

**FORMATION OF COMMUNICATION SKILLS IN CHILDREN WITH MOTOR  
ALALIA BASED ON NEW TECHNOLOGIES****Azhimova Z.G.**

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**Abstract**

The article discusses modern technologies that contribute to the development of communication in children with motor alalia. The categories of digital and alternative means of communication (AAC), the possibilities of programs based on artificial intelligence, and the application of augmented and virtual reality in speech therapy practice are described. Conditions for the effective implementation of innovative tools in the educational process are presented, and research results on their application are analyzed.

**Keywords:** severe speech disorders, motor alalia, communication, AAC, AR, VR, speech therapy, technologies

**Introduction:** Modern educational and correctional practices necessitate a reevaluation of approaches to developing communication skills in children with severe speech disorders. Taking into account the rapid advancement of digital technologies, it becomes evident that innovative tools can significantly enhance the effectiveness of speech therapy and facilitate the full social integration of children with speech developmental delays. This topic is particularly relevant in the context of inclusive education, as the task here is to create an opportunity for each child to fully interact with their environment.

The purpose of this article is to analyze the modern technologies used to form communication in children with motor alalia, to determine their potential and conditions for successful implementation in educational and corrective-developmental practice.

Motor alalia in children is a severe speech disorder that affects not only speech development but also cognitive, emotional-volitional, and social development. One of the main challenges is the limitation of communicative abilities, which leads to impaired social adaptation and the formation of secondary developmental issues.

In modern speech therapy and special pedagogy, digital technologies have become an integral part of the corrective-developmental process. Digital speech therapy applications are special software products designed to correct various components of the speech system in children, in particular, sound pronunciation, grammatical structure, vocabulary, auditory and visual memory, attention, and articulatory movements.

Examples of such applications:

- "LogoMir" is an interactive software package designed to automate sounds, develop phonemic perception, train auditory and visual memory, and the grammatical structure of speech. It is distinguished by the multi-stage structure of tasks and the ability to adapt to the child's speech development level.
- "Speech Trainer" - a program that includes a series of articulation and breathing exercises, as well as game-based tasks for developing coherent speech and understanding of grammatical structures. This program is widely used in speech therapy practice, both for individual and group sessions.
- "Children Speak" - a multimedia application for early speech development that features visual instructions, voice guidance, emotionally engaging characters, and game elements. This significantly increases children's interest in participating in the activities.

The advantages of digital applications include:

- high level of visual clarity and interactivity,
- the ability to repeat exercises multiple times,
- adaptation of difficulty levels to each child's individual characteristics,
- automatic recording of results and progress,
- integration of audio and video materials for comprehensive speech development.

1. AAC technologies (Augmentative and Alternative Communication). Augmentative and Alternative Communication (AAC) is a set of tools, methods, and strategies designed to support and replace verbal speech in individuals with impaired communicative function. In speech therapy, these technologies play a crucial role in working with children with motor alalia, who have completely or partially lost their ability to speak due to severe speech, cognitive, or multiple disabilities.

Modern AAC tools include:

- Low-tech tools: communication boards, booklets with pictograms, PECS (Picture Exchange Communication System) cards, sign language, and other forms of visual communication support.
- High-tech tools: tablets and communication devices with speech synthesizers, software for creating personalized communication interfaces (for example, Grid 3, GoTalk NOW, CoughDrop), devices capable of integration with switches and eye-tracking systems.

These technologies enable children to engage in social interactions, express their needs, feelings, and intentions, which is crucial for developing emotional intelligence and social adaptation. The use of AAC increases a child's level of independence, improves their quality of life, and contributes to the formation of a positive self-image. According to research, the timely implementation of AAC tools stimulates speech attempts and does not hinder, but rather supports the development of natural speech while preserving speech potential.

Special attention is given to the principle of individualization: when selecting AAC tools, it is essential to take into account the child's age, level of cognitive development, motor abilities, and communication needs. The effectiveness of using AAC increases significantly when these tools are integrated into the child's educational and everyday environment, and when there is active involvement of the family.

2. AR and VR technologies. Augmented reality (AR - Augmented Reality) and virtual reality (VR - Virtual Reality) are innovative technologies that are increasingly being used in corrective and developmental activities with children with severe speech disorders. These technologies create an immersive, controlled, and secure environment that allows for modeling various speech situations and managing them in real-time.

Augmented reality (AR) allows the placement of digital objects (images, texts, sounds) within real objects and spaces, enabling children to interact with both real and virtual content. AR technologies are actively used in speech therapy programs and educational games, stimulating speech activity through interaction with animated characters, objects, or texts. These forms are particularly beneficial for developing lexical and grammatical structures, improving dialogic speech, and enhancing comprehension of instructions.

Virtual reality (VR) creates a completely artificial three-dimensional environment. A child can enter such an environment and play in socially significant situations: go to the store, get acquainted, ask for help, etc. Thanks to this, it becomes possible to form and consolidate speech skills in conditions close to real life, but not causing stress. This is especially important for children with autism spectrum disorders (ASD) and alalia.

The application of AR/VR technologies in speech therapy provides the following opportunities:

- Increasing interest in verbal communication;
- Maintaining attention and interest throughout the lesson;

- Creating the possibility of repeatedly repeating speech situations without tiring;
- Engaging children with varying levels of sensory and cognitive activity in work.

Modern research shows that such technologies are particularly effective when used in conjunction with traditional methods of speech therapy correction and pedagogical support.

3. Artificial Intelligence and Speech Recognition. The advancement of artificial intelligence (AI) and automatic speech recognition technologies opens up new possibilities in diagnosing, correcting, and monitoring speech disorders in preschool children. AI systems are capable of analyzing spoken language, recognizing individual sounds, words, and sentences, identifying articulation errors, and adapting learning tasks to the child's speech development level in real-time. The main areas of artificial intelligence application in speech therapy include:

- Automated diagnosis of speech disorders: utilizing machine learning algorithms to detect deviations in pronunciation, speech rate, intonation, and grammar. For example, systems that analyze speech audio recordings and compare them with reference samples.
- Flexible educational platforms: Artificial intelligence enables the creation of tasks tailored to a child's speech skill level, adjusting the difficulty based on their successful completion. This enhances the effectiveness of practice sessions and reduces fatigue.
- Dynamic monitoring: artificial intelligence systems are capable of maintaining statistics of successful task completion, saving audio recordings of speech at different stages of correctional work, providing the speech therapist with objective information about the child's development.
- Interactive speech assistants: virtual characters controlled by artificial intelligence communicate with the child, ask questions, and suggest games by imitating verbal interaction. Such technologies are especially effective when working with closed children and children with autism spectrum disorders.

Artificial intelligence and speech recognition technologies have high potential for inclusion in the speech therapy process as auxiliary tools for diagnostics, correction, and monitoring. Their application contributes to the individualization of speech therapy, increases the accuracy of speech task setting, and expands the communicative capabilities of children with motor impairments.

The study was conducted at Specialized Preschool Educational Institution No. 24 of Chimbay district and included 12 children diagnosed with motor alalia. Experimental data show that children engaged in the application of modern technologies acquire communication skills faster. Using AAC-communicators helps reduce anxiety and increase confidence in children with motor alalia. Interactive environments stimulate initiative and a stable interest in communication. However, the effectiveness directly depends on the level of specialist training and family support.

Conditions for successful technology implementation.

- Training of specialists. Targeted work is needed to train teachers and speech therapists in digital literacy and master correctional platforms.
- Material and technical support. Institutions must have access to modern equipment and licensed software.
- Family coverage. Parents should be active participants in the process, receive guidance and support from specialists.
- Individual approach. All technologies should be applied taking into account the child's psychophysiological characteristics.

Conclusion:

The use of modern technologies allows for a significant expansion of the arsenal of speech therapy assistance for children with motor alalia. They contribute to the intensification of the correctional process, making lessons more visual, interactive, and stimulating. However, their effectiveness



depends on a whole range of factors, such as professional training, the institution's technical capabilities, and the individual approach to each child.

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