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PRINCIPLE OF PROFESSIONAL DIRECTION IN MATHEMATICAL EDUCATION OF FUTURE TEACHER

Abstract: The paper substantiates the role of the principle of professional orientation in the design of the mathematical education of students of a pedagogical university. In accordance with the principle of professional orientation in mathematical education, three interconnected blocks are distinguished: substantial (goals and content of education and training); procedural (teaching methods, didactic teaching aids, training conditions and forms of organization of training); effective (creative implementation of the subjects of pedagogical interaction, methods of control and evaluation of results).

Key words: professional orientation, mathematical education, educational activities.

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Introduction

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One of the leading principles in modern higher education is the principle of professional orientation of education, which includes both the professional orientation of the individual to work and a specific profession, as well as the professional orientation of general education and vocational training. Orientation at the educational level is manifested in all forms of organization of the educational process and expresses the prospects and real opportunities of the student in the framework of the mastered activity.

The professional orientation of the mathematical preparation of a university student, noted in [1], involves not only professionally significant material introduced into the content of the training, but also activities aimed at mastering such mental operations, analogues of which will be performed by students in pedagogical activity. Accordingly, the professional orientation of mathematical training is implemented

through a system of substantive-methodical lines of the course of mathematics. At least two issues are relevant here.

First, how to combine the formation of students' theoretical knowledge with their value orientations and practical needs? And secondly, what should be the system of mathematical knowledge for a student to master the fundamentals of the profession in order to increase the level of generalized knowledge about activity?

Analysis of Subject Matters

The activity carries in itself the possibility of deploying the educational process in dynamics and sets a unified logic for constructing training not only for each individual discipline, but also for the entire content of mathematical training. The issues of the formation of professional competencies in the mathematical training of the future teacher are considered in [2; 3]. The classification of professional assignments for student work with educational texts is

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presented in [2]. There are three types of training tasks aimed at developing professional competencies:

1. tasks mediating educational information (relevant information is provided directly or the source of the necessary data is indicated);

2. assignments directing the student's work with educational information (the assignment directs the student to comparisons, conclusions, generalizations, focusing on comprehension, systematization of educational material and self-control);

3. creative tasks that direct the student to solving problems and self-orientation in the educational literature.

Gene Masroff rightly notes that the thinking of students at a university is often not developed [4, p. 65]. Here, one of the reasons is that much attention is paid to the acquisition of knowledge, but not enough to their practical application. And, as a result, students do not master the organization of their written and oral speech. Therefore, using the mathematical apparatus in solving professional tasks, students also master the methods of general scientific knowledge (for example, hypothesis construction, model design and mathematical processing of experimental data).

Analysis and results

The indicated tasks are most often present in the organization of independent work of students, since they didactically direct educational activities to the formation of professional competencies.

The pedagogical potential of historical and mathematical knowledge to enhance the professional culture of a future mathematics teacher is analyzed in [3]. The main means of implementing the professional orientation of education in the organization of educational activities of students are creative professionally-oriented tasks.

In the general structure of arbitrary activity, three cycles are distinguished: need-motivational (need - goal - motive); operational (actions - means - subject); reflective-evaluative (self-control - result - self-esteem). Mastery of various methods of activity is an important condition for the implementation of the professional orientation of education. So, in the mathematical preparation of students of pedagogical specialties, generalized methods of activity for organizing elements of the training system should be distinguished, i.e. such methods of activity that allow the teacher to solve entire classes of professional tasks (design and organization of educational activities of students; examination and development of various elements of the pedagogical system; modeling of content, forms, teaching aids).

Since the process of cognition is inextricably linked with modeling and constructing the image of the studied object to establish its basic properties and relationships, modeling in teaching mathematics is recognized as an effective method of implementing a

professional orientation. The purposeful train of thought (from feelings to ideas, from ideas to concepts, from concepts to judgments, from judgments to conclusions) helps to translate the real problem into mathematical language.

Mathematical educational activity in solving professionally oriented problems consists of such stages as analysis, classification, dividing the whole into parts, establishing and determining the sequence, determining the relationships, synthesis. Similar actions are implemented in professional activities:

- 1) understanding of the problem;
- 2) search and fixing of known provisions or methods;
- 3) selection of the most possible methods for these conditions;
- 4) the search for a guiding idea for building a rough plan of activities;
- 5) solutions to the problem;
- 6) reflective-evaluative actions.

Thus, the formation of professional competencies of the student. Competencies, being a multidimensional result of education, should be diagnosed by appropriate methods. In [5, 6], a vector method for diagnosing the results of education is presented. By means of multidimensional vectors, it is possible to structure competencies into components - the coordinates of vectors. The module and angular coefficients of the vector relative to the coordinate axes allow us to judge the formation of competencies. A means of assessing the compilation of competencies are professional tasks.

Technological support of creative professional tasks in the organization of the student's independent work includes:

- motivational justification of the task;
- determination of the structure and sequence of actions;
- rating assessment of work performance;
- an indication of the form of the assignment (together with the teacher, individually individually or in groups);
- verification (self-and mutual verification) and assessment (self-and mutual assessment) of the assignment in terms of volume and quality.

At the same time, issues of developing conceptual approaches for the "task" structuring of student learning activities are actualized. The main role is assigned to professionally oriented tasks - such analogues of a certain fragment of natural or social reality, in which active use of connections, relationships and evidence in the educational process is supposed. A special role belongs to research, calculation, experimental and design assignments, as well as assignments for independent assessment of educational material, the conclusion of their own conclusions and generalizations, the refutation of specific material and the establishment of causal relationships.

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It should be noted that even the most ideal and perfect professional training will not make a graduate a professional once and for all, if he does not have the ability to continuous self-development. The systematic result of mathematical training implicitly reduces to self-realization and enrichment of the cumulative experience that most fully contributes to the formation of the student's professional competencies.

Conclusions and Suggestions

Thus, the principle of professional orientation determines the allocation of three interconnected blocks in mathematical education: substantial (goals and content of education and training); procedural (teaching methods, didactic teaching tools, training conditions and forms of organization of training); effective (creative implementation of the subjects of pedagogical interaction, methods of control and evaluation of results).

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