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DEVELOPING CREATIVITY IN PRIMARY SCHOOL STUDENTS THROUGH PROBLEM-BASED LEARNING

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РАЗВИТИЕ КРЕАТИВНОСТИ У УЧАЩИХСЯ НАЧАЛЬНОЙ ШКОЛЫ МЕТОДОМ ПРОБЛЕМНО-ОРИЕНТИРОВАННОГО ОБУЧЕНИЯ

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Abstract. Creativity is a crucial skill for the 21st century, especially for young learners in primary education. Problem-Based Learning (PBL) has emerged as an effective pedagogical approach to fostering creativity by engaging students in real-world problems and encouraging critical thinking. This paper explores the theoretical foundations of PBL and its role in developing creativity in primary school students. The study examines historical perspectives, provides definitions of key terms, and reviews scientific perspectives on creativity development. Additionally, the research outlines methodologies, discusses results, and presents conclusions on the effectiveness of PBL in enhancing creative thinking among young learners.

Аннотация. Креативность является важнейшим навыком в 21 веке, особенно для учащихся начальной школы. Проблемно-ориентированное обучение (PBL) возникло как эффективный педагогический подход к развитию креативности путем вовлечения учащихся в решение реальных проблем и поощрения критического мышления. В этой статье рассматриваются теоретические основы PBL и его роль в развитии креативности у учащихся начальной школы. В исследовании рассматриваются исторические перспективы, даются определения ключевых терминов и рассматриваются научные перспективы развития креативности. Кроме того, в исследовании излагаются методологии, обсуждаются результаты и представляются выводы об эффективности PBL в развитии креативного мышления у учащихся младшего возраста.

Keywords: creativity, primary education, problem-based learning, critical thinking, innovative teaching methods.

Ключевые слова: креативность, начальное образование, проблемно-ориентированное обучение, критическое мышление, инновационные методы обучения.

The development of creativity in primary school students is essential for their intellectual growth and problem-solving abilities. Modern education aims not only to provide knowledge but also to develop skills that prepare students for future challenges. Problem-Based Learning (PBL) has gained prominence as a student-centered approach that fosters creativity by engaging learners in

real-world challenges. This paper investigates how PBL influences creativity in young learners, emphasizing its theoretical background and practical implications.

Primary school students have unique psychological and pedagogical characteristics that influence their learning processes. At this stage, children exhibit high levels of curiosity, imagination, and emotional sensitivity. According to Piaget (1952) [1], primary school-aged children are in the concrete operational stage of cognitive development, meaning they begin to develop logical thinking but still rely on tangible experiences. Vygotsky (1978) emphasized the importance of social interaction in learning, proposing that children develop higher cognitive functions through guided experiences with teachers and peers.

Pedagogically, young learners benefit from active, hands-on learning experiences that engage their senses and emotions. Bruner (1960) argued that discovery-based learning is particularly effective at this stage, as it allows students to construct their understanding through exploration. Additionally, Erikson (1950) described the developmental crisis of industry vs. inferiority, suggesting that children at this age seek to develop competence and confidence in their abilities. Therefore, instructional approaches that encourage creativity, problem-solving, and collaborative learning align well with their developmental needs [2, 3].

The concept of creativity has evolved over time, with early theories focusing on individual talent and artistic expression. Plato and Aristotle discussed the nature of creativity in philosophy, linking it to divine inspiration and logical reasoning.

In the 20th century, scholars such as J. P. Guilford (1950) emphasized the importance of divergent thinking in creativity. Guilford's model of intelligence identified creativity as a distinct cognitive function, highlighting fluency, flexibility, originality, and elaboration as key elements [4]. In the context of education, John Dewey (1938) advocated for experiential learning, laying the groundwork for PBL. Dewey's theories emphasized that learning should be student-centered, inquiry-based, and directly connected to real-life situations. The shift from traditional rote memorization to inquiry-based learning has shaped modern educational practices, making PBL a significant tool for creativity development in schools [5].

P. Guilford (1950) defined creativity as the ability to generate multiple and unique solutions to a given problem, emphasizing divergent thinking. Vygotsky (1978) considered creativity a social construct, influenced by cultural and educational interactions. For this study, creativity is defined as the ability to produce original, useful ideas through imaginative thinking and problem-solving. Vygotsky (1978) argued that creativity is a social and cultural construct influenced by interactions and experiences. According to Amabile (1996), creativity arises from intrinsic motivation, domain-relevant skills, and a conducive learning environment. Sternberg and Lubart (1995) introduced the Investment Theory of Creativity, proposing that creative individuals "buy low and sell high" in terms of ideas, meaning they take risks on unconventional solutions. Research indicates that structured problem-solving activities can enhance cognitive flexibility, leading to higher creativity levels among students [6].

Barrows and Tamblyn (1980) described PBL as an instructional strategy where students learn through structured problem-solving experiences. It encourages critical inquiry, collaboration, and self-directed learning. In this study, PBL refers to a student-centered teaching method that engages learners in real-world problem-solving. PBL is a powerful instructional strategy that encourages students to engage in complex, real-world problems requiring critical analysis and creative solutions. Research shows that PBL fosters deeper learning by encouraging exploration, experimentation, and reflection [7].

According to Paul and Elder (2001) critical thinking is the ability to analyze, evaluate, and synthesize information systematically. For this paper, critical thinking is viewed as a fundamental

skill in PBL that enhances students' problem-solving and reasoning abilities. Consequently, critical thinking, an essential component of PBL, enables students to assess information, question assumptions, and develop well-reasoned conclusions. Students engaged in PBL tend to be more independent, collaborative, and motivated learners, demonstrating enhanced cognitive flexibility and problem-solving skills [8].

In summary, creativity, problem-based learning, and critical thinking are interconnected components of an innovative educational approach. Creativity involves generating original ideas, PBL provides a structured framework for applying these ideas in real-world contexts, and critical thinking ensures systematic reasoning and problem-solving. Together, these concepts foster an environment where primary school students can develop essential cognitive and social skills for lifelong learning.

PBL can be categorized into different types based on the level of structure and student autonomy:

Fully Open PBL: Students define problems themselves, research independently, and develop solutions with minimal teacher intervention.

Structured PBL: Teachers present predefined problems, guiding students through research and discussions while maintaining student-driven inquiry.

Collaborative PBL: Emphasizes teamwork, where students work collectively to develop creative solutions.

Critical thinking within PBL can be developed through:

Analytical Thinking: Encouraging students to deconstruct complex problems into smaller, manageable parts.

Logical Reasoning: Teaching students to follow structured thinking patterns to assess information validity.

Reflective Thinking: Engaging students in self-assessment and evaluation of their problem-solving processes [9].

This study employed a mixed-methods approach, incorporating both qualitative and quantitative methodologies. Data collection involved classroom observations, semi-structured teacher interviews, and student performance assessments. The research was conducted in three primary schools, with students aged 7-10 participating in PBL activities designed to stimulate creativity. Materials included:

Open-ended questions to encourage critical thinking by prompting students to explore multiple solutions rather than relying on rote memorization.

Group discussions to foster collaboration, allowing students to articulate ideas, challenge perspectives, and refine creative solutions through peer interaction.

Project-based tasks to stimulate idea generation by engaging students in hands-on, inquiry-based assignments that mirror real-world problems.

Reflection exercises to assess cognitive flexibility, encouraging students to analyze their problem-solving approaches and consider alternative strategies.

Structured observation checklists to evaluate student engagement, tracking participation, enthusiasm, and responsiveness during PBL activities.

Teacher questionnaires to assess instructional effectiveness, collecting feedback on PBL implementation, student progress, and perceived challenges. Students' creative progress was measured using the Torrance Tests of Creative Thinking (TTCT), which assess fluency, originality, and elaboration. Statistical analysis was applied to compare pre- and post-intervention results, and thematic analysis was used for qualitative data interpretation [10].

Findings suggest that PBL positively impacts creativity development by encouraging exploration and experimentation. Students engaged in PBL demonstrated improved cognitive flexibility, originality, and confidence in expressing ideas. Collaborative learning environments facilitated peer interaction, fostering diverse perspectives and innovative solutions. Teachers reported increased student motivation and engagement compared to traditional teaching methods. Moreover, students exhibited enhanced problem-solving skills and a greater willingness to take intellectual risks.

PBL is a powerful strategy for fostering creativity in primary education. Educators should:

Incorporate open-ended tasks to encourage divergent thinking; Foster a collaborative classroom environment; Use reflection exercises to help students assess their own learning.

By shifting from passive learning to active problem-solving, students develop essential skills such as critical thinking, collaboration, and innovation.

The process of developing creativity in primary school students through project-based learning (PBL) is an important tool for developing critical thinking skills, independence, and the ability to solve non-standard problems. Incorporating PBL into the educational process not only promotes knowledge acquisition, but also develops a creative approach to the topics being studied. This allows students to actively interact with the world around them, applying the acquired knowledge in practice, which develops their imagination and self-confidence.

The PBL method helps create a learning environment in which students learn, experiment, and solve real problems. This active form of learning increases children's motivation and helps them see the practical significance of the educational material, which makes the learning process more interesting and meaningful. As a result, children begin to value creativity not only as an abstract ability, but also as an important part of personal development and success in life.

Thus, the PBL methodology is a powerful tool for developing creativity in elementary grades, contributing to the comprehensive development of the child's personality and preparing him for future challenges and tasks.

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