

PREPARATION OF FUTURE MATHEMATICS TEACHER FOR PROFESSIONAL ACTIVITY AS A COMPONENT OF METHODOLOGICAL TRAINING

Diyorbek Kuchkarov

Researcher, Tashkent State Pedagogical University
Tashkent, UZBEKISTAN

ABSTRACT

This article highlights the role of higher educational institutions in the organization and implementation of modern lessons in the development of free thinking, creative thinking, formation of knowledge, skills and abilities related to teaching and also if students could accomplish planned activities, how well they could complete, whether educational objectives have been achieved.

Keywords: Active and technological approach to education, designing, diagnosing, didactic analysis of the educational process, the role of mathematics as a science, individual characteristics.

INTRODUCTION

One of the main requirements of the National Program for Personnel Training is to give an active character to educational objectives. From the point of view of the technological approach to education, the key objectives in designing the learning process play a key role. At the same time, the entire learning process is routinely and consistently focused on specific goals and guarantees the achievement of the learning process. Both of these requirements can be achieved using both proactive and technological approaches to design.

The purpose of the proposed approach is to get students to:

- to have solid mathematical knowledge and to analyze them didactically;
- to have a full understanding of the role of mathematics as a subject in science, and to convey it to students;
- be able to use mathematical apparatus to study processes and phenomena in the environment and to develop such skills in students;
- to be able to work on all the issues of mathematics in secondary schools, secondary specialized and vocational educational institutions and to teach it to students;
- to be able to design and implement a purpose-oriented learning process, to educate and develop a person through mathematical tools during math and extracurricular activities;
- planning and carrying out methodical work;
- be able to analyze their activities in order to improve and strengthen their skills.

In order to achieve the goals of studying mathematics courses and mathematics teaching methods it is necessary to solve the following:

- to develop the understanding that mathematics as an integral part of human culture and its role in the history of civilization and modern society;
- to study the basics of the theory and methodology of teaching mathematics from the perspective of didactic teaching activities and mathematical methods;
- Formation of ideas about pedagogical technologies of education;
- Development and improvement of skills in solving mathematical, educational and methodical problems;

- Formation of intellectual skills and abilities of independent mathematical activity and methodical design activity on the basis of requirements of state educational standards;
- the ability to take into account the individual characteristics and abilities of students in the learning process and the aptitude to carry out differentiated learning in math.

Together with teaching methods of geometry (planimetry and stereometry):

- 1) studying of the content of elementary geometry (planimetry and stereometry) from the perspectives of "advanced mathematics" and "math teacher";
- 2) developing understanding of the importance of geometry, that geometry is a component of universal culture, in the history of civilization and modern society;
- 3) investigating the basics of geometry teaching techniques in terms of didactics, theory of educational activities, and geometric techniques;
- 4) Formation of ideas about the methods of geometry knowledge and expression of real existence;
- 5) exploring geometry teaching methodology and its variants;
- 6) development and improvement of skills in solving geometric problems:
 - a) a study of various methods of solving problems related to a) proof, b) design, c) calculation;
- 7) developing and improving skills in solving geometric learning and methodological issues;
- 8) studying elements of technological approach to teaching geometry;
- 9) formation of intellectual skills, skills of independent mathematical and methodical activities, proficiency in geometric language;
- 10) students' working on geometric images and concepts, and forming geometric images;
- 11) realization of pedagogical correction.

The educational objectives are implemented in such categories as knowledge, understanding, skills and competencies, which are based on the requirements of an active and technological approach to the level of preparation. In the first stage there are general requirements for the preparation of students; in the second stage, differentiated requirements for the level of mastering of the specific material are studied.

Stage one: The student should know and understand:

- The role and place of axioms in geometry, the possibilities of constructing geometry on an axiomatic basis; Methods of teaching the logical structure of geometry of secondary school and secondary specialized and professional education;
- The role of geometric materials in secondary schools and secondary special and vocational institutions; mathematics, the methods and objectives commonly used in the study of basic and propedeutic courses; the idea of fusionism in geometry teaching, and the whole system of teaching geometry;
- The idea of combining rigidity and visualization in solving geometric problems, the use of deductive and visual methods of teaching geometry depending on the age and individual characteristics of students, the implementation of a differentiated approach to teaching geometry;
- Definition, properties and location of geometric figures (in plane and in space), their classification, structure of their study and methodological methods of teaching;
- general logical methods for proving the theorems and teaching students how to use them.

Basic types of geometry problems, basic methods of their solution, features of teaching geometry and methods of teaching students to solve basic problems; - general and special

methods of finding solutions of geometric problems of calculation, proving and making ideas, formulas and methods of measuring geometric sizes.

The essence and mathematical content of special methods of geometry (measuring geometric sizes, geometric displacements, coordinate and vector methods), training students in these techniques and their use, the ability to develop and educate students in geometry.

The student must:

- be able to describe, classify, compare and generalize descriptions of geometric figures; to be able to form geometric figures, to write with symbols and to prove their properties in various ways; to be able to design methodology for studying the material;

- to draw and illustrate geometric figures in the drawing, to select and construct the necessary additional drawings, to read the drawing; design teaching methods;

The use of general and special methods for solving geometric problems of computing, the design and proofing, verification, research and generalization of solutions in plane and spatial figures; writing and registration of solutions of geometric problems, the choice of methodological methods of training in solving certain geometrical problems;

- to identify and correct mistakes made by students in the study of geometry and in solving geometry problems;

The use of geometric concepts in the basics of algebra and analysis, trigonometry, applied problems, teaching students how to solve such problems, using geometric textbooks and teaching aids, popular literature for students, and the use of educational technology elements in teaching geometry.

The abovementioned requirements are differentiated according to the degree of acquisition in each meaningful and methodical direction of the course of geometry:

Level 1 (Minimum) - a learner understood, remembered, told back, calculated one-step problem (mathematical, methodical);

Level 2 (mandatory training) - a learner acquired information within Level 1 and used it in a standard (standard) setting;

Level 3 (Level of Opportunities) - a learner acquired information within Level 2 and applied it to a non-standard setting.

Second step:

Different categories, such as knowledge, understanding, skills and qualifications, based on the requirements of an active and technological approach to education, are differentiated by the level of assimilation of a particular material.

Geometric figures and methods of their study:

The student should be able to remember and repeat the material studied:

Level I - terms, definitions, rules and image algorithms of studied geometric figures, properties of geometric shapes, logical structure of definitions and theorems, methods of description of theorems, methods of proof of theorems, methods of studying the concepts and theorems, methods of reading the properties of figures on the drawing, methodological features of learning geometry in propedeutic and systematic courses of planimetry and stereometry;

Level II - Structure of definitions of geometric forms studied in secondary school and secondary special education geometry, methods of their description and classification, logical structure of theorems, methods of studying theorems, methods of teaching theorems, problem solving techniques and methods of teaching problem-solving, to draw a line according to the conditions, methodologies prevalent among teaching geometry;

Level III - logical structure and methodology of studying geometry course, general structure of studying geometric figures, various ideas and methods of proving the properties of figures (axiomatic, additional drawings, triangle method, special methods, etc.), methods for solving problems, proof and their transfer to non-standard situations, teaching methods for solving problems, priority in studying geometric figures, the idea of fusionism in the study geometric figures.

The student must be able to transfer the material from one form to another and be ready to interpret it:

Level I - a learner can accurately describe mathematical and methodological terms, short notes and diagrams, objectives and methods of teaching tasks, provide examples, methods for teaching geometric figures, separating stages of studying concepts and theorems;

Level II - a learner provides examples of contours to geometric and methodological concepts, differentiates the definitions and properties of figures, describes the properties of figures, determines the methodological conditions for the application of standard mathematical and methodological problems;

Level III - a learner translates oral geometric material into symbolic representations and, on the contrary, draws conclusions from the descriptions, justifies the equivalence of definitions, distinguishes ideas and methods of proof and teaching methods, and finds new solutions on proofs.

The student must have the skills and competences to carry out activities that form the methods of teaching activities under strict control or automation:

Level I - a learner solves the problem of proof based on the given algorithm, sample or external help, illustrates the figures, formulates written solutions for proof-of-concept questions, draws fragments of lessons on understanding and theorem, separates simple methods of teaching, and demonstrates the problem-solving techniques. describes

Level II - a learner solves typical and applied geometric problems of proofing using the necessary methods of solution, methods and techniques of working with concepts and theorems and technological chains of studying geometric figures, drawing up fragments of lessons on studying concepts and their properties, describing typical problem solving methods;

Level III - a learner solves typical and applied problems on proofing in unusual situations, independently chooses and uses the methods of proofing, designs method of studying geometric figures, designing methods for problem solving in non-standard situations.

CONCLUSION

In this context, the learning objectives allow the volunteer expert to understand whether the student has accomplished the planned actions and to what extent the educational objectives have been achieved. On the same basis, it will be possible to correct the assimilation.

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