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THE PROBLEM OF MODELING ON THE PHYSICS COURCES IN HIGH SCHOOLS

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Annotatsiya. *Maqolada ta'lim tizimiga modellashtirish muammosi o'rganilgan. Modellashtirish talabalarning mustaqil ijodiy qobiliyatlarini oshirish, ularning dunyoqarashi va ilmiy tafakkurini oshirish va shakllantirish, pirovardida butun ta'lim jarayonini takomillashtirish vositasi sifatida ko'rsatilishi ko'rsatildi.*

Kalit so'zlar*: modellashtirish, fanlararo integratsiya, fizika, kimyo, matematika*

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Аннотация.*В работе изучена проблема проблема моделирования процессов при обучении физики в образовательной системе. Было показано, что моделирование представлена как средство повышения самостоятельных творческих способностей студентов, повышения и формирования их мировоззрения и научного мышления и, в конечном итоге, улучшения всего учебного процесса.*

Ключевые слова: *моделирование, физика, химия, математика.*

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Abstract.*The article describes the mathematical modeling of physical processes as a method of forming the cognitive activity of students.*

Key words: *cognitive activity, practical methods, object of modeling, modeling*

The question of enhancing the cognitive activity of students are among the most actual problems of modern pedagogical science and education. The implementation of the concept of the modern educational process is aimed in developing the creative nature of students' activities, experimenting and stimulating analytical skills through modern information technologies. In this paper the mathematical modeling has been

considered as a method for enhancing the cognitive activity of students in high schools. As we know, in the process of educational activities, the mathematical modeling becomes necessary to motivate students to acquire and assimilate new knowledge, mastering skills and, as a result, the formation of their competencies.

The most effective methods of enhancing cognitive activity of students are visual methods, which, on the basis of the visual analyzer, ensure the full acquisition of new knowledge by students, and instill in them the skills of correct perception, the ability to detect essential signs, and establish connections in the phenomena being studied. The choice of visual teaching methods depends on the content of the material, the degree of familiarity with it among students and the appropriateness of its application. Visual methods provide a wide opportunities for students to work independently.

The practical methods are a complex combination of verbal interaction, visibility, and hands-on work. The practical activity of students is organized by the activation of their cognitive activity and the formation of skills and abilities of analytical thinking. The introduction of modeling of physical phenomena and processes in the course of physics in high school provides an opportunity for students not only to evaluate the characteristics and parameters of considered object, but also allows them to control the object of research [1].

The use of mathematical modeling complements the practical part of the material being studied, expanding the possibilities of experimental and analytical study outside the framework of educational activities in high school, thereby stimulating cognitive activity and independent work of students.

Recently, mathematical modeling has become a separate interdisciplinary field of knowledge. Models make it possible to understand the structure of various objects, learn how to control them, predict the results of impact on an object, etc. It is especially important that in all natural sciences similar mathematical models, mathematical concepts and operations, differential equations, etc. are used. the unity

of the surrounding world and the modeling method as a method of cognition. The creation of a mathematical model of a physical process or phenomenon contains several stages:

1. Detailed study of a physical process or phenomenon. The choice of the wording of the practical task, the preparation of the research program.

2. Drawing up a hypothesis, formulated in terms of the problem, taking into account the purpose of the study.

3. Development of a mathematical model using applied product packages and presentation in the form of a program with visualization of research results.

The development of a course of practical work on modeling is quite difficult and requires professional training from the teacher with an orientation towards a modernized educational process and the specifics of the younger generation.

The modeling in a high school becomes a necessary component of the educational process and solves a set of very important tasks:

• development of productive creativity of students;

• development of higher forms of figurative thinking;

• application of the acquired knowledge in solving compound problems;

• consolidation of the knowledge gained by students;

• selection of properties and control capabilities of the studied objects;

• students' understanding of the essence of physical phenomena.

It is important to note an essential feature of modern mathematical modeling: if earlier the classical schemes of the natural, humanitarian and exact sciences were rather passive, now they are increasingly acquiring a normative-target character. This approach allows not only to explore the process itself, but also to change it in the right direction. So, mathematical modeling always has a preliminarily fixed goal and is not just a form of materialization of a relationship that was previously opened in consciousness, but an action of constructing it, which gives it a heuristic character. Cognitive models provide the acquisition of new knowledge, and educational models

- the mastery of this knowledge. Thus, the modeling method makes it possible to reduce the study of the complex to the simple, helps student to "learn actively", forms universal educational actions, and contributes to the development of their cognitive interest.

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