Educator Insights: A Journal of Teaching Theory and Practice
Volume 01, Issue 03, March, 2025
brightmindpublishing.com
ISSN (E): 3061-6964

FEATURES OF THINKING IN CHILDREN WITH HEARING IMPAIRMENT

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Abstract:
This article examines the features of thinking in children with hearing impairments, which are shaped by the compensatory use of visual, tactile, and practical perception channels. Particular attention is paid to methods of inclusive education, including visualization, practical tasks, and interactive technologies. It has been proven that adapting pedagogical strategies to the specifics of visually-based thinking in such children contributes to the development of their intellectual potential. The article emphasizes the need to integrate an individualized approach and digital tools to enhance spatial perception.

Keywords: Hearing impairment, children's thinking, visual perception, inclusive education, cognitive development, corrective methods, visually-based thinking, sign language, sensory compensation.

Introduction

Modern society is increasingly focusing on inclusive education and support for individuals with special needs. One such group includes people with hearing impairments. Their cognitive processes have specific features, understanding of which is crucial for developing effective pedagogical strategies. This article analyzes the thinking of such children, the role of sensory perception in its development, as well as methods of diagnosis and correction.

Thinking is one of the most important functions of human consciousness, playing a key role in understanding and interacting with the world. It allows individuals to comprehend reality, analyze information, identify patterns, and acquire new knowledge. Thinking is not merely the process of perceiving information but also its processing, generalization, and the formation of new conclusions, making it a critical factor in intellectual development.

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As the highest form of cognitive activity, thinking helps individuals link various aspects of consciousness, form generalized representations, and analyze reality. During the thought process, a person identifies cause-and-effect relationships between phenomena, draws conclusions, and makes decisions. Therefore, thinking plays a decisive role in all areas of human activity, including science, education, professional work, and social life.

Thinking is closely related to cognitive processes: it analyzes and generalizes information received through the senses. In the initial stages of cognition, a person forms representations of the surrounding world through vision, hearing, smell, taste, and tactile sensations. However, thinking enables deeper understanding and analysis of these representations. It connects perceived information, builds logical relationships, and contributes to the generalization of knowledge.

Moreover, thinking allows a person not only to process already known information but also to create new knowledge. While the senses perceive the surrounding world directly, thinking analyzes the received information and forms logical conclusions. This process depends on personal experience and knowledge level, which directly influences cognitive development. Thus, thinking is formed, developed, and enriched throughout a person's life.

The study of thinking in children with hearing impairments has a long history and covers interdisciplinary aspects, including psychology, pedagogy, neurobiology, and defectology. The systematic study of this issue can be traced back to the mid-20th century when the development of an inclusive approach in education required the creation of specialized methodologies for children with sensory limitations.

In the 1960s, the works of L.S. Vygotsky laid the foundation for understanding compensatory mechanisms in the development of children with hearing impairments. His concept of the "zone of proximal development" emphasized the role of social interaction and visually based practical methods in learning. During the same period, A.R. Luria's research identified a connection between auditory deprivation and the enhanced development of spatial thinking, which became the starting point for developing visual pedagogical tools.

In the 1980s and 1990s, significant contributions were made by foreign researchers. For example, H. Furth's work Thinking Without Language demonstrated that the absence of hearing does not limit cognitive abilities but

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alters the structure of thought processes. M. Marschark's studies confirmed that children with hearing impairments effectively use visual and tactile channels to solve logical problems; however, their abstract thinking requires additional support.

For individuals with hearing impairments, thinking is primarily formed through visual and kinesthetic perception channels. This is due to the limitation of auditory perception, which is compensated by the following mechanisms:

- visual imagery (gestures, drawings, diagrams);
- tactile sensations (exploring objects through touch);
- practical experience (acquiring concepts through interaction with objects).

For example, children with hearing impairments learn new concepts not through verbal explanations but through visualization and hands-on interaction with objects. This contributes to the development of visually based thinking.

These mechanisms not only compensate for the lack of hearing but also influence the structure of thinking. For instance, people with hearing impairments more frequently use graphic materials and physical manipulations to solve problems, which fosters the development of spatial and logical thinking. Specialized educational programs are developed for children with hearing impairments, including:

a) visual tools: infographics, pictograms, video materials;
b) practical activities: role-playing games, experiments, construction sets;
c) interactive methods: the use of sign language and interactive whiteboards.

Motivation and an individualized approach play a key role in education. For example, tasks related to real-life situations (such as planning a route) help develop independent thinking.There are two main types of thinking:

•practical thinking develops through solving everyday problems (e.g., communication using sign language).

•theoretical thinking requires mastering abstract concepts. this process can be facilitated using visual analogies (e.g., explaining mathematical formulas through graphs).

To maintain a balance between these types of thinking, theoretical knowledge should be connected to practice. For example, physics laws are best learned through laboratory experiments.Specialized methods are used to assess cognitive abilities, such as:

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– "Odd One Out" test – to identify classification skills;
– Segmented images – to analyze the ability to synthesize information;
– Wechsler's method – to evaluate overall intellectual development and logical thinking.

These methods help determine thinking speed, the ability to identify logical connections, and the general level of intellectual development.In specialized educational institutions, thinking correction programs are based on an individualized approach, specialized techniques, and various training exercises. Teachers and psychologists regularly monitor children's cognitive development and select optimal teaching methods according to their needs.

Correctional work in specialized schools includes an individualized approach, which considers the learning pace and personal characteristics of each student, the integration of theory and practice, and the use of technology. Special attention is given to balancing practical thinking (solving everyday problems) and theoretical thinking (understanding abstract concepts through visual analogies).Additionally, it is recommended to:

– Develop educational materials with a strong focus on visual aids;
– Implement interactive learning formats (quests, project-based learning);
– Regularly assess cognitive skills to adjust programs accordingly;
– Create an environment that encourages independence and creativity.

Thinking is one of the key cognitive processes that forms and develops based on an individual's unique characteristics. In people with hearing impairments, thinking follows a specific path, relying on visual and practical experiences. Therefore, their successful education requires specialized pedagogical approaches aimed at enhancing their cognitive abilities.

The thinking of children with hearing impairments has unique characteristics that necessitate adaptations in the educational process. Their cognitive development can be effectively supported through a combination of visual, tactile, and practical methods. An inclusive approach, tailored to individual needs and utilizing modern technologies, not only compensates for limitations but also unlocks the potential of these children. Future research may focus on developing digital tools that enhance visual-spatial perception.

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