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## **Integration of educational subjects in light of the updating of the content of education**

In the Address of the President of the Republic of Kazakhstan N.A. Nazarbayev to the people of Kazakhstan "Strategy" Kazakhstan-2050 "New Political Course of the State" pays great attention to education issues. "To become a developed competitive state, we must become a highly educated nation," the President noted in the Address.

The State Programme for the Development of Education of the Republic of Kazakhstan for 2011-2020 is functioning in the Republic of Kazakhstan, aimed at increasing the competitiveness of education, developing human capital by ensuring the availability of quality education, thereby ensuring the steady growth of the economy of our republic.

The introduction of modern methods and technology, improving the quality of education is a guarantee of the development of Kazakhstan. Society needs a functionally competent person who knows how to work for a result that is capable of certain socially significant achievements. The functional literacy of students is a certain level of education of students at the level of general secondary education, expressing the degree of mastery of students with key competencies, which allows them to effectively act in educational activities and beyond.

The subjects of the natural and mathematical cycle in general education schools are studied mainly within the mandatory minimum. However, the global goal of teaching these subjects is to reveal to students the modern scientific picture of the world. Pupils are given knowledge of nature, which constitutes the natural science foundation of the worldview of modern man. Consequently, each moment of obtaining knowledge must be at the same time the formation of the integrity of the

student's consciousness, a unified system of knowledge about nature - its integral image.

In the realization of the great truth of nature, students feel the bulkiness is insufficient systematic knowledge about it. Integration of it allows you to solve this problem. The establishment of inter-subject relations in the lessons of the natural-mathematical cycle is one of the forms of implementing an integrated approach to learning, which has a crucial role in improving the practical and scientific-theoretical training of pupils, an essential feature of which is the mastery by pupils of the generalized nature of cognitive activity. The integrated nature of the knowledge gained makes it possible to apply it in specific situations, when considering different situations, both in educational and extracurricular activities.

Integration is not an end in itself, but a certain system in the activities of a teacher, aimed at solving certain problems of integrated learning:

- increasing the level of knowledge of students in the subject, which is manifested in the depth of assimilable concepts, laws due to their multifaceted interpretation using the information of the integrated sciences;
- changing the level of intellectual activity, by considering educational material from the position of leading ideas, establishing natural relationships between the problems under consideration;
- Increasing the educational interest of pupils, manifested in the desire to work actively and independently in the classroom and outside time;
- inclusion of pupil in creative activities.

The need for integration in the modern education system is as follows:

- 1) firstly, in the traditional "monological" system in education, there are tendencies to lose their practical effectiveness;
- 2) secondly, it is necessary to note the "competing" nature of school educational disciplines. Each, being in confrontation with all the others, seems to claim greater significance compared to others;

3) thirdly, each of the school educational disciplines, in fact, presents a set of information from a certain field of knowledge, as a result - the lack of close interaction, while preserving the subject "person."

For the alignment of the teaching of subjects in the natural and mathematical cycle, it is essential how schoolchildren master the skills of approximate calculations.

The development of uniform requirements for performing actions with approximate numbers when measuring quantities is an important link in the joint activities of a teacher of mathematics, chemistry, physics, labor training.

The new education model differs from the previous one in the following approaches:

- System-activity approach in training organization;
- Internal integration of knowledge - the principle of "spiral";
- Interintestinal knowledge integration.

The new model of secondary education includes the following three levels of integration of the content of educational material:

- Internal - integration of concepts, knowledge, skills carried out within individual educational subjects and characterized by a spiral structure based on the principle of concentricity. According to the principle of "spiral" - students in the process of learning do not let out of view the initial problem, gradually expanding and deepening the range of knowledge associated with it, as well as forming and developing the necessary skills;

- interintestinal - integration, in which there is a synthesis of facts, concepts, principles, etc. of two or more disciplines. It is clearly traced in the use of laws, theories, methods of one educational discipline when studying another. The systematization of content carried out at this level leads to such a cognitive result as the formation of a holistic picture of the world in the minds of pupil, which, in turn, leads to the formation of a qualitatively new type of knowledge, which is expressed in general scientific concepts, categories, approaches;

- trans-subject - integration, in the implementation of which, there is a synthesis of the components of the main and additional content of education for the study and

analysis of multifaceted objects, information about the essence of which is contained in various academic disciplines.

The system-activity approach is the basis of a new model of secondary education. This approach is conceptually based on ensuring that the educational activities of pupils correspond to their age and individual abilities, and is also aimed at the harmonious development of each pupil, at the development of his or her individual abilities, and also allows strengthening knowledge, increasing the pace of material study without overloading pupil. The teacher's position at the same time after such campaign: to a class not with the answer (ready knowledge, abilities, skills), and with a question. The pupil's position with this approach: for knowing the world, (in specially organized conditions for this).

Forms of activity used by teachers: group, pair, individual, front.

Didactic principles of the new education system:

- *the principle of activity*- that the student, having received knowledge not in a ready form, but having obtained it independently, is aware of the content and forms of his educational activity, understands and accepts the system of its norms, actively participating in their improvement, which contributes to the active and successful formation of his general cultural and activity abilities, general teaching skills;

- *the principle of continuity* - in such a training organization, the result of activities at each previous stage is to ensure the beginning of the next stage;

- *the principle of a holistic view of the world* means that a student must have a generalized, holistic view of both the world and the role and place of a certain subject in the system of sciences;

- *the principle of psychological comfort* implies the removal of stressful factors of the educational process, the creation of an atmosphere in the school and in the lesson, a collaborative environment focused on the implementation of the ideas of pedagogical cooperation;

- *the principle of variability* involves the development of variable thinking skills in pupils, i.e. understanding the possibility of the existence of various ways of solving

the problem, the formation of the ability to systematically search for options and choose the optimal solution;

- *the principle of creativity* - the maximum orientation towards creativity in the educational activities of pupil, their acquisition of their own experience of creative activity. Allows you to form the ability to independently find solutions to non-standard problems.

Systemically-active approach provides achievement of the planned results of development of the main educational program and creates a basis for independent successful development by school students of new knowledge, abilities, skills, types and modalities of action. Therefore, its application to the integration of the subject of mathematics into extracurricular activities is appropriate.