curriculum. "If the student just needs to get a grade and tries to forget the subject as soon as possible after the final exam, these opportunities are definitely lost" (158, 5).

We believe that the mathematical knowledge of the students of the faculty of social and humanities can be increased to the level of being able to use it in their future professional activities only if they develop an interest in acquiring knowledge that is very important for their educational activities.

It is known that in modern conditions, the formation of interest in learning mathematics is becoming an important task of education, a necessary condition for the comprehensive development of the future teacher's creative personality.

In the modern conditions of the use of mathematical methods in the humanities, which is reflected in the newly revised State Education Standards of Higher Professional Education, the mathematics course in the humanities faculties has its own characteristics.

It includes the following features:

- to contribute to the development of students' thinking, creativity, independent activity;
- to give an understanding of the importance of mathematical modeling and probability-statistical methods in the development of humanitarian sciences and practical activities;
- Formation of methodologically correct outlooks on nature and society that correspond to the modern scientific landscape of the world.

It is worth noting that the mathematics course allows students studying in the humanities to create an idea of the role of mathematical education in the knowledge system and arm them with the minimum skills necessary for mastering basic humanities, preliminary scientific research, experiments, observations and experiments, mastering practice. In order to train teachers of socio-humanities, it is necessary to familiarize them with mathematical methods of research, basic mathematical concepts, and mathematical language. The need to develop a curriculum for mathematics arose in connection with the emergence of new State educational standards. Currently, courses in mathematics for humanities and majors are in their infancy. Therefore, in order to provide adequate training for students of the pedagogical university, programs and study guides were prepared for students of the Faculty of Humanities. There are several views on how mathematics should be taught to humanities students (79), (172). Shikin V. presents his concept of teaching mathematics (211). In his opinion, students should be introduced to basic mathematical concepts in accordance with their worldview. "One of the possible ways to solve the problem under consideration is to introduce a block of mathematical sciences into the university educational process" (211, 275). "It is desirable to direct education, first of all, to the factors that serve the flourishing of the science of mathematics" (211, 276). But at the same time, he emphasizes the need to "provide the humanities student with a certain mathematical mechanism that allows quantitative analysis of data" (211, 277). The content of the course in mathematics is also of particular importance. The traditional higher mathematics course for technical faculties, if it is not fundamentally revised, cannot be the basis for teaching mathematics to students studying in the social and humanitarian direction.

The complexity of the issue is that there are no requirements for the level of knowledge in mathematics for humanities students. Taking into account the mathematical mechanism regularly used in scientific literature on social and humanities, it is reasonable to conclude that algebraic logic, sets, and random events should be the basis of mathematical education of students of humanities.

These sections provide a solid foundation for almost all of the mathematical methods necessary for the humanities. In fact, logic algebra, axiomatic method, mathematical thinking and proofs, which are the basis of the modern structure of mathematics, are formal and widely used in the theoretical and practical issues of psychology and sociology, in the formation of documents of social importance, in the clear expression of laws and regulations, and in the creation of logical chains of reasoning is the basis of general logic. The algebra of random events is the basis of probability theory and mathematical statistics, and its practical value is undoubtedly of great importance in all areas of human activity. When

choosing the criteria for selecting the content of mathematical education in the appropriate order, Yu.K. Babansky, M.M. Research by Potashnik (15) was used.

The following criteria were extracted:

1. the criterion of the integrity of the educational content, which fully reflects:
  - a) modern requirements imposed by the society for comprehensive and complete development of a person;
  - b) the main directions of the development of modern science;
2. criterion of scientific-practical significance of components of educational content;
3. the criterion of compliance of the educational content with the age capabilities of the students;
4. the criterion of compliance of the educational content with the time allocated for studying this material;
5. Criterion of conformity of educational content with international experience in this field, etc.

The program touched on a number of issues that are important for professions in the social and humanitarian direction. These include elements of probability theory, basic concepts of statistics, and more. A.S. According to Kalitvin, a teacher of social studies "should be able to correctly interpret statistical data, have an idea of their reliability and significance level, master the simplest methods of assessing and forecasting situations. In addition, mathematical statistical methods are widely used in books on social sciences that appeared in recent years (for example, books by A. T. Fomenko). All this indicates that future teachers of social and humanitarian sciences should learn the basics of mathematical statistics. Analysis of connections between various social phenomena and their illustrative interpretation allows the teacher of social sciences to become familiar with the elements of mathematical logic and set theory" (73, 13). Taking into account the above, we emphasize that the study of mathematics in the faculties of social and humanitarian sciences of higher educational institutions of pedagogy should not be a mere goal. We believe that students need mathematical knowledge to master the courses of special subjects (psychology, pedagogy, economics, linguistics, sociology, history, archeology, etc.). In accordance with the principle of continuity of education, the course organized in HEIs on the theory of probability should introduce students not only to the most important concepts, problems and theorems of probability, but also deepen and develop the main scientific ideas and content-methodical directions of school mathematics. Mathematics is also important as a tool for scientific research and solving various humanitarian problems. Mathematical science has been added to the social and humanitarian sciences, as the prospects for using mathematical research methods, which are one of the conditions for the acquisition of modern scientific knowledge, along with traditional methods, have expanded. Mathematical methods are designed to describe real world reality. Strong relationships expressed in the mathematical model of the humanitarian system are described by statistical and probability methods, the theory of random processes. The widespread use of quantitative methods of acquiring scientific knowledge can be explained by the introduction of the organizational and reliability nature of mathematics, quantitative relative and absolute indicators of measurement, and qualitative criteria. In this regard, the general cultural importance of mathematics is increasing. In this case, the issue is not only that everyone should have a minimum technical knowledge, but that our previous attitude towards the humanities, as unrelated to the development of technology, has deteriorated as a result of its intrusion into fields of knowledge such as cybernetics, mathematics, economics, history, linguistics, music, etc. (29, 16). In the process of learning mathematical sciences, students get acquainted with the methods of scientific knowledge of nature and society, and their cognitive abilities are formed.

These knowledge and skills are equally important for the entire educational process and contribute to effective learning, as well as independent learning and development of one's abilities. These skills

include: planning and conducting experiments, proposing hypotheses, analyzing the results of scientific work, summarizing, etc. A key feature of this course is its focus on the study and broad use of mathematical methods used in humanities research. The importance of mathematical knowledge for humanities teacher is revealed through the content of the course. This is especially important for the faculties of social and humanitarian sciences, because mathematics is not an object of independent study, but a means of knowing real reality. As we witnessed in the process of qualification-experimental work, it is necessary that the mathematical knowledge acquired by the students studying in social and humanitarian direction in higher educational institutions should have a practical nature, contribute to the expansion of the future teacher's worldview and form his thinking. Appropriately selected practical tasks in the practical classes given in the field of mathematics convince students that the knowledge of mathematics is of practical importance for various areas of human activity. Students studying in these faculties, first of all, seek to learn to perform specific tasks with the help of mathematics. F. how important it is to consider practical issues. Klein states: "... the life of mathematics, its direction of significant progress and effectiveness depend mainly on its application, that is, on the interaction of its abstract objects with all other fields..." (83, 33). In practical terms, the goal-oriented principle is closely related to increasing the motivation and desire to learn mathematical theories by students studying in the social and humanitarian direction. The possibility of useful and effective use of mathematical methods in performing various humanitarian tasks should inspire students to study more complex and specific mathematical theories. We believe that the program presented in mathematics for the faculties of social and humanities meets these goals. This experimental work was carried out in several stages. In 1997, its first version was published (74), which was offered to all humanities majors of higher education institutions; significant corrections were made to the program during experimental work. In 2000, an authorship program in mathematics was developed for students of social and humanities, taking into account future specializations (76). The program is based on the State Educational Standards of Higher Vocational Education of 2000 (57). In accordance with the above, we offer variants of the program we have developed in mathematics for social and humanities, which meet the needs and specific characteristics of a specific group of specialists. Each version of the program has comments and a list of recommended literature. The proposed program was experimentally tested and included in the educational process in the development and teaching of mathematics lectures at the Lipetsk State Pedagogical University in the following faculties: history, philology, pedagogy and psychology; it was used in writing a textbook called "Mathematical Statistics" for students studying in the humanities.

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