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ROLE AND PLACE OF PROBLEM-BASED LEARNING IN THE EDUCATIONAL PROCESS

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ABOUT ARTICLE

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Abstract: The use of problem-based learning technology in the classroom allows you to individualize and differentiate the learning process, control the activities of students, activate their creative and cognitive abilities, optimize the learning process, and significantly increase the pace of work. This article presents the role and place of problem-based learning, several techniques for creating problem situations in the classroom, the structural elements of a modern lesson, methods and rules for creating problem situations.

INTRODUCTION

The organization of problem-based learning involves the use of such techniques and teaching methods that would lead to the emergence of interrelated problem situations and predetermine the use of appropriate teaching methods by students. The creation by a teacher of a chain of problem situations in various types of creative learning activities of students and the management of their mental (search) activity in acquiring new knowledge by independently (or collectively) solving educational problems is the essence of problem-based learning. Based on the idea of developing the cognitive independence of students, all types of modern lessons, based on the principle of problem-solving, are divided into problematic and non-problematic[1].

From the point of view of internal specifics (logical-psychological), a lesson should be considered problematic in which the teacher deliberately creates problem situations and organizes the search activities of students to independently pose educational problems and solve them (the highest level of problematicity) or he himself poses problems and solves them, showing the students the logic of the movement of thought in a search situation (the lowest level of problematicity).

THE MAIN PART

A didactic (external) indicator of a problematic lesson is its complexity and synthetic nature. The essence of a synthetic lesson is that repetition of what has been learned, as a rule, merges with the

introduction of new material; there is a continuous repetition of knowledge, skills and abilities in new connections and combinations, which is typical for a problem lesson.

1. The structural elements of a modern lesson are:

updating students' previous knowledge (which means not only reproducing previously acquired knowledge, but also often applying it to new situations, stimulating students' cognitive activity, and teacher control);

assimilation of new knowledge and methods of action (in a meaning more specific than the concept of "learning new material");

formation of skills (including special repetition and consolidation). Since an indicator of the problematic nature of a lesson is the presence of search activity stages in its structure, it is natural that they represent the internal part of the structure of a problematic lesson:

the emergence of a problem situation and the formulation of the problem;

making assumptions and substantiating a hypothesis;

proof of hypothesis;

checking the correctness of the problem solution[2].

Thus, the structure of a problem lesson, in contrast to the structure of a non-problem lesson, has elements of the logic of the cognitive process (the logic of productive mental activity), and not just the external logic of the learning process, and creates the possibility of managing the student's independent educational and cognitive activity.

2. Methods of creating problem situations Based on a generalization of best practices, several basic ways of creating problem situations can be indicated.

1. Encouraging students to provide a theoretical explanation of phenomena, facts, and external inconsistencies between them. This causes students to search and leads to the active acquisition of new knowledge.

2. The use of educational and life situations that arise when students perform practical tasks at school, at home, etc. Problematic situations in this case arise when trying to independently achieve the practical goal set before them. Usually, as a result of analyzing the situation, students themselves formulate the problem.

3. Setting educational problem tasks to explain the phenomenon or search for ways of its practical application. An example would be any research work done by students in humanities classes[3].

4. Encouraging the student to analyze facts and phenomena of reality, which generate contradictions between everyday ideas and scientific concepts about these facts.

5. Making assumptions (hypotheses), formulating conclusions and testing them experimentally.

6. Encouraging students to compare and contrast facts, phenomena, rules, and actions that result in a problematic situation.

7. Encouraging students to preliminary generalize new facts. Students are given the task to consider some facts and phenomena contained in material that is new to them, compare them with known ones and make an independent generalization[4].

8. Familiarization of students with facts that seem to be of an inexplicable nature and have led to the formulation of a scientific problem in the history of science. Usually these facts and phenomena seem to contradict the ideas and concepts that students have developed, which is explained by the incompleteness and insufficiency of their previous knowledge.

9. Varying the task, reformulating the question.

Rules for creating problem situations:

1. To create a problem situation, students should be given a practical or theoretical task, the implementation of which requires the discovery of new knowledge and the mastery of new skills; here we can talk about a general pattern, a general method of activity or general conditions for the implementation of activity.
2. The task must correspond to the intellectual capabilities of the student. The degree of difficulty of a problem task depends on the level of novelty of the teaching material and the degree of its generalization [4].
3. The problem task is given before the material being learned is explained.
4. The same problem situation can be caused by different types of tasks.
5. The teacher guides a very difficult problem situation by indicating to the student the reasons for not completing the practical task given to him or the impossibility of explaining certain facts to him.

A student's preparedness for problem-based learning is determined primarily by his ability to see the problem put forward by the teacher (or that arose during the lesson), formulate it, find solutions and solve it using effective techniques. Based on the linguistic definition: a problem is a task that needs to be resolved and researched. What is the nature of the problem that arises in the learning process? Many teachers identify the concept of "problem" with the concepts of "question" and "task"; a problem in teaching is confused with a problem in its commonly used meaning.

A learning problem is not the same as a task. Both in life and at school there are many problems, the solution of which requires only mechanical activity, which not only does not contribute to the development of independent thinking, but also inhibits this development. An educational problem is a form of implementation of the problem-based principle in teaching.

An educational problem is a subjective phenomenon and exists in the student's mind in an ideal form, in thought, just like any judgment, until it becomes logically complete. A task is an objective phenomenon; for the student it exists from the very beginning in material form, and the task turns into a subjective phenomenon only after its perception and awareness[5].

The main elements of the educational problem are "known" and "unknown" (you need to find a "connection", "relationship" between the known and the unknown). The task conditions necessarily contain such elements as "given" and "requirements". An educational problem is a form of manifestation of a logical-psychological contradiction in the process of assimilation, determining the direction of mental search, awakening interest in researching (explaining) the essence of the unknown and leading to the assimilation of a new concept or a new method of action.

Several requirements must be presented to the problem being put forward. If at least one of them is not fulfilled, a problematic situation will not be created.

1. The problem must be understandable to students. If students do not understand the meaning of the task, further work on it is useless. Therefore, the problem must be formulated in terms known to students so that all, or at least most, students understand the essence of the problem posed and the means to solve it.
2. The second requirement is the feasibility of the problem being put forward. If the majority of students cannot solve the problem put forward, it will be necessary to spend too much time or the teacher himself will have to solve it; both will not give the desired effect.
3. The formulation of the problem should interest students. Of course, the main thing in creating interest is the mathematical side of the matter, but it is also very important to choose the proper verbal format. An entertaining form often contributes to the success of solving a problem.

4. The naturalness of the problem statement plays a significant role. If students are specifically warned that a challenging problem will be solved, this may not arouse their interest at the thought that they will move on to a more difficult one. The teacher's knowledge of the basic requirements for the curriculum is one of the most important conditions for the successful formulation of the problem and the organization of independent cognitive activity of students.

The formulation of an educational problem is carried out in several stages:

analysis of the problem situation;

awareness of the essence of the difficulty - vision of the problem;

verbal formulation of the problem[6].

The solution to an educational problem is the result of overcoming the contradictions of the educational process in general and the main contradiction of the cognitive problem in particular; it is the result of an active thought process in which incorrect hypotheses are discarded and correct, well-founded ones are selected. Solving a problem by students, writes Polish didactician V. Okon, has a huge advantage over simply memorizing ready-made information.

The advantage is that the student thinks actively when solving a problem. And this leads not only to the strength and depth of knowledge acquired independently, but also to the most valuable quality of the mind - the ability to navigate in any situation and independently find ways to solve any problem.

CONCLUSIONS AND SUGGESTIONS

The technology of problem-based learning is the most important direction in the implementation of the developmental education paradigm. Analysis of work experience using this technology and research by educational psychologists allows us to draw the following conclusions. Thanks to problem-based learning, students develop five universal competencies:

ability to research;

ability to communicate effectively and organize interaction;

ability to make decisions;

ability to implement the decision made;

the ability to constantly learn new activities.

The technology of problem-based learning is of a general pedagogical nature, that is, it is implemented in any subject content and at any educational level, and therefore is objectively necessary for every teacher. This technology develops not only the student, but also the teacher. The teacher grows as a creative person, a communicative leader, capable of successfully solving complex pedagogical problems in modern conditions. This educational system is based on problem-based learning technology. And the most important thing is that the educational and methodological kits contain the technology of problem-based dialogue, and the teacher, using methodological recommendations, can prepare and successfully conduct a problem-based dialogue lesson.

Lessons in which children themselves determine the topic of the lesson, identify difficulties, identify problems, independently draw conclusions, make rules, bring pleasure to the teacher, and the joy of discovery to students.

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