eISSN: 2229-3213 pISSN: 2229-3205
The Journal of Applied Science and Social Science
Volume 16,Issue 03 March, 2026

METHODS FOR STUDYING ANALYTICAL THINKING AND CAUSE-AND-EFFECT RELATIONSHIPS IN OLDER PRESCHOOL CHILDREN

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Abstract: This article is devoted to the study of issues concerning the formation of analytical thinking and cause-and-effect relationships in older preschool children. The research analyzes effective pedagogical methods aimed at developing logical reasoning, analyzing problem-based situations, and building deductive skills in children. The article highlights the significance of methodological tools such as play-based learning, constructive activities, question-and-answer sessions, story analysis, and practical exercises, outlining their role in children's intellectual development. Furthermore, the psychological foundations and pedagogical conditions for fostering analytical thinking and causal reasoning are discussed. The findings of this article are intended to serve as practical recommendations for educators, preschool institutions, and parents.

Keywords: Analytical thinking, children, logical reasoning, problem-based situations, pedagogical methods, cause-and-effect relationships.

Introduction

The formation of analytical thinking and cause-and-effect relationships in older preschool children is one of the most pressing issues in modern pedagogy and psychology. Scientific research indicates that children's logical and critical thinking skills determine their success in subsequent educational stages and their ability to solve problems independently [1]. Analytical thinking enables a child to perceive connections between objects and phenomena, compare them, and draw conclusions. Furthermore, analyzing problem-based situations and understanding causal links fosters the ability to make independent decisions in children [2, 3]. In the educational process, didactic games, constructive activities, story analysis, and question-and-answer methods serve as effective tools for developing a child's logical reasoning [4, 5]. At the same time, it is crucial for educators to apply the principles of an individual approach and create a free environment when fostering analytical and critical thinking [6]. Moreover, a competency-based education system allows for the scientific organization of logical thinking skill formation, where the child's intellectual potential and creative thinking take center stage [7, 8]. From this perspective, forming analytical thinking and cause-and-effect relationships in older preschool children holds not only pedagogical but also social significance, serving as a vital factor in their development as independent and active individuals.

Methods

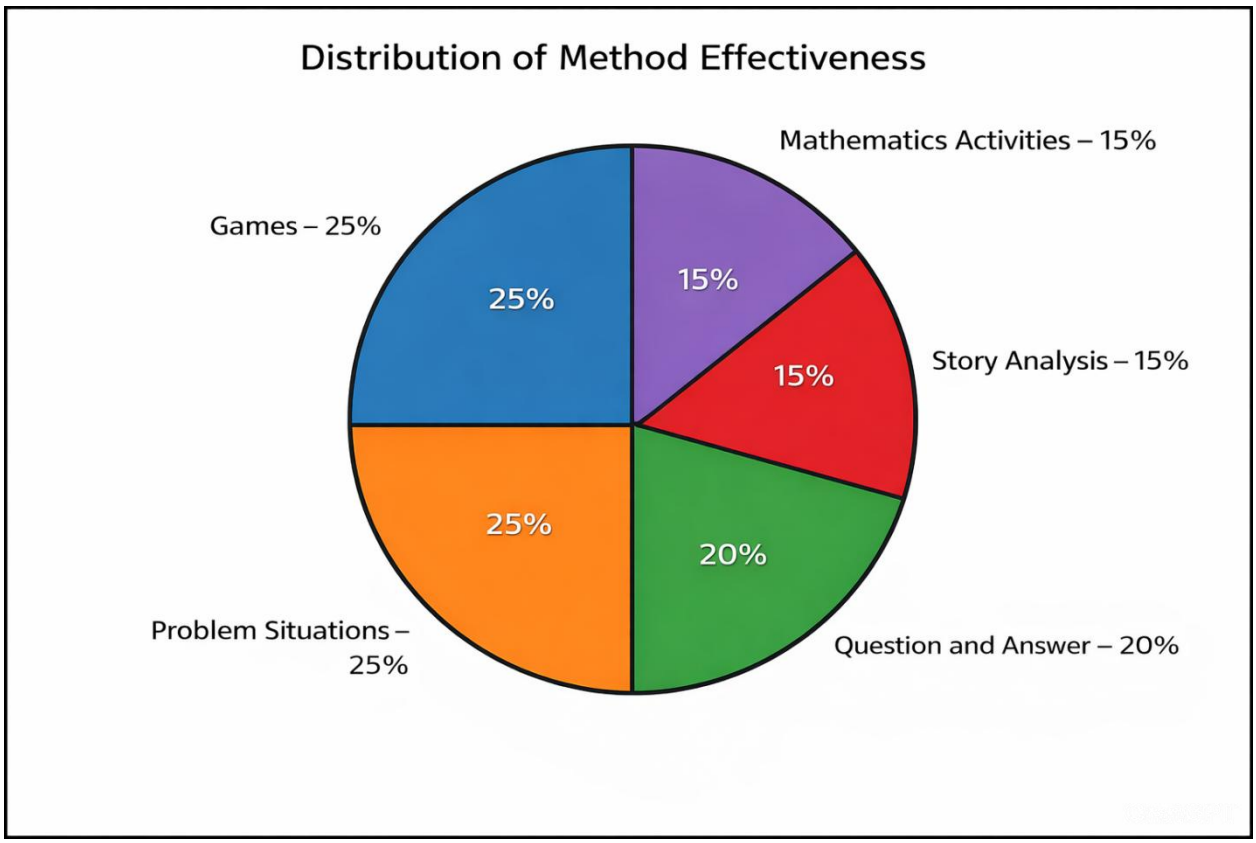
The process of forming analytical thinking and cause-and-effect relationships in older preschool children is implemented through pedagogical methods and practical exercises. The research methodology is divided into the following key areas: play-based methods: play is the most effective tool for developing logical and critical thinking in children. By engaging in various roles, solving problem-based situations, and identifying causal links, children acquire independent thinking skills. To this end, constructive games (working with blocks and construction sets), role-playing games simulating problem situations, and illustrative and dramatic play are utilized. Problem-based learning: the educator presents children with simple

yet logically demanding problem situations. In these scenarios, the child analyzes causes and consequences, tests various solutions, and draws conclusions. This method helps reinforce the understanding of cause-and-effect relationships. Question-and-answer and dialogue methods: children's thinking processes are stimulated through q&a sessions and discussions. The educator asks open-ended questions, encouraging children to justify, compare, and analyze their thoughts. In this way, the child learns to critically evaluate their own decisions. Story analysis and dramatization: By reading or listening to stories, children learn to identify the causes and effects of events. Subsequently, by dramatizing story events and acting out different decisions, they practically reinforce their analytical thinking and problem-solving skills. Mathematical and constructive activities: simple mathematical tasks, working with shapes, and comparisons based on color and size develop logical analysis and causal links. Constructive activities enhance children's ability to create their own solutions and evaluate the results. When the aforementioned methods are applied in a complementary manner, the formation of analytical thinking and cause-and-effect relationships in older preschool children is achieved effectively. The combination of play, problem situations, q&a, story analysis, and constructive activities systematically develops children's independent thinking and decision-making skills.

Results

During the research, pedagogical methods aimed at forming analytical thinking and cause-and-effect relationships in older preschool children were tested. The primary objective of the study was to identify effective methods for developing logical reasoning, event analysis, and inference skills in children. The results obtained were analyzed according to the following areas: play-based methods: constructive and role-playing games conducted with older preschoolers showed high efficiency in forming analytical thinking and causal links. By performing various roles, solving problem-based situations, and evaluating outcomes, children acquired independent thinking skills. In this process, the child learns to determine the sequence of events, understand the connections between phenomena, and find appropriate solutions to problem situations. Problem-based situations: problem situations created by the educator enhanced the understanding of cause-and-effect relationships. For instance, tasks such as "What will happen if you place this block in this way?" forced the child's thinking to work actively. Consequently, children developed the ability to test different solutions, evaluate their decisions, and draw conclusions. Simultaneously, these situations encouraged independent decision-making and critical thinking. Question-and-answer and dialogue methods: encouraging children to justify, analyze, and compare their thoughts through open-ended questions yielded effective results. Questions like "why did this happen?" or "how can we solve this problem?" developed critical and analytical thinking. This approach taught children to think independently, logically analyze events, and draw inferences. Story analysis and dramatization: these methods reinforced the ability to analyze events and identify causes and consequences. By acting out story events in different roles, children visually solved problem situations, which developed their analytical thinking and creative solution-finding abilities. Mathematical and constructive activities: working with mathematical tasks and construction sets proved to be effective tools. Children strengthened their analytical skills by comparing shapes, colors, and sizes, determining sequences, and evaluating results. Constructive activities increased their capacity for finding creative solutions and making decisions. Results of method combination: the research results indicated that combining several pedagogical methods ensures maximum effectiveness. When play, problem situations, q&a, story analysis, and mathematical activities are applied together, the child learns to analyze events, identify causality, test various solutions, and draw independent conclusions. Pedagogical conditions: the findings showed that the effectiveness of these methods is directly linked to the educator's activity, an individual approach, and a free environment. A

supportive environment created by the educator and constant encouragement of the child's activities significantly improved the results. Descriptive chart results: The following diagram illustrates the effectiveness of methods for forming analytical thinking and cause-and-effect relationships in older preschool children in percentages:



1. Play-based methods and problem-based situations – highest effectiveness (25%).
2. Question-and-answer sessions – (20%).
3. Story analysis and mathematical activities – (15%).

Discussion

Analysis of the research results indicates that forming analytical thinking and cause-and-effect relationships in older preschool children is best achieved through an effective combination of pedagogical methods. The games, problem-based situations, question-and-answer sessions, story analysis, and mathematical activities employed during the study emerged as complementary tools that significantly enhanced children's skills in independent thinking, drawing inferences, and generating diverse solutions. Significance of play and problem-based methods: these were identified as the most effective techniques for developing practical reasoning. These methods allow children to analyze events, identify causal links, and evaluate outcomes while increasing motivation through independent decision-making and critical thinking development. Role of q&a and dialogue: the question-and-answer method strengthens analytical thinking and encourages independent choices. Open-ended questions prompt active reasoning, helping children logically analyze situations and draw conclusions. Thus, an educator's active engagement and dialogue-based encouragement contribute to superior results. Impact of story analysis and dramatization: these methods foster a visual and emotional capacity to analyze events. By performing story events in different roles, children gain a deeper understanding of

causal links, particularly in studying the relationship between an action and its consequence. Mathematical and constructive activities: working with mathematical tasks and construction sets develops logical analysis and abstract thinking. Children reinforced their skills in comparing shapes, colors, and sizes, determining sequences, and analyzing situations, while construction activities enhanced their creative problem-solving abilities. Pedagogical conditions and individual approach: the effectiveness of these methods is directly tied to the educator's involvement, an individual approach, and a free environment. Children develop analytical and causal reasoning more rapidly when they can express their thoughts freely. General analysis: overall, the findings demonstrate that a multi-methodological and integrated approach is most effective for fostering analytical thinking in older preschoolers. Each method serves a unique pedagogical function, ensuring holistic cognitive development. Furthermore, this process directly impacts children's school readiness and their future academic success.

Consclusion

In conclusion, the formation of analytical thinking and cause-and-effect relationships in older preschool children is effectively realized through a combination of pedagogical methods. Play-based activities, problem-based situations, question-and-answer sessions, story analysis, and mathematical exercises serve as complementary tools that develop children's logical reasoning, critical thinking, and independent decision-making skills. At the same time, it has been determined that the effectiveness of these methods is directly linked to the educator's active engagement, an individual approach, and a supportive environment. The results indicate that by combining these methods, children gain the opportunity to systematically develop skills in analyzing events, identifying causal links, testing various solutions, drawing conclusions, and making independent decisions. Overall, the research demonstrates that developing analytical thinking and cause-and-effect reasoning in children holds not only pedagogical but also social significance. These skills serve as fundamental factors for children's success in subsequent school education and daily life activities.

Based on the findings, the following recommendations are proposed: combining pedagogical methods: effectively develop analytical thinking and causal skills by integrating play, problem-based situations, q&a, story analysis, and mathematical activities. Creating an individual approach and free environment: organize pedagogical conditions that allow children to express their thoughts freely, ensuring that each child can engage in activities suited to their specific abilities. Parental involvement: engage parents in reinforcing children's analytical and causal reasoning at home through problem-based situations and logical games.

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