



Developing Critical Thinking in Children through Problem-Situation-Based Games

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Abstract: This article addresses the development of critical thinking in children through games based on problem situations. The study analyzes children's thinking processes, the pedagogical significance of problem situations, and the role of play activity in the educational process. Particular attention is given to the formation, in preschool-age children, of independent thinking, problem-analysis skills, and the ability to draw sound conclusions through problem-based games. Drawing on the theoretical positions of leading scholars in pedagogy and child psychology, the article proposes practical recommendations for applying problem-situation-based games in the educational process. The findings suggest that such games, when systematically organized, provide an effective pedagogical tool for cultivating independent reasoning, analytical skill, and reasoned decision-making in young children.

Keywords: critical thinking, problem situation, play activity, preschool education, child psychology, pedagogical process, independent thinking, problem-based games.



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INTRODUCTION

In the modern education system, forming children's ability to think independently, analyze problems, and make sound decisions in various situations is one of the central pedagogical tasks [1]. This task is of particular importance at the preschool and primary education stages, since it is precisely during this period that a child's thinking activity, perceptual ability, and cognitive processes develop most actively [2]. Critical thinking can be defined as an individual's ability to analyze diverse information, compare it, draw conclusions, and express independent judgments [3].

A variety of methods and techniques are used to develop critical thinking in children, one of the most effective being games based on problem situations [4]. Researchers in pedagogy and psychology have conducted extensive studies on the development of

children's thinking processes; in particular, Lev Vygotsky, Jean Piaget, Jerome Bruner, and Daniil Elkonin examined the development of children's thinking and provided a scientific grounding for the importance of play activity in this process. This article analyzes the pedagogical foundations and effective methods for developing critical thinking in children through problem-situation-based games.

Beyond the foundational accounts offered by these classical theorists, more recent empirical research has continued to confirm the link between play and critical thinking in early childhood. Systematic reviews of preschool classrooms report that activities such as storytelling and games that prompt children to reason about content can function as effective mediators of critical thinking, while children with stronger metacognitive skills tend to perform better at problem-solving tasks [5]. Other recent studies link play-based and game-based learning more broadly to gains in problem-solving, collaboration, and critical thinking across early childhood settings [6]. Taken together, these findings indicate that the pedagogical value of problem-based play identified in classical developmental theory continues to be supported by contemporary empirical evidence, which strengthens the rationale for the present analysis.

Despite this convergence of theoretical and empirical support, problem-situation-based games are still applied unevenly and without a systematic methodological basis in many preschool education settings. This gap between the recognized pedagogical value of such games and their inconsistent practical implementation defines the purpose of the present study: to examine, through a conceptual analysis of classical and contemporary pedagogical and psychological literature, the pedagogical foundations of problem-situation-based games and to identify concrete forms and methods through which such games can be used to develop critical thinking in preschool-age children.

Method

Research design

The study employs a qualitative, theoretical-analytical design based on a conceptual review of the classical and contemporary pedagogical and psychological literature on children's thinking development and play activity. No experimental intervention with children was conducted; rather, the research synthesizes existing theoretical positions in order to clarify the pedagogical foundations and practical forms of problem-situation-based games.

Sources and selection criteria

The source base consists of two main groups of material. The first group comprises classical works on child development and learning theory, including the writings of Lev Vygotsky on the social origins of intellectual development [7], Jean Piaget on the formation of children's thinking through activity and experience [8], Jerome Bruner on discovery-based learning [9], and Daniil Elkonin on play as the leading activity of psychic development in childhood [10]. The second group comprises contemporary peer-reviewed studies on critical thinking, play-based learning, and game-based learning in early childhood education. The second group also includes studies on the cognitive and socio-emotional benefits of innovative play-based learning [11], broader accounts of the role of play-based learning in early childhood development [12], reviews of the importance of play-based learning in early childhood more generally [13], and studies

examining preservice teachers' perceptions of the relationship between play and critical thinking [14]. In addition, the source base draws on national methodological literature on preschool pedagogy [15] and on child psychology [16]. Sources were selected on the basis of direct thematic relevance to problem-based play and the development of critical thinking in preschool-age children.

Procedure of analysis

The analysis was conducted in three stages. In the first stage, the concept of critical thinking and its constituent abilities (analysis, comparison, evaluation, and independent judgment) were clarified on the basis of the classical and contemporary literature. In the second stage, the theoretical contributions of Vygotsky, Piaget, Bruner, and Elkonin were examined in order to establish the conceptual link between play activity and the development of children's thinking. In the third stage, specific forms of problem-situation-based games and methods for organizing them in the preschool educational process were identified and classified.

Results

The concept of critical thinking and its significance

Critical thinking can be defined as a person's ability to analyze information in depth, evaluate it, draw conclusions on the basis of evidence, and form independent judgments. A person with developed critical thinking examines problems from multiple points of view and seeks the most appropriate solution. Piaget held that a child's thinking is formed through activity and becomes progressively more complex as the child accumulates experience. This suggests that, in order to develop critical thinking in children, it is necessary to create an environment that actively encourages them to think.

Vygotsky similarly emphasized that learning and the social environment play an essential role in children's development, arguing that a child's intellectual development arises through social activity and communication. This position underscores the importance of using problem situations when working with children. Problem-situation-based games can accordingly be defined as play activities that prompt children to think, analyze, and search for the solution to a problem. In the course of such games, the child analyzes a given situation, considers different options, and attempts to choose the most appropriate solution.

Bruner emphasized the importance of active learning in the educational process, arguing that a learner acquires knowledge not in ready-made form but through a process of active inquiry. Problem-based games provide precisely this kind of process. During such a game, the child analyzes the situation, identifies its causes, searches for a solution to the problem, and attempts to justify his or her own reasoning. This sequence of actions contributes directly to the development of critical thinking.

The role of play activity in developing critical thinking

The role of play activity in developing critical thinking in children lies in the fact that play is the most natural form of children's activity. In the course of play, a child not only rests but also acquires new knowledge. Elkonin described play as the leading activity in children's psychic development. During play, the child communicates, exchanges ideas, solves problems together with others, and learns to make independent decisions — processes that, in turn, develop critical thinking.

Forms of problem-situation-based games

On the basis of the theoretical foundations outlined above, the following forms of problem-situation-based games can be used to develop critical thinking in children:

“Why?” game – children are presented with various situations, such as “Why does a flower need water?”, and are asked to express their own views and explain the underlying reasons;

“Find the right solution” game – children are presented with a problem situation, such as “What should be done if a toy breaks?”, and are asked to propose different possible solutions;

“What if...?” game – children are presented with a hypothetical situation, such as “What would happen if birds could not fly?”, a form of game that develops children’s imagination and logical reasoning.

Methods of organizing problem-based games

In order to organize problem-based games effectively, the following methods can be used: the question-and-answer method, the creation of problem situations, group discussion, and role-play. These methods encourage children to engage in active thinking.

More broadly, recent empirical work on play-based and game-based learning supports the practical value of these forms, with reviews of preschool classroom practice and syntheses of game-based learning research reporting consistent associations between structured play and gains in problem-solving, collaboration, and critical thinking. These findings reinforce the practical relevance of the four forms of problem-based games identified above as concrete tools for preschool practice.

Discussion

The results indicate that the four classical theorists examined in this study — Vygotsky, Piaget, Bruner, and Elkonin — converge on a shared conclusion despite differing theoretical emphases. Vygotsky’s account of intellectual development as arising through social activity implies that thinking is not formed in isolation but through engagement with others around a problem. Piaget’s view that thinking becomes more complex through accumulated experience points in the same direction, locating the source of cognitive growth in activity rather than instruction. Bruner’s emphasis on discovery learning makes the same point even more directly, treating active inquiry as the very mechanism through which knowledge is acquired. Elkonin’s characterization of play as the leading activity of childhood, finally, supplies the concrete setting — play itself — in which this kind of active, problem-driven engagement most naturally occurs. Read together, these four positions suggest that problem-situation-based games are not merely an entertaining pedagogical technique but a method that is directly grounded in the mechanisms through which children’s thinking is known to develop.

The three forms of problem-based games identified in this study — the “Why?” game, the “Find the right solution” game, and the “What if...?” game — can be understood as targeting complementary aspects of critical thinking. The “Why?” game primarily develops causal reasoning and the ability to justify a judgment, the “Find the right solution” game develops solution-generation and evaluative comparison among alternatives, and the “What if...?” game develops hypothetical and imaginative reasoning, consistent with the

emphasis on learning through active inquiry rather than the receipt of pre-formed conclusions discussed above.

This conceptual analysis is also consistent with the broader empirical literature on play-based and game-based learning in early childhood, which links structured play activities to measurable gains in problem-solving, collaboration, and critical thinking, and which finds that even narrative-driven games can mediate the development of critical thinking when they require children to reason about and discuss the content presented to them. The convergence between the classical theoretical foundations examined here and this more recent empirical evidence strengthens the case for the systematic use of problem-situation-based games in preschool practice, rather than their occasional or incidental application.

At the same time, the present study has certain limitations. As a theoretical-analytical study based on the existing literature, it does not provide direct empirical evidence — such as classroom observations or controlled comparisons — on the comparative effectiveness of the three forms of problem-based games identified here within the specific context of preschool education in Uzbekistan. Future research could usefully complement these theoretical findings with empirical studies, for example through structured observation or pre-test–post-test designs, in order to verify how these forms of play affect specific components of critical thinking in practice and to assess whether their effectiveness varies according to children’s age or prior experience with problem-based play.

Conclusion

Problem-situation-based games constitute one of the effective means of developing critical thinking in children. In the course of such games, children acquire the skills of independent thinking, problem analysis, and sound decision-making. Play activity also develops children’s creativity, logical thinking, and communicative culture. For this reason, the broad application of problem-situation-based games in the preschool educational process is of considerable practical importance, and their systematic integration into pedagogical practice — supported by methods such as question-and-answer techniques, the deliberate creation of problem situations, group discussion, and role-play — should be regarded as a meaningful priority for preschool education organizations.

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