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SCIENTIFIC AND THEORETICAL FOUNDATIONS OF TEACHING METHODS AIMED AT DEVELOPING STUDENTS' COGNITIVE ACTIVITY

Abdusalomova Maftuna Sheraliyevna

Navoi Department of the Academy of Sciences of the
Republic of Uzbekistan, Doctoral Student

Email: abdusalomovamaftuna34@mail.com,| Mob.tel: +998913398891

Abstract

Introduction: This thesis examines the theoretical foundations of teaching methods designed to develop students' cognitive activity, drawing on cognitive psychology and constructivist learning theory. In contemporary education, learners are viewed not as passive recipients of knowledge, but as active participants who construct understanding through independent inquiry, a key indicator of educational quality. Implementing instructional strategies that actively engage students' cognitive processes is therefore essential. Identifying theoretically and empirically grounded approaches that foster critical thinking, curiosity, and creativity remains a major pedagogical and methodological challenge.

Keywords: cognitive activity, constructivism, interactive methods, problem-based learning, inquiry-based learning, cognitive pedagogy, zone of proximal development, project method, creativity, integrated education.

Background / Relevance. In the modern educational process, enhancing students' cognitive activity is regarded as one of the primary objectives. This process transforms the learner from a passive recipient of knowledge into an active subject of learning, while simultaneously fostering independent thinking, creative approaches, and the development of analytical as well as innovative skills.

Materials and methods. The concept of two levels of cognitive development was originally proposed by L.S. Vygotsky. The first level — the actual developmental level (i.e., the learner's existing level of cognitive readiness) — is characterized by



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the learner's ability to perform tasks independently and completely, without assistance. The higher second level, known as the zone of proximal development, is characterized by what the learner is unable to perform independently but can achieve with minimal assistance (such as guiding questions, explanations, or cues). With such support, the learner can transition to the actual developmental level during the learning process [12].

I.Ya.Lerner and M.N.Skatkin classified teaching methods into five groups [5, 9]. These methods are presented in a sequence that corresponds to the increasing potential to develop students' qualities such as initiative, independence, and creative approach:

1. In the explanation and demonstration method, students receive educational information in a "ready-made" form through textbooks or screen-based guides. In this case, students remain within the scope of reproductive thinking.
2. The reproductive method is a teaching approach based on examples or rules, where the learning activity is carried out in an algorithmic manner.
3. In the problem-based learning method, before presenting the topic, the teacher formulates a problematic cognitive task and demonstrates ways to solve problems by comparing different perspectives and providing evidence through the use of various sources and resources.
4. The inquiry-based or heuristic method involves active exploration aimed at solving cognitive tasks in the learning process. This activity is carried out under the guidance of the teacher or based on heuristic instructions.
5. In the research method, once the goals and tasks are outlined in the form of brief instructions, students independently study relevant literature and perform scientific research activities such as observation and measurement.

R.Safarova, in co-authorship, identified the following methods as those that activate students' learning activities in situations involving the perception and comprehension of knowledge:

1. The method of introducing innovations into educational content involves incorporating engaging and relevant information into the learning material. Making educational content more vivid, interesting, and conceptually rich helps enhance students' existing knowledge and promotes deeper understanding.



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2. The method of enriching the content of educational materials fosters students' interest in uncovering the meaning of learned words, concepts, terms, and information. It contributes to understanding the main ideas presented, establishing interdisciplinary connections, and developing students' imagination.

3. The method of emphasizing the significance of the learning material involves the study of content deemed essential, where the importance is determined by the biological, socio-economic, or practical relevance of the information being presented [8].

M.A.Gofurova argues that, in order to develop students' cognitive activity, it is essential to integrate non-standard problems that require reflective reasoning into the educational content, as well as to implement logical tasks that foster creative competence [3].

The project-based learning method involves solving a specific task, which requires the application of various approaches on one hand, and, on the other hand, ensures the integration of knowledge and skills from creative fields as well as from science, technology, and engineering disciplines. Therefore, M.M.Rakhimov argues that if the learning process requires solving creative or research tasks, applying research-based methods, or utilizing interdisciplinary knowledge from various fields, it is necessary to employ the project-based learning method [7]. These methods are applied in the process of planning and executing progressively complex practical tasks that present knowledge to students step by step.

Integrated education, by its nature, reflects a learner-centered approach, focusing not on the mere formation of students' knowledge, skills, and competencies, but rather on the comprehensive development of their personality. I.I.Tuychieva emphasizes the following aspects of the learner-centered approach in the organization of integrated education: the enrichment of educational content with materials and tasks related to essential, practical knowledge, which motivates learners to solve problems and acquire new knowledge; the congruence of the educator's personality, understood as the alignment of their behavior with their emotions and thoughts and the authentic expression of their true self, which alleviates students' stress and psychological defense mechanisms, allowing them to behave naturally and fully realize their potential; unconditional understanding and acceptance of the child,



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which leads to the creation of a favorable psychological environment and fosters a positive attitude towards the learner; reliance on the learner's self-activation, identifying and manifesting their internal potential during the educational process, and encouraging personal growth [11].

Kh.E.Abdulshehidova conceptualizes the structure of project activities as an interrelated system comprising the following components: motivational (interest in cognition and positive attitude), cognitive (the formation of knowledge and skills), operational-creative (independence and readiness for creative activity), and emotional-behavioral (the attitude towards self-organization and self-analysis, as well as the manifestation of positive emotional experiences) [1]. As V.I.Zagvyazinsky emphasizes, "independent work facilitates the deepening, expansion, and systematization of knowledge, fosters the motivation to learn, cultivates a persistent desire in the learner to continuously supplement and update their knowledge, and teaches the effective and rational use of time under certain conditions" [13].

O.V.Shchelkunova's proprietary technology, aimed at enhancing students' personal activity effectiveness, is based on the algorithmization of the lesson process [14].

N.V.Gafurova argues that problem-based and developmental education create the necessary conditions to enhance students' intellectual activity and are therefore essential for modeling the pedagogical process aimed at students' intellectual and personal development. One of the most significant aspects of problem-based and developmental education is its focus on fostering students' activity and "sense of autonomy" (самостоятельность). The student's agency as a subject facilitates the assimilation of educational content and cognitive methods, as well as the establishment of relationships with others and social groups, thereby promoting both intellectual and personal qualities [2].

In contemporary international studies, J.Hattie [4] synthesized over 800 meta-analyses evaluating teaching effectiveness and identified interactive and inquiry-based methods as the most effective approaches to enhance student engagement. Complementing this perspective, R.Mayer proposed the theory of deep learning through multimedia, while A.Sfard conceptualizes the learning process as active participation [6, 10]



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The various classifications of teaching methods highlight their significance in developing students' cognitive activity. For instance, explanatory and reproductive methods primarily facilitate the acquisition of foundational knowledge, whereas problem-based and inquiry-based approaches foster independent thinking and creative engagement. The research (investigative) method, in turn, transforms students into fully active participants in the learning process.

Interactive methods (such as clustering, case studies, role-playing, and brainstorming) support cognitive activity from a socio-psychological perspective. International practices have demonstrated that multimedia technologies [6], active student participation [10], and multifaceted assessment [4] contribute to deep and long-term knowledge acquisition.

Results and Discussion

Teaching methods aimed at developing students' cognitive activity should be regarded not merely as pedagogical techniques, but as didactic mechanisms that actively stimulate intellectual functioning. Such an approach shapes the learner not as a passive recipient of ready-made knowledge, but as an active and creative subject who seeks and constructs knowledge independently.

Teaching methods can be theoretically categorized based on problem-based learning, research-oriented approaches, interactive communication tools, as well as heuristic and reflective techniques. Each method is designed to develop students' skills in independent thinking, problem comprehension, and solution-finding.

Selecting and classifying teaching methods based on such functional criteria ensures not only the effectiveness of instruction but also the personal intellectual development of learners. Therefore, a theoretically grounded classification holds significant theoretical and methodological importance in transforming the teaching process from passive knowledge transmission to active learning.

From an analytical perspective, such methods can be categorized based on problem-based learning, research-oriented approaches, interactive communication tools, as well as heuristic and reflective techniques. Each method is aimed at developing students' abilities in independent thinking, problem comprehension, and solution-finding. In particular, learner-learner collaborative activities (such as clustering,



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role-playing, case studies, and brainstorming) support cognitive activity from a socio-psychological standpoint.

Conclusion

Teaching methods aimed at developing students' cognitive activity represent one of the most significant directions in contemporary pedagogy, ensuring qualitative improvements in the educational process. Grounded in cognitive psychology and constructivist theory, this approach positions the learner not as a passive recipient of ready-made knowledge, but as an independent, creative, and inquisitive thinker who actively constructs understanding.

Both national and international research evidence confirms that teaching methods aimed at developing cognitive activity not only enhance the quality of knowledge acquisition but also foster the learner's intellectual culture, as well as their inquiry and creative abilities. Through such theoretically grounded didactic approaches, the educational process transforms from passive knowledge transmission to active learning, which can serve as a critical factor in advancing the national education system to a new level.

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