THE METHODOLOGY OF DEVELOPING EDUCATION IN MATHEMATICS

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ABSTRACT

Developmental learning is learning based on the laws of personality development, in which the developing effect is not a side effect, but a direct result. It considers the child as a person living today, and creates a maximum of favorable conditions for its development. Students need to develop independent thinking, the ability to self-education and self-development.

Keywords: Methodology, teaching math lesson, modern technologies, psychological understanding, didactic play, lotto, domino, public-personal.

INTRODUCTION, LITERATURE REVIEW AND DISCUSSION

In accordance with the basic reforms of the comprehensive school and academic lyceums, in order to improve students' knowledge, develop their comprehensive interests and abilities, choose a profession, and prepare graduates for entering higher educational institutions, the formation of general educational knowledge, skills and abilities is especially relevant for students.

Quite often, teachers are faced with a situation where students, having a generally positive attitude toward learning, do not show sufficiently independent cognitive activity. Due to the fact that many students, for a number of objective reasons, lost their desire to get an education, increased self-esteem and self-awareness, teachers have a desire to move away from boring, stereotyped teaching methods, from the framework of instruction constraining the educational process, to find new teaching methods and upbringing, consonant with today's day, encouraging students to be active, sparking an interest in knowledge.

How to include in the learning process their own student activity, interested and active? It turns out that there is no need to come up with new methods for transferring knowledge and skills. Yes, this is impossible. It is necessary to see the internal difference between the two main ways of learning: reproductive (do as I do, think as I do, as indicated in the study guide) and developing (and what will happen if ...? Let's think about how to do ...? Look for a way out of the situation) . In the second case, truth is not presented in its finished form, but its joint search is underway. Rules, theory are communicated in the course of reasoning, reflection. In this case, the teacher uses the same ancient verbal way of transferring knowledge, but its essence changes, because it (the explanation) is constructed in such a way that the student becomes involved in the search for an answer, is put in the position of the person asking questions to which the teacher answers, reasoning with him.

We often say that a lesson is the main form of learning organization. At the same time, we are clearly aware of what needs to be given in the lesson, because we have a program and a textbook. And therefore, more and more often we think not about what to study, but how to present educational material. Gradually, I came to the conclusion that the central figure in the

lesson is the student, that is, the teacher is himself, and the teacher is only an assistant. So, we must make sure that the Student begins to teach himself and help his friends to learn. You need to go to knowledge through interest, you need to learn to work, teach search, research. In the choice of methods, I think, you need to build on the student, keep in mind: what teachers like, children are often not interested. The lesson, firstly, must be thought out in all details so that they logically follow each other, and students understand why, what, and why they do in the classroom.

Secondly, everything that the teacher says is desirable to translate into some visible images, so it is useful to adhere to the principle of "Better to see once than hear a hundred times." Thirdly, students need to be prepared to understand and understand the topic of the lesson, and not write it on the board in advance. The expediency of studying the material should be realized gradually, and not be imposed at the beginning of the lesson, when the children are not ready for its perception. Fourth, the lesson should be interesting, because without emotions, without emotions, the mind does not strain. Interest arises where the teacher manages to infect with his emotionality, selected didactic material and the ability to present it. Therefore, the motto of my work was the words: "Tell me - and I will forget, Show me - and I will remember, Warmly - and I will understand." All these needs are answered by developmental education, which differs significantly from the traditional system (Application 1).

Application 1. ***Comparative characteristics of traditional and developing learning systems***

№	Traditional learning system	Educational system
1	Purpose: to give a certain amount of knowledge, skills. To prepare students for the performance of certain functions in public life. Personal development is a direct, spontaneous consequence of learning.	Purpose: to form in the child certain abilities for self-improvement. To educate academic independence, to achieve the transformation of the student into the subject of the learning process, interested in self-change and capable of it. Personal development is a direct, not an indirect result. Knowledge in this system is not an end in itself, but a means of development.
2	Psychological and pedagogical basis: development proceeds spontaneously according to internal laws, and training, in the words of L. S. Vygodsky, "laces in the tail of children's development." The pedagogical consequence of this position: the principle of accessibility of educational material, the idea of learning with guaranteed results. Learning is reduced to the exercise of memory, imagination, perception and represents the memorization of a large number of rules, ways of solving particular problems.	Psychological and pedagogical basis: orientation not on yesterday, but on tomorrow of children's development. Only in this case can those processes that lie in the zone of proximal development be brought to life. In pedagogical practice, it looks like this: if the student does not work in the zone of his acquired skill, but in the zone of proximal development, where under certain conditions he can break through and solve a problem that he did not solve before, then the mechanism that allowed the child to break through can be a teacher fixed and returned to him as an assigned ability. Learning goes ahead of development, the teacher can help the student to form unformed abilities and thus contribute to its development.

3	The student is the "object" of instruction. He is the student to whom the influence of the teacher is directed. The activity comes from the teacher, and the student, because of his passivity, is often inactive.	The student is the "subject" of learning. He is a partner of the teacher in the educational process, he is not a student, but a student, that is, teaching himself under the guidance of a teacher. The activity comes from the student, and the process of obtaining knowledge takes on the character of a learning activity.
4	The goal of the teacher and student is to learn how to act through showing and training. Each skill acquired by the student is strung one on top of another and crumbles when it first encounters a learning task.	The purpose of the activity is not just the assimilation of the mode of action, but the assimilation of the theoretical basis on which the modes of action are built.
5	The educational process proceeds through the transfer of educational information by the teacher, display and training. The main thing is to acquire knowledge, to form skills. General ideas are based on empirical experience, subordinating its formation to rational rules.	The general principle of action through display and training cannot be learned. It must be extracted from the method and generalized, that is, to conduct an elementary study that forms theoretical thinking. The general principle of action is the content of theoretical knowledge and is the essence of the concept. Mastering the method is more important than the fact of mastering the material itself.
6	The subject of joint activity of a teacher and a student is educational material, knowledge, skills. The teacher transmits information, the student assimilates it.	The subject of the joint activity of the teacher and student is educational activity, which involves educational material. But the teacher does not teach, but organizes educational activities.
7	The main task: the development of a certain amount of knowledge, skills.	Not just the amount of knowledge is acquired, but a certain system of concepts, which is a component of the content of developing learning.
8	Knowledge, abilities and skills are acquired mainly in a verbal way, through training, repetition and practical exercises. The concept here is an abstract form, clothed in verbal wording.	The content of concepts is given through objective actions. The concept here is not as a form of verbal description, but as the basis of its practical transformation. Students all the time operate on characteristics.
9	The main methods are related to explanation and presentation.	The main methods associated with the organization of activities.
10	The unit of pedagogical action is a lesson or activity. In this case, the unit of educational material is first selected, and then the unit of pedagogical action.	The unit of pedagogical action is a learning task, and all subject content is built through a system of learning tasks. Here, at first, a unit of educational action is selected, and then pedagogical material.
11	The purpose of the lesson or the purpose of the exercise is imposed from above, i.e. by the teacher. Whether the student has accepted this goal, the teachers are practically not worried.	The teacher wants the student to take on the task, formulate it for himself, and for this he needs to be faced with a situation in which he finds a deficiency of his abilities.
12	Modeling in training is used from case to case. Its implementation largely depends	Modeling is an essential component of the formation of educational activities. It is a tool

	on the initiative and creative spirit of the teacher.	for clarifying the internal connection in the object of study. The model here is the carrier of the form of fixing knowledge of the internal structure of the object of study, it helps the student to identify and specify the methods of action, apply them to solve new options for educational tasks.
13	The predominant forms of organization of cognitive activity are frontal, individual, group, collective.	The main form is the collective distribution form of activity. In the course of solving the educational problem, situations arise when the methods of action available to students turn out to be unsuitable for its solution. The teacher needs to create such a situation that at least one student guesses about its solution. The guess of one student is prepared by a learning dialogue that is collectively prepared and thereby collectively distributed. All work in the classroom is built through the organization of collective distribution activities between the teacher - student and student - student. The main form of work is an educational dialogue.
14	The system is quite inert with respect to the ways students act.	The mode of action is an essential component of the transformation and assimilation of a system of concepts.
15	Widely used is the external control of the teacher over the activities of students.	The leading place is given to the formation of students' self-control, i.e. internal control.
16	The psychological characteristics of the age of students are poorly taken into account.	Fully based on the age characteristics of students and built on the basis of the principle of leading activities.
17	The system is authoritarian, which is a certain brake on the development of the student's personality.	The learning process is built on the principle of cooperation and complicity. Three types of communication are widely used: educational cooperation of children among themselves, educational cooperation of children with a teacher, cooperation of a student with himself.
18	The educational process is poorly focused on the successes and joyful experiences of students.	The whole educational process is based on joyful experiences of cognition, collective work, self-government and self-realization of a person, on organization

I. S. Yakimanskaya gives the following definition: "Learning, which, providing full assimilation of knowledge, forms learning activity and thereby directly affects mental development, is developmental learning."

Developing education: contributes to the liberation of creative potential in each student and the development of his needs and abilities in transforming the surrounding reality and himself; It awakens an active principle that permeates all levels of education and all forms of work with students, which allows you to build the educational process not on a passive-meaningful note, but in the form of dialogue and creatively for both the teacher and the student.

The main characteristics of developmental education:

1. Developing learning refers to a new, actively-active learning method that replaces the explanatory and illustrative method.
2. Developing education takes into account and uses the laws of development, adapts to the level and capabilities of the student.
3. Pedagogical interactions are ahead, stimulate, direct and accelerate the development of the student's hereditary data.
4. The student is a full-fledged subject in the learning process.
5. Developing education is aimed at the development of all areas of the personality, not only intelligence.
6. Developing education takes place in the "zone of proximal development" of the child.
7. The content of developing education is didactically built in the logic of theoretical thinking (the leading role is given to theoretically meaningful generalizations, deductions).
8. Developing learning is carried out as a directed learning activity in which the Student consciously sets goals and objectives and creatively achieves them.
9. Developing training is carried out by solving educational problems.

The goal of developmental education is to provide conditions for the formation of a child as a subject of educational activity, for turning a student into a student, into a person interested in self-change and capable of it. The student in the role of the subject learns not because the teacher said so and demanded, but because he himself needs it. You can become a subject of training only if the student is able to independently find ways to solve the problems that arise before him, and not when the teacher provides this. In developing learning, the goal and result is 3 not in changing the subject with which the student is acting, but in changing himself in the course of the educational activity.

The inclusion of students in creative activity is the main way of developing learning. Therefore, the main thing in developing teaching mathematics is the orientation toward the inclusion of students in creative activity, the students' awareness of the learning process. This principle requires students to understand why they are studying this or that material, how the knowledge they receive will help them in studying other topics, how the issues being studied are related.

Characteristic features of the subject of learning are: the internal freedom of the student's personality, the ability to freely explain one's actions, the ability to critically evaluate them, the ability, under certain conditions, to abandon established dogmas and rules, the ability to evaluate one's capabilities, reflect on one's actions, the ability to solve educational problems independently, and interest in doctrine.

From here the tasks follow:

1. To identify the internal psychophysiological resources of students, allowing them to realize themselves in knowledge of mathematics.
2. To determine the individual pace of educational and cognitive activity of students.
3. Introduce and improve new programs, develop teaching manuals.
4. To develop students' independence, the ability to organize and manage their scientific and cognitive activities.
5. Develop students' intellectual competencies:

highlight the essential, the main thing in the information; systematize the material, express it in the scheme; select the introduction to your own answer, during the answer to make comparisons and conclusions; use reference books; build a coherent story, emphasizing logical accents and transitions; disclose material in comparison; understand the cognitive task contained in the text; express their own attitude to the facts and events being studied;

independently formulate questions in connection with the study of new material or with its comparison with already known facts and provisions; conduct research based on several sources, observations, experiments; formulate a hypothesis, outline ways to test it; make comparisons, comparisons, draw conclusions; classify information according to essential features; reveal the meaning of abstract phenomena.

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