

## NEUROPEDAGOGICAL OPPORTUNITIES FOR DEVELOPING COGNITIVE ABILITIES IN PRESCHOOL CHILDREN OF SENIOR AGE

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<https://doi.org/10.5281/zenodo.15693606>

**Abstract.** *This article analyzes the role and significance of the neuro-pedagogical approach in the modern preschool education system. The study highlights the positive impact of neuro-pedagogy on children's psychophysiological and cognitive development. Special emphasis is placed on the development of attention, memory, problem-solving skills, and emotional stability. The article argues that integrating neuro-pedagogical strategies into preschool education enhances the effectiveness of the learning process.*

**Key words:** *Cognitive, preschool, neuropedagogy, memory, development, cerebral hemispheres, children.*

### INTRODUCTION

The scientific and technological advancement of modern society demands individuals who can adapt to a changing environment, think creatively and quickly, and possess innovative thinking skills. This necessitates the introduction of methodological and scientific approaches that foster the holistic development of children's personalities at the initial stage of education, particularly in the preschool education system.

Neuroeducation is increasingly being integrated into the educational process as a scientific field that studies the connection between brain activity and learning in children.

This situation requires the modernization of the preschool education system in conjunction with informatization, the introduction of digital technologies, and globalization processes. In this regard, it becomes necessary to develop educational programs aimed at the comprehensive development of children, enabling them to fully realize their intellectual, creative, and cognitive potential.

In particular, the use of the capabilities of neuroeducation is of significant scientific and practical importance. Neuroeducation is a scientific field formed on the basis of the integration of neuropsychology, neurophysiology, pedagogy, and other disciplines. It enables the early identification of children's abilities, the analysis of individual difficulties in intellectual development, and correction in accordance with the functioning of the brain's hemispheres.

### LITERATURE REVIEW AND METHODOLOGY

The main objective of neuroeducation is to consciously apply scientifically grounded knowledge in practice to make the educational process more effective and advanced.

Research by scholars such as L.S. Basser, J.E. Bogen, B. Given, E. Jensen, E. Lenneberg, B.T. Woods, P. Wolf, and A. Smith has examined how the development of children's speech and thinking in the educational process is influenced by brain asymmetry and damage to the left or right hemispheres.

Currently, systematic scientific research in the field of cognitive neuroscience by M. Gazzaniga, E. Kandel, and R. Munakata deserves special attention.

According to these scholars, human thinking is subjective, and emotions can sometimes lead to better decisions than logically derived conclusions.

Based on the literature review, neuroeducation is the study of how cognitive functions—such as memory, attention, and language skills—are influenced during learning. Neuroeducation aims to improve educational practices by understanding how the brain works.

Applying neuroeducational strategies in the preschool education process helps optimize the development of children's cognitive abilities, increase their learning capacity, and support their overall development. These methods engage various parts of the brain and enhance the effectiveness of the educational process.

In preschool education, neuroeducational factors play a critical role in developing cognitive abilities. By studying the brain and its functioning, neuroeducation helps optimize the learning process. These factors support the development of cognitive abilities and enhance the effectiveness of education in several ways.

Neuroeducational factors in preschool education focus on considering children's brain activity, neurophysiological state, and other related aspects during the teaching and developmental processes.

## RESULTS

According to the research results, preschool education organized based on a neuroeducational approach yielded the following positive outcomes:

Neuroeducational factor	Impact on child development
Brain Development	Creates an educational process tailored to each child's individual neurological development.
Attention and Memory	Helps quickly and accurately process information and form strong memory retention.
Emotional-Motor Development	Improves motor coordination through physical activities and games.
Individual Approach	Applies educational strategies adapted to each child's unique needs and learning styles.
Learning Strategies	Increases learning efficiency through activities aligned with brain functioning.
Environment	Creates an emotionally safe and secure atmosphere, which accelerates developmental progress.

It was also found that individual differences among children (such as memory capacity, attention span, and information processing speed) are related to their dominant brain hemispheres. Stimulating the left hemisphere in the learning process enhanced analytical thinking, while engaging the right hemisphere contributed to the development of creative thinking.

## DISCUSSION

The results of the study showed that the wide application of the neuroeducational approach in the preschool education system significantly enhances children's cognitive potential.

This approach:

- **Deepens cognitive activity:** Children improve their abilities in processing information, solving problems, and acquiring new knowledge.
- **Supports individual development:** Educational strategies are selected according to each child's neuropsychological characteristics.

- **Improves educational effectiveness:** Advanced neuroeducational strategies (e.g., visual stimuli, multisensory learning, movement-based games) facilitate deeper knowledge acquisition.

Neuroeducation contributes to the modernization of the preschool education system based on the latest scientific achievements about the human brain. In turn, this helps lay the foundation for developing individuals with digital and innovative thinking in society.

### CONCLUSION

In conclusion, the successful application of pedagogical and neuroeducational opportunities to develop cognitive abilities in preschool-aged children plays a crucial role in improving the learning and developmental process. Proper use of these opportunities in the educational process serves to create a quality and effective learning environment for children.

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