

The Essence and Content of Problem Based Learning

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Abstract— the article analyses the efficiency of using problem based learning in teaching process. The problem arises in a specific learning environment, where purposeful instruction is provided through specific pedagogical tools. It is also necessary to develop specific ways to create such situations, based on the nature of the topics studied. Thus, the problem based teaching is not simply a state of mental work associated with an "unexpected obstacle in the way of thinking". At the same time, it should be noted that not every problem is related to the problematic situation. Problem-based learning has a great potential for enhancing students' cognitive functioning while understanding and assimilating knowledge, and determining their active attitude to the environment.

In problem based teaching, the teacher organizes the students' cognitive activity so that students can independently solve intellectual difficulties, draw conclusions and generalize, formulate laws, and apply the acquired knowledge to a new situation, based on the analysis of the disciplines.

Key words: problem based learning, learning technology, solve, knowledge, problem, effective teaching.

I. INTRODUCTION

Problem-based learning is an advanced learning technology. Effective teaching technology in today's high school is a problem education. Its mission is to stimulate an active cognitive process and to form a research method in thinking. Problematic education is consistent with the goals of creative personality development. Problem-based teaching is based on the theoretical principles of American philosopher, psychologist and educator John Dewey, and began to spread in the 20-30s of the XX century. Dr. Dewey set out the basis for teaching: social, design, artistic expression, research. It is recommended to implement these bases: speech, artwork, technical equipment, games and labor.

Today, Problem Teaching refers to the problem situations created by the teacher in the lessons and the active independent work of the learners to address them. As a result,

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Students acquire professional knowledge, skills.

Problematic teaching relates to personalized learning technologies, where the individual is viewed as a subject, and the purpose of problematic situations is to arouse particular interest in the pedagogical process.

Problem-based teaching is the most effective way to teach, because the logic of scientific knowledge reflects the logic of problem situations.

II. RESEARCH METHODOLOGY

Problems are incorporated, and traditional, narrative content is the most optimal content. The teacher creates a problematic situation (Figure 1), guiding the student to solve it, organizing the search for a solution. Managing problem-based teaching requires pedagogical skills because emergence of a problematic situation is an individual condition that requires a differentiated and individualized approach.

The essence of problem training is to build a problem situation (task) and learning how to find the optimal solution to get out of this situation. At the same time, students are actively involved in the course of the lesson. They no longer receive ready-made knowledge, but they should rely on their experience and skills, in order to find a way to solve a new problem. Another important point: a problem situation makes children realize the insufficiency of their knowledge, encourages them to search for new knowledge and skills.

Problem-based teaching requires solving non-standard scientific and educational issues from the creative process. Problems given to students serve to strengthen the acquired knowledge and skills, while problem-oriented issues are only focused on finding new solutions.

The essence of the problem presentation is that the teacher puts the problem in front of the students without presenting information and encourages them to look for ways and means to solve them. The problem is the way to new knowledge and ways of action (Farberman B.L. 2002).

It is important to note that new knowledge here is not for information but for solving problems or problems. In traditional pedagogical methods - from knowledge to problem - students do not have the skills and abilities of independent scientific research as they are provided with ready-made results. The solution to this problem requires creative thinking.

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If a person is regularly trained to master ready-made knowledge and skills, his or her natural creative abilities may also be quenched; it "forgets independent thinking" The thought process is perfectly reflected and evolves in problem solving.

III.RESULTS & DISCUSSIONS

The learner is searched independently or with the help of a teacher to find an unknown solution. Subject-object-to-subject relationships that arise in collective problem-solving tend to stimulate creative thinking.

The main indication of problem-solving is the opposite of the necessary objective contradictions that arise in academic or all kinds of activities. This is a moving and developing source of all areas. Therefore, problem-based learning can be called a developer because its purpose is to formulate, develop, and solve knowledge, hypotheses (Avlyakulov N.Kh., 2001). In problem teaching, the thinking process is introduced only to solve the problem, which forms the thinking needed to solve unusual problems.

There are four main conditions for effective teaching:

- Provide sufficient excitement in the context of the problem;
 - ensuring that each step of the problem-solving process can be performed (acceptable and unknown ratio);
 - the importance of information to learners in solving problems;
 - The relationship between the teacher and the student should be positive and all the ideas and hypotheses expressed by students should not be left unattended (Nazarova T.S. 1997);
- The main psychological and pedagogical objectives of problem education are:
- to develop students' thinking and abilities, to develop their creative skills;
 - The students will be able to independently solve problems and acquire the knowledge and skills gained during active research activities, as a result of which these knowledge and skills will be stronger than in traditional teaching;
 - fostering an active creative personality of a student who can see, put, and solve non-standard problems;
 - Development of professional problem thinking - Each specific activity has its own specifics.

Among the above mentioned advantages there are following disadvantages:

- It is difficult to use the problem study strategy to form practical skills;
 - it takes more time to learn new material (compared to other teaching methods);
 - lessons on the methodology of problem study are possible only on the basis of material that allows ambiguous decisions, opinions, judgments;
 - The problem-based learning method only works when the students have enough knowledge on particular subject;
- Despite these shortcomings, the technology of the problem based teaching method has firmly established in modern pedagogy as one of the most optimal requirements. (Makhmutov M., 1993)

Not all teaching materials are compatible with problem reporting. It is easy to create problematic situations when teaching students the history of science. Hypotheses, solutions to the problem of problem-based reporting of new concepts in the science of crisis, the collapse of traditional

ideas in the repetition phase, the search for new approaches to the problem, and so on. Acquiring the logic of research through the history of discoveries is one of the most promising ways to form problem thinking. The success of the transition from traditional teaching to problem-based learning depends on the level of "difficulty" determined by two factors:

- The degree of complexity of the problem - determined by the ratio of known and unknown to the student within the given problem;
- The collective and personal contributions of students to problem-solving process.

Building a lesson in the method of problem-based learning

1. Statement of the problem situation, issue.
2. Awareness of the problem situation by students. Guiding questions can be asked to facilitate the process. But! The teacher should not point out a contradiction. It is important that the children themselves become aware of the origins of the problem.
3. Finding a solution to the problem. The work at this stage can be organized in different ways (depending on the age, characteristics of the learners and the general preparedness of the class).

Options:

- Gathering hypotheses (methods Tree of predictions, Basket of ideas).
 - Creating a discussion (in groups).
 - Organization of search activities (in textbooks, reference books, on the Internet).
 - Search for solutions based on observations.
4. The choice of the optimal solution, the development of new knowledge, its development. After all possible options for resolving a problem situation will be discussed and the students jointly decide which option is the most correct.
 5. Application of new knowledge and reflection. In fact, this is the stage of fixing the material. Performing exercises on the use of new knowledge, students are once again convinced that the correct solution is chosen.
 6. Testing, control of knowledge.

Classification of methods of problem education

In the learning strategy through the formulation of a cognitive problem and the search for its solution, the following types of methods are used:

- Partially search. The teacher formulates the problem and by asking leading questions that involve students to the discussion. The teacher also helps to organize a search for a solution to the problem. Teacher assistance limits the independence of students, so they participate only partially. Nevertheless, this is the most effective method of organizing a lesson according to the methodology of problem education in elementary grades or in such classes where problem education is just beginning to be applied.
- Reproductive method. Lessons are built by analogy with the samples. For example, while setting a problem situation, the teacher first gives examples of problem situations and indicates how to find contradictions. The same is with the form of organizing the search - first an example is given explaining what needs to be done to find the answer to the question, what materials to refer to, etc.

IV. CONCLUSION

- The problem statement method is the most passive teaching method. The main role belongs to the teacher: he himself poses a problem, points out a contradiction, organizes the search for a solution and proves the correctness of the chosen solution. Students in this case play only the role of observers. But this method can be used to explain complex topics in order to demonstrate to children the course of reasoning, the consistency of the presentation of the material, and the course of analysis.
- The research method is the most difficult way to organize lessons using problem-based learning. Here the task of the teacher is reduced only to the formulation of the problem situation. To see a contradiction, to formulate a problem, to find a way to solve it is a completely independent work of students.

Of course, the organization of the educational process by the method of problem-based learning is a rather complicated and labor-intensive work. But practice proves that such lessons are effective for the development of creative thinking of students.

Ways to create a problem situation in the lesson

Depending on the feelings that students experience when they get acquainted with a problem situation, it is customary to distinguish two methods of creating a problem situation in the methodology: with surprise and difficulty.

With surprise

1. The teacher simultaneously offers conflicting facts, theories on the topic.
2. Pupils are asked a question or assignment, upon the solution of which conflicting opinions of children are revealed.
3. Offer a task or an example containing an error, insufficient information, an oversupply of data, conflicting data.
4. Offer to consider the phenomenon, the situation from different points of view (for example, from the position of a lawyer, teacher, scientist, businessman, ecologist, etc.).

With difficulty

V. CONCLUSION

1. A task is given that differs from those already known to the students.
2. A practical situation (from life) is proposed, for the solution of which learners do not have sufficient knowledge. So, the essence of the problem learning method lies in the art of creating problem situations and finding ways to solve them.

The hardest part of this method is to create the right problem situation.

- First, the problem suggested by students should be accessible to the age of learner.
- Secondly, the problem should not be solved with the help of existing knowledge and skills; it should encourage the promotion of new ideas and the search for new knowledge.
- Thirdly, the situation must contain a contradiction.
- Fourth, the situation should be of interest due to its unusualness, non-standard.

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