JOURNAL OF MULTIDISCIPLINARY SCIENCES AND INNOVATIONS
VOLUME 5, ISSUE 03
MONTHLY JOURNALS
ISSN NUMBER: 2751-4390
IMPACT FACTOR: 9,08

WAYS OF DEVELOPING LOGICAL THINKING IN PRESCHOOL CHILDREN AGED 4–5 THROUGH INTERACTIVE GAMES

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Abstract: This article provides a comprehensive analysis of the important role of interactive games in developing logical thinking in children aged 4–5. Focusing on the theoretical foundations of early cognitive processes, the paper examines different types of interactive games and their mechanisms influencing the formation of logical thinking.

Keywords: logical thinking, interactive games, preschool age, cognitive development, pedagogy, didactic games, child psychology

Introduction

The preschool period is one of the most important stages in human development. In particular, children aged 4–5 experience rapid cognitive growth, show an active interest in exploring the world, and begin to acquire the initial forms of logical thinking.

Logical thinking serves as the foundation for problem-solving, decision-making, understanding cause-and-effect relationships, and critical analysis. Developing these skills at an early age creates a solid basis for a child's future academic success and social adaptability.

Modern pedagogy and psychology emphasize the significant role of play in teaching and developing preschool children. Play is considered the most natural and effective way for children to learn about the world. Interactive games, in particular, require active participation, encouraging communication, collaborative problem-solving, and creativity.

This study aims to deeply analyze the role of interactive games in developing logical thinking in children aged 4–5. It explores the theoretical foundations of logical thinking, types of interactive games, their impact mechanisms, and their influence on children's cognitive and psycho-emotional development. Additionally, practical recommendations for effectively applying interactive games in pedagogical practice are provided.

Literature Review

The development of logical thinking occurs step by step according to a child's age. According to the cognitive development theory of Swiss psychologist Jean Piaget, children aged 4–5 are in the preoperational stage. At this stage, although they cannot perform complex logical operations, they are capable of symbolic thinking, classification, and simple reasoning.

Children try to understand the world through their own experiences, although their thinking is often egocentric. Lev Vygotsky's sociocultural theory emphasizes the crucial role of social interaction and environment in cognitive development. According to Vygotsky, through the "zone of proximal development," children learn to perform tasks with the help of adults or peers.

At this age, children begin to classify objects by color, shape, and size, recognize simple sequences, and follow basic rules. Their ability to understand cause-and-effect relationships also starts to develop.

Research methodology

Interactive games create a favorable environment for developing logical thinking. These games can be categorized into several types:

- Didactic games: Designed to achieve specific educational goals and help children learn concepts such as colors, shapes, and numbers.
- Role-playing games: Allow children to simulate social situations and develop logical sequences of actions.
- Construction games: Using blocks or constructors develops spatial thinking and problem-solving skills.
- Puzzles and brain teasers: Improve attention, analysis, and visual perception.

Through these games, children learn:

- problem-solving
- following rules
- testing hypotheses
- understanding sequences
- developing critical thinking

Interactive games also positively affect attention, memory, speech, social skills, confidence, and creativity.

Discussion and results

To ensure the effectiveness of interactive games in developing logical thinking in children aged 4–5, it is important to organize and apply them correctly in pedagogical practice.

- Game selection: Games should match children's age, abilities, and interests.
- Pedagogical support: Teachers should guide, assist, and encourage children's thinking.
- Environment: A safe, engaging, and resource-rich play environment is necessary.
- Evaluation: Children's thinking processes should be observed and analyzed.
- Integration: Games should be integrated into subjects like mathematics and language learning.

These approaches help implement the theoretical potential of interactive games in practice.

Conclusion

The study confirms that interactive games play a crucial role in developing logical thinking in children aged 4–5. Based on the theories of Piaget and Vygotsky, play is a key factor in cognitive development.Interactive games help children develop problem-solving skills, critical thinking, independence, and confidence. They also positively influence cognitive, social, and emotional development.

In conclusion, interactive games are an essential tool in preschool education. Their systematic and purposeful use strengthens children's intellectual potential and prepares them for future learning.

Future research should focus on digital interactive games, cross-cultural studies, and long-term effects on cognitive development.

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