

SOME ASPECTS OF THE TEACHING OF MATHEMATICS

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Abstract

This article discusses the problems of teaching a mathematics course. The aspects associated with reducing the amount of time devoted to mathematics in programs are highlighted. The gaps between the level of mathematical training of schoolchildren and the requirements of higher education institutions are given. Possible ways of solving some problems of the methodology of teaching mathematics at a university are proposed.

Keywords: education, mathematics, educational process, mental activity.

Today, the development processes of the economy, industry and technical knowledge are characterized by an increase in the demand for the most modern tools, developers of high-efficiency technologies, and, therefore, the new generation of specialists who master mathematical methods. Forms a social order for the preparation of highly qualified personnel with the ability to work at the level of international standards in the field of material production and higher education of the society, ready for continuous professional growth. The main goal of professional education is to train qualified personnel who are competitive in the labor market, competent, responsible, who freely master their specialty, who have the ability to work effectively at the level of world standards in their specialty, who are ready for continuous professional growth in social and industry mobility. The mathematics course is a compulsory subject studied in higher education and serves as a basis for mastering other general education, general engineering and special subjects. Mathematics plays an important role in the development of mental abilities, in the education of thinking, in the development of the student's scientific outlook. Searching for effective methods of teaching mathematics course is one of the important areas of work of teachers of higher education institutions.

Today, higher mathematics as an educational subject occupies an important place in the curricula of technical, economic, humanitarian specialties. However, although the laws and postulates of mathematics have not changed for many years, unfortunately, the problems in teaching it do not disappear. High school pedagogues, mathematics teaching methodology and all participants of the educational process are well aware of the features of the modern stage of mathematical knowledge and status:

- insufficient number of hours allocated for mathematics;
- high difference between the level of mathematical knowledge and higher education requirements of school graduates;
- The deepening of the gap between the mathematical knowledge of graduates of higher education institutions and the objective requirements of modern science and technology.

The state educational standards provide for the reduction of lecture, classroom training and the acquisition of hours for independent study of the course. Independent education of a student implies a systematic independent activity managed by a teacher. A.N. Krylov emphasizes that the main task of higher education is “to teach how to read” and no school can produce a mature specialist: forms a specialist through his own activity. “Knowledge of reading” is fully developed in students during independent work.

The educational process includes lecture texts, educational complexes on mathematics with practical training. It includes a large number of issues for independent work, various materials for self-development and control, and creative assignments. These educational complexes may include special workbooks (files that can be transferred in electronic form) for independent study. In addition, there may be students involved in the development of such guides. Thanks to such methodological complexes, the lecture can turn into an active dialogue between the student and the teacher. This, in turn, allows independent work to be directed in the necessary direction.

It is important to support and maintain students' desire to learn during the learning process. In addition to organizing students' independent work, the following method can be used to increase the effectiveness of teaching. At the beginning of the school year, offer students a math test that covers different sections of school math. Based on the results of the test, the level of preparation of students is determined, gaps and the direction of individual work with each student and group is developed. In the introductory lecture, they get acquainted with the content of the course, all materials are divided into blocks. Studying each block is carried out with a certain group of students. These students then use active learning methods to they explain the material to the rest of the students, controlling their mastery level.

Individual approach to students serves to increase the effectiveness of teaching. Some students learn new material quickly and are ready to solve more complex problems, while others take much longer. Such students need to solve more elementary problems, they are independent in quickly moving to complex problems suppresses the desire to create. Homework helps to solve the problem of individual approach. Each student must solve a certain number of initial problems, which later provide quality knowledge.

The presence of positive emotions is an important factor in the learning process for successful knowledge and creative activity. Such feelings appear when the student begins to solve the problem of his own free will, not by forcing him during the lesson. The task should be clearly formulated and show the possibilities that can be opened in solving this problem. For example, when studying partial derivatives, it is necessary to explain that the differentiation of a function later helps to find the optimal solution of economic or engineering problems. In addition, students' primary knowledge, skills and qualifications should also be taken into account. Thus, in the above example, if students have formed the concept of the derivative of a function of one variable and they know how to calculate the derivatives of functions of one variable, then they will easily master the rule of differentiation of functions of several variables.

The presence of a stimulus in the implementation of mental activity is an important factor in awakening the student's understanding and creative activity. The ball-rating system of evaluating students' knowledge, skills and abilities increases the activity of their understanding. The essence of the assessment through the ball-rating system is that a certain level of points is attached to all assignments performed by students. Points are earned for participation in classes, preparation of lectures or abstracts, completion of homework, control and test work, etc. The points accumulated during the semester are taken into account when setting the exam grade. The ball-rating system allows to activate the work of students, increases efficiency, because any achievement or loss is assessed, and allows for an objective assessment of the student's performance.

A future engineer or economist should acquire knowledge of information culture and the use of new information technology tools in his/her future specialty, in addition to knowledge of specialized disciplines. Computer-aided mathematical systems are ideal tools for providing the terms of the search process and lead to a dramatic increase in mathematical practice. Intensive modernization of computer algebra systems and the emergence of computer mathematical systems expands the scope of their application in scientific and engineering research and education. Today, the use of the mathematical system "Mathematica" (<https://www.wolfram.com/solutions/education/students>) intended for the use of educational software products can be considered as an effective developing direction.

Thus, in the process of studying mathematics, students should develop the skills of thinking, such as the development of logical thinking, analysis, systematization, and the calculation of special cases. Such a result is obtained by using modern teaching methods in the educational process to intensify cognitive activity.

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