

THE PRINCIPLES OF PROFESSIONAL AND PEDAGOGICAL ORIENTATION OF THE MATHEMATICAL PREPARATION OF THE FUTURE TEACHER

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ABSTRACT

To identify the specifics of the professional and pedagogical orientation of the course "Mathematics" at the Faculty of Training of Primary School Teachers, it is of scientific interest to analyze the principles in accordance with which the professional and pedagogical orientation of the mathematical preparation of the future teacher of mathematics is carried out.

Keywords: Mathematics, teacher, training, solutions, primary school, professional and pedagogical orientation.

INTRODUCTION, LITERATURE REVIEW AND DISCUSSION

Various approaches to solving this issue are reflected in the works of A.G. Mordkovich, V.M. Monakhov, G.L. Lukankin, K.G. Ovanesov, A.I. Nizhnikov, and others.

Due to the fact that the concept of professional pedagogical orientation of education (PPS), developed by AH. Mordkovich, is the methodological basis of the study, we will consider its main provisions in more detail and correlate them with the specifics of the mathematical preparation of primary school teachers.

Among these provisions, it is worth highlighting, first of all, the principles of professionally-pedagogical orientation of training (PPSN).

The principle of fundamentality. In relation to the future teacher of mathematics, its essence boils down to the need for fundamental mathematical training of the teacher, which provides him with "effective mathematical knowledge within limits that go far beyond the school course of mathematics and the universality of his knowledge of various mathematical subjects at school." [2, p. 147]

Unlike the subject teacher, the professional activities of primary school teachers are universal. He has to master various special subjects: mathematics, the Russian language, natural sciences and others. It is hardly possible to speak, in relation to each of the mentioned subjects, about fundamental training and effective knowledge "within the limits far beyond the school curriculum," rather, we are talking about the necessary minimum of knowledge that will ensure the successful work of primary school teachers.

In this regard, we can assume that, considering the vocational training of primary school teachers, it is advisable to talk about the principle of humanization both in relation to mathematics and in relation to other special subjects.

In view of the fact that the concept of humanization of education is a complex and multifaceted phenomenon, we will use only those characteristics that reveal the essence of this principle to reveal this principle:

- humanitarian knowledge is determined by a humanitarian culture, which is spiritually practical and includes the unconscious, sensually - emotional, moral, aesthetic, scientific - cognitive aspects;
- a humanitarian culture is characterized at the same time as a culture of thinking, a culture of feelings, a culture of language and speech, a culture of communication and behavior;
- humanitarian knowledge in education is knowledge that is obtained by the pupil (student) himself as a result of his intense intellectual and emotional search activity, this is personal knowledge, reflecting the fusion of personal and objective in the process of obtaining knowledge.

Understanding that the above characteristics are general in nature, we specify this principle in the language of knowledge. Towards

Primary school teacher can include mathematical knowledge for high school. Speaking of “effective knowledge”, i.e. about those that are the theoretical foundations of the school course in mathematics and allow the teacher to competently carry out professional activities aimed at teaching younger students in mathematics, they can be limited to preparing the teacher for teaching mathematics to students in grades 1-6. In accordance with the principle of continuity, a teacher working in elementary grades should have knowledge of the mathematical concepts that are considered in grades 5-6.

The second principle is binary. In teacher training, he occupies a central place. Its essence boils down to the fact that “the basis for building a mathematical discipline in a pedagogical university is the combination of general scientific and methodological lines ... It is a matter of choosing the teacher of a pedagogical university, whenever possible, consciously giving preference to those of which the student will use in their subsequent pedagogical activities” [1, p.13].

Noting that this principle is in accordance with the principle of developing learning, concretizing it, the author talks about the saturation of the subject with creative and emotional elements, the coincidence of motive and goal, contributing to the productive activities of students.

The capacity of the content of this principle and its name in no way contradict the specifics of the mathematical preparation of the future primary school teacher. Nevertheless, given the fact that a student of the faculty of training primary school teachers will teach mathematics to primary schoolchildren, and his main goal will be to form learning activities for them, it is useful to organize student activities aimed at mastering the mathematical content in such a way that they find reflection of all components of educational activity. Given this specificity, it is advisable to formulate another principle, namely, “leading activities”.

The third principle (A.G. Mordkovich) is the “leading idea”, in which the author refers to the connection of a particular course with the corresponding school subject. In relation to the course "Mathematics" at the faculty of training primary school teachers, this principle is being consistently implemented and is embodied in programs and textbooks [3], [4].

The fourth principle of “continuity”, the essence of which is that all mathematical courses should participate in the student’s continuous comprehension of the elements of pedagogical

activity” [1, P. 14] is not relevant for the elementary school faculty, since the mathematical preparation of the future teacher is carried out in the process studying a single course "Mathematics". Therefore, in relation to the faculty of elementary grades, it is advisable to talk about inside subject relationships.

Of great interest for improving the professional training of primary school teachers is the approach of A.Kh. Mordkovich to the implementation of the principles formulated by him in the methodological system (A.M. Pyskalo) of teaching mathematics to students, as well as the criteria for compiling programs of mathematical courses - compliance with goals, didactic isomorphism and minimization. All of the above facts, of course, can serve as the scientific basis for improving the programs of special courses, including the course "Mathematics" at the Faculty of Training of Primary School Teachers.

The technological approach to improving the university special training of the future teacher of mathematics has expanded the list of those principles that reveal the essence of the professional and pedagogical orientation of the mathematical preparation of the future teacher at the present stage of development of higher education [5].

As A.I. Nizhnikov notes, "building a model of the methodological system of training a modern teacher becomes possible only when following the leading principles", adequate to the concept of professional formation of a future mathematics teacher.

The system of proposed principles [7] includes: ^ the principle of expediency and relevance. It is revealed through a system of models: a model of an applicant to a pedagogical university, a student model at the end of each academic year, a graduate model, and a professional teacher model. Refining this principle, A.I. Nizhnikov points out the need for the future teacher to formulate a mathematical culture, fundamentalize the study of the basic concepts of school and higher mathematics, and strengthen the applied orientation of higher mathematics courses.

2) The principle of optimizing the teaching system involves coordination of minimization and maximization processes during the choice of the volume, content of education and the necessary initial link mathematical knowledge; the target function is mathematical the competence of a modern teacher given by the state educational standard.

3) The principle of integration of methodological systems for teaching mathematical disciplines at the university and the methodological system of teaching at school.

4) The principle of polyphony is revealed through the multilevel complexity of the presentation of general and special courses of mathematics for students of the Faculty of Physics and Mathematics; through the productive use of information technology; through purposefully expanding and deepening the mathematical competence of the future teacher.

5) The principle of freedom of choice involves the enrichment of students' independent activities, self-determination in choosing the path of professional development and providing students with the opportunity to receive an advanced level of training.

The learning process in higher education is an organized managed system, one of the components of which, according to N.G. Ovanesov, is the following general principles of teaching mathematics in higher education:

- The principle of scientific and methodological orientation in training.

This principle is designed to ensure the construction of a mathematical course at a high scientific, ideological and theoretical level so that in the process of studying this discipline students - future teachers will form a worldview and, on this basis, an understanding of the subject of mathematics.

As a result, students will be aware of the nature of mathematical concepts, theories, and ideas. The latter can be ensured if there is a scientific and ideological connection between mathematics and philosophy, which is designed to clarify the scientific understanding of such important problems for mathematics as

- the problem of the ratio of theory and practice;
- logical and historical methods of cognition;
- systems and methods;
- the substantive and formal aspects of mathematical science.
- The principle of professional orientation in training.

Professional orientation in training should provide

Purposeful formation of the basics of professional excellence among students, which, according to the author, are based on active and in-depth knowledge of school mathematics, its scientific foundations and methodological support. And active and deep knowledge should be acquired in the process of a positive, business, responsible attitude to pedagogical duties and to mathematics (as a science and as a subject).

- The principle of logical and psychological orientation in training, under which understands the relationship and combination of logical and psychological foundations in the learning process, designed to provide a solution psychological and pedagogical problems of perception and assimilation mathematical knowledge.

- the principle of the effectiveness of training provides a solution to the problem of optimal perception and assimilation of knowledge, provides for the activation of the educational process by special organization of the content of mathematical material within a specific discipline, the choice of effective forms and methods of teaching. From the point of view of the study, the thesis of Pustovoitenko M.V., [8], in which the ways of realizing the interconnections of the developing and teaching functions of education in practical classes in algebra and number theory, is of interest.

Rightly noting that “the traditional lecture scheme, when the lecturer sets out and the students only listen and write, cannot correspond to the task of developing learning, if only because this training assumes, first of all, a high level of independence of students’ mathematical activity, ”the author suggests make up for this shortcoming in practical exercises. To successfully solve this problem M. Pustovoitenko formulates the principles:

- the unity of the developing paradigm of lectures and practical exercises.

This principle is based on reasonable transference.

a certain proportion of lecture material, which has a certain developmental effect and is available for independent study by students, in practical classes.

- the principle of advancing, which is expressed through updating necessary knowledge, solving leading problems and problem statement questions before considering the relevant elements of the theory in lectures;
- The principle of the relationship of higher algebra with the school course;

- The principle of the active orientation of training, which is implemented in two aspects: the organization of educational activities of students in practical classes and the preparation of students for professional activities.

The author emphasizes the intellectual development of students as the main line of professional training.

The analysis of the principles of professional and pedagogical orientation of the mathematical training of the future teacher of mathematics

allows you to fully imagine the ways of professionally-pedagogical orientation in special courses in the preparation of a mathematics teacher. However, the specifics of training

primary school teachers did not find proper reflection in them. The identification of this specificity is the task of this study, the solution of which is described in the subsequent sections of the dissertation.

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