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PROBLEM-POSING EDUCATION AS A DIDACTIC CONCEPT AND A METHODOLOGICAL DIRECTION¹

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***Abstract:** This article presents historical review of different concepts associated with the characteristic specifics and aspects regarding practical application of problem-based didactic technology. Basic patterns for assigning problem situations are described – problem question, problem task, problem assignment. The necessary conditions for cognitive activity and independence of the students while acquiring new knowledge, skills and competences are looked at – as these are the professional characteristics of future quality professional realization of the specialists, who are taught in the framework of the academic institution.*

***Keywords:** problem-posing education, historical validity, problem approaches, quality professional realization.*

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INTRODUCTION

Didactic problems are closely connected to educational objectives in the educational process, as an important tool for developing cognitive independence and creativity in the students, while forming skills for mastering new competences from different sources and applying those competences in unusual circumstances.

The methods of problem-posing education mold situations which mirror real situations and activate the cognitive activity and creativity of students, giving them the opportunity to use their theoretical knowledge and acquired practical skills.

In the educational process, the given problematic situations and the heuristic decisions for solving them, develop interpersonal relations between students which provide for reaching the necessary level of socialisation, good and ethical communication, responsibility and self-responsibility.

EXPOSITION

The word “problem” is of Greek origin and means task, assignment, scientific or social question and figuratively – a difficulty, an obstacle.

It is believed that problem-posing education is used for the first time by Socrates – in his lectures, through posing a problem, he stimulates thinking, independent truth seeking and revealing contradictions (Popov, T., 2005).

In the basis of problem-posing education lie the ideas of the American philosopher, psychologist, and educational reformer John Dewey. In his work “How We Think”, Dewey rejects

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traditional education, trading it for an independent practical activity of students – mental activity as a problem solving method in students' activity (Boronina, O., 2015, Dewey, J., E. Dewey, 1924).

In 1894, Dewey initiated the University of Chicago Laboratory Schools where education was not defined by a curriculum but rather by games and practical activity. The conclusions he draws are connected to problems as a necessity, essential to developing thinking in the educational process. John Dewey affirms the idea that problem solving is in the basis of developing students' abilities (Dautova, O., 2013). Placing them in unusual, non-defined situations leads to the formation of questions and problems. This calls for thorough observation and deliberation of facts and leads to the emergence of ideas for solution, to a discussion with peers and professors and drawing the right conclusion. Dewey's theory is graphically presented in fig. 1.

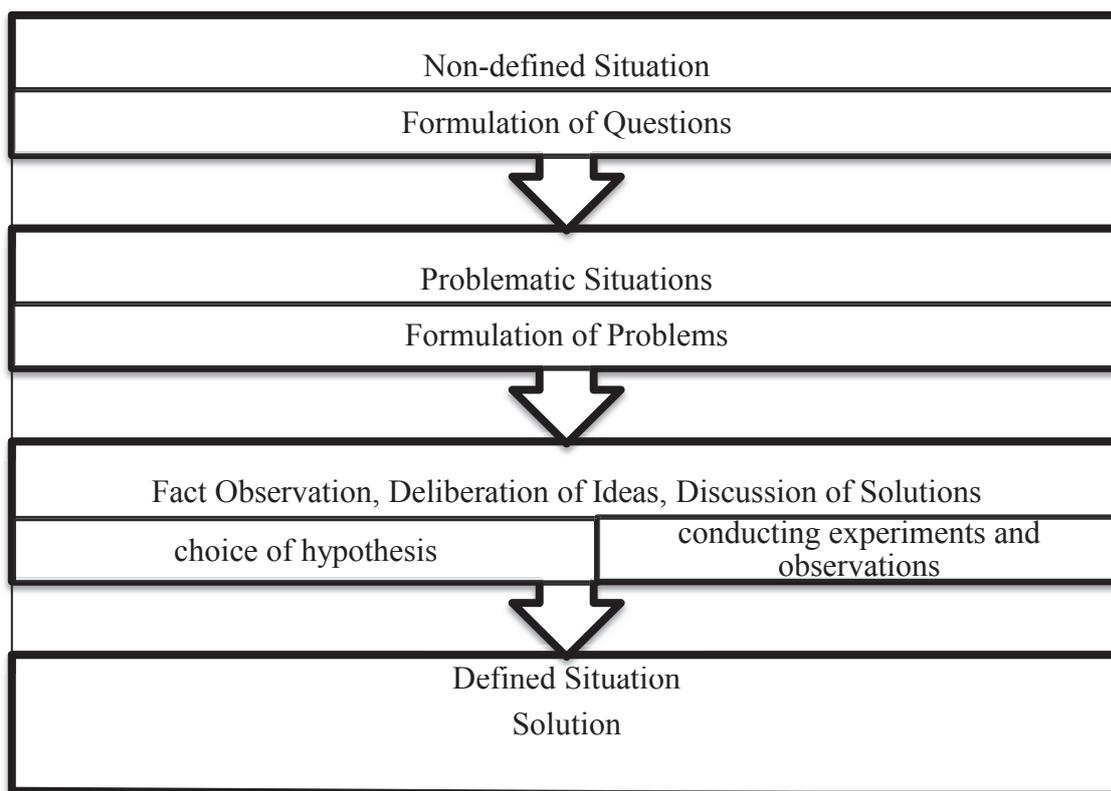


Fig. 1. Pattern of active learning through problem solving by J. Dewey

Problem-posing education in Russia is initiated by psychologists A. N. Leontiev and S. L. Rubinstein. The idea that the thought process is a process of problem solving lies in their theories. They believe that regularities in acquiring knowledge coincide with regularities in thought activity – origination and solving of a problematic situation is a necessary condition for developing thinking in the educational process (Dautova, O., 2013).

Scientific studies and researches in the didactic aspect of problem-posing education are carried out by M. Skatkin, M. Mahmutov, E. Lerner, Y. Babinski, M. Matyushkin, M. Arstanov, P. Pidkasistu, Zh. Haidarov – the majority of Russian pedagogists define the problem as a complicated theoretical question (Andreev, M., 1996, Boronina, O., 2015, Dautova, O., 2013, Petrov, P., 2016).

One of the authors with a great contribution to the development and affirmation of the problem-posing education concept in Bulgaria is Marin Andreev. He associates problem-posing education with “inductive learning through discovery, with problem solving, with research techniques and procedures, with question-response options for educational organisation, with stimulation of thinking and especially of critical thinking in didactic situations” (Andreev, M., 1996).

In relation to the system of categories of problem-posing education, **the educational problem** is a problematic situation that is realized and accepted in order to be solved. Each educational problem has a problematic situation in its genesis which is originated by the professor. It is known that not every problematic situation qualifies to serve as an educational problem – it has to create interest and motive in the student for its solution, i.e. it needs to be neither too easy nor too difficult (Petrov, P., 2016; Popov, T. 2005).

Basic patterns for assigning problematic situations are: problematic question, problematic task and problematic assignment – fig. 2.

Problem-posing Education

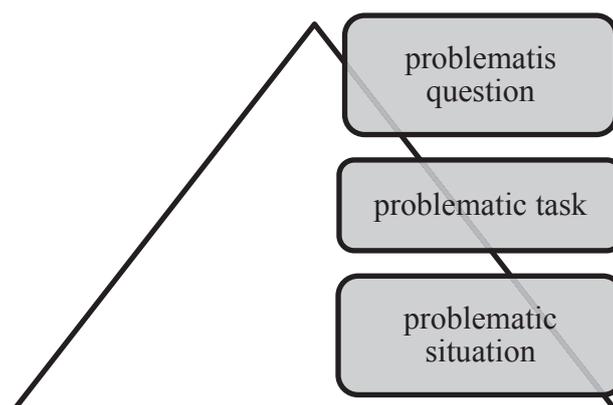


Fig. 2. Core categories of problem-posing education

The problematic situation – reflects the situations which were formulated in the educational process, mirroring the real ones, allowing for maximal utilization of students' professional and life experiences.

What is understood under situation is one or another set of conditions, events or actions (Petrov, P., 2016; Dautova, O., 2013; Popov, T., 2005). Within problem-posing education, students analyse the situation to reach the essence of the problem, suggest probable solutions and select the best of them. The main figure is the student – he or she acquires an active position /fig. 3/.

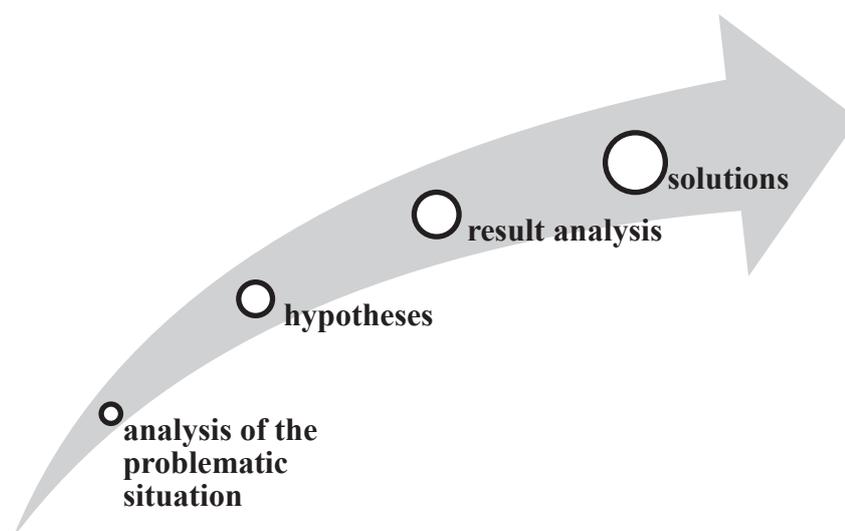


Fig. 3 Analysis of the problematic situation – stages

The degree of cognitive independence is defined by assessing whether the students have formed competences to realise the problematic situation, to formulate the problem, to raise a

hypothesis, to justify it, to confirm or reject it and to practically apply the solution they have discovered.

The solution of the problem is foremost a process of coming out of a cognitive obstacle in which the students have been positioned by the problematic situation. Simultaneously, problem solving is a process of acquiring new knowledge, forming new skills, habits and competences. The review of the solution has the biggest educational importance. Namely through this review, it is defined which of the suggested hypotheses is the correct one. This may be conducted through a comparison, analysis and synthesis of data.

The problematic question is a question that places students in an intellectual difficulty and doesn't offer a ready answer or facilitate reproducing of knowledge already acquired.

The problematic task is an organisational form of the educational material with set conditions and missing data, which prompts students to researching and active thought activity: fact analysis, clarifying the reasons behind the objects' emergence, the cause-and-effect relationship. The solution of problematic tasks may be a verbal reasoning, literary research, processing of informational sources, laboratory work and more.

In their own works, P. D. Petrov and P. R. Petrov accentuate problem posing of educational material as a motive for independent thinking. Through it, students acquire not only some specific knowledge but are also introduced to ways of discovering this knowledge or to a system of evidences for reasoning its truthfulness – resulting in more realised knowledge, which allows for transforming this knowledge into conviction (Petrov, P., 2016).

According to O. Boronina, a major role in the development of problem-posing education plays American psychologist Jerome Bruner's concept. It includes structuring educational material and a dominating role of the thought in regard to assimilation of new knowledge. Focus falls on free examination of the educational material by the students (Boronina, O., 2015).

In the basis of problem-posing education lies self-education. Knowledge is offered through educational tasks with a problem-posing method, solving them molds the logics of scientific research. Problem-posing education presumes students acquire new knowledge as a function of conjoining already acquired knowledge with activities that prompt acquiring new knowledge (discovering the unknown). Most frequently used methods of problem-posing education – fig.4.



Fig. 4. Methods of the problem-posing education

- Discussion – the educational group is divided into subgroups, different hypotheses are accepted together with individual and group reasonings. The professor guides and supports the participating students;

- practical trainings – students are divided into small groups or work individually on a given task. For the practical solution of the problem, a creative effort is necessary and also an independent discovery of the solution by the students themselves;
- role play – each student has a clearly defined subtask from the main task. When all the subtasks are solved correctly, forming the final solution can be reached;
- sharing of the acquired personal experience – students present a review of their research in front of the rest of the students and share their experience;
- brainstorming – a discussion where the assigned task is with an elevated degree of difficulty, even outside students' immediate development zone, solution can be conducted in many different ways;
- case study (method of the individual case) – students analyse a situation (a real one, or simulated) in order to formulate the problem, propose solutions and choose the best one.

CONCLUSION

Problem-posing education is associated with solving complex, unstructured problems, which will arise in the future professional activities of students.

Situated in various problematic situations, they form analytical and communicational abilities, identify themselves with the profession, increase their own motivation and self-esteem and control the educational process.

Problem-posing education is a necessary component of the complex of modern educational system, consisting of a variety of objectives, contents and methods, tailored to the educational material, the age and individual characteristics of students. Advantages consist of:

- increasing the cognitive activity of the students;
- opportunity for reaching a higher level of independence;
- permanence of the knowledge acquired;
- stimulating individual creativity;
- making the link between theoretical knowledge and practical activity;
- interdisciplinarity.

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