NECESSITY OF USING APPLIED PROBLEMS IN THE TEACHING OF MATHEMATICS

Annotation: In this article highlights of necessity of using applied problems in the teaching of mathematics.

Key words: mathematics, teaching, innovation, education.

Mathematics throughout the history of human culture has always been an integral part of it; it is the key to the knowledge of the world, the basis of scientific and technological progress. Mathematical knowledge and skills are needed in almost all professions, especially those related to the natural Sciences, technology and Economics. But mathematics began to penetrate into the field of traditional “non-mathematical” - government, medicine, linguistics and others. Undoubtedly, the need to apply mathematical knowledge and mathematical thinking doctor, historian, linguist, so important mathematical education for professional activity in our time. One of the moments in the modernization of modern mathematical education is to strengthen the applied orientation of the school course of mathematics, that is, the implementation of the connection of its content and teaching methods with practice.

The problem of applied orientation of teaching mathematics is not new and at all stages of its formation and development was associated with many issues, some of which have not been solved so far. The problem of applied orientation of school mathematics is dynamic in its content and due to the constant development of mathematical theory, the progress of ICT, the expansion of the field of human activity. Even once solved, it will require rethinking and adjustment with each new round of history. This should not be forgotten. To predict all aspects of the application of mathematics in the future activities of
students is almost impossible, and even more difficult to consider all these issues in school. The scientific and technological revolution in all areas of human activity imposes new requirements on knowledge, technical culture, General and applied nature of education. This poses new challenges for the modern school to improve education and prepare students for practical activities.

The applied orientation of the course of mathematics is carried out in order to improve the quality of mathematical education of students, the application of their mathematical knowledge to solving problems of daily practice and in further professional activities. The applied orientation of teaching mathematics includes interdisciplinary connections with the courses of physics, chemistry, geography, drawing, labor training, the widespread use of electronic computer technology and computer literacy; the formation of mathematical style of thinking and activity. All methods and means of teaching that the teacher uses during the lesson should be focused on the implementation of the applied orientation of training in all possible manifestations.

Thus, the teacher should as often as possible to focus the attention of students on the universality of mathematical methods, specific examples to show their applied nature. At the lessons it is necessary to provide an organic connection of the studied theoretical material and the problem material, so that students understand its importance, near and long-term prospects of its use. If possible, you can outline the area in which the material is actually used. It is well known that one of the main conditions for the implementation of activities, achieving certain goals in any area is motivation. At the heart of motivation, as psychologists say, are the needs and interests of the individual. To achieve good success in school, it is necessary to make learning a welcome process. Therefore, each new concept or provision should, as far as possible, initially appear in the task of a practical nature. Such a task is intended, first, to convince the owls of the need and practical usefulness of learning new material; secondly, to show students that mathematical abstractions arise from practice, from the tasks set by
real reality. This is one of the ways to strengthen the ideological orientation of teaching mathematics. Use of intersubject communications is one of conditions of realization of an applied orientation of training. The object of mathematics is the whole world, and all other Sciences study it.

However, there are many difficulties: the teacher needs to learn other subjects, the practical task usually requires more time than the theoretical one, there are questions of mutual coordination of programs and others. And, of course, an important role in the implementation of the applied orientation of teaching mathematics is played by tasks. Practice shows that students with interest solve and perceive the problem of practical content. Students enthusiastically observe how a theoretical problem arises from a practical problem, and how a purely theoretical problem can be given a practical form. The following requirements should be presented to the applied problem:

- the content of the applied problems should reflect mathematical and non-mathematical problems and their mutual relationship;
- the tasks should correspond to the course program, be introduced into the learning process as a necessary component, serve to achieve the learning goal;
- the concepts introduced in the problem, the terms should be accessible to students, the content and requirements of the tasks should be “closer” to the real reality;
- methods and methods of solving problems should be close to the practical techniques and methods;
- the applied part of the problems should not cover its mathematical essence.

Applied problems provide ample opportunities for the implementation of General didactic principles in teaching mathematics at school. Practice shows that applied problems can be used for different didactic purposes, they can interest or motivate, develop mental activity, explain the relationship between mathematics and other disciplines. The solution of applied problems consists of three stages: formalization, implementation, interpretation. Applied can be considered text
problems presented in existing textbooks, but most of them focuses students only on determining the quantitative characteristics of the described phenomena: "Find the speed of a cyclist, motorcyclist, bus, train, ship, river flow, etc.", "How many hours did the cyclist, motorcyclist, bus, etc. spend?".

Obviously, such tasks need to be reformulated in order to reorient students from establishing the quantitative characteristics of the links reflected in the problem, to identify their essence. The main principles of work on the task are:

1. Methodical processing of the problem according to the learning objectives and requirements for the system of tasks
2. The education of the students at each stage of the problem solving process
3. Use in solving problems of methods close to those found in practice (search, research, plausible reasoning and intuition, the use of reference books, tables, etc.).
4. Consideration of several solutions and discussion of the best option. So, problems can be the main means of strengthening the applied orientation of teaching mathematics, if they are properly approached. Work on the implementation of the applied orientation of training should be very serious, because it entails the development of cognitive activity of students. To sort out a dozen methods and choose the right one, to process dozens of textbooks, to think for yourself, to invent forever, to improve. And all in order to Wake the children, to bring them into the realm of thought. The introduction of computer technology in the learning process will strengthen its application orientation. A synthesis of problem-based learning with the computer will contribute to the development of information culture of students.

References: