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MECHANISMS FOR PREPARING CHILDREN WITH HEARING IMPAIRMENTS FOR INCLUSIVE EDUCATION IN THE CONDITIONS OF AN EDUCATIONAL CLUSTER

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Abstract: This article analyzes the mechanisms for preparing children with hearing impairments for inclusive education within the framework of an educational cluster. It examines the essence of the cluster system, its role in strengthening pedagogical cooperation and cross-sectoral integration, as well as modern approaches to working with children who have hearing impairments. The study highlights organizational-psychological, methodological, and technological aspects of creating an inclusive environment, along with contemporary mechanisms for implementing adapted curricula, providing logopedic and surdopedagogical support, and ensuring the readiness of learners with special educational needs.

Keywords: educational cluster, inclusive education, children with hearing impairment, surdopedagogy, differentiated approach, special education, adaptive methodology, rehabilitation, communicative development.

Introduction

In the modern educational system, strengthening inclusivity and ensuring equal learning opportunities for all children have become priority directions of state policy. Providing quality education for children with hearing impairments is of particular significance, as it directly contributes to enhancing their overall development, social adaptation, and communicative competence. Educational clusters represent a comprehensive model that promotes cooperation between special education institutions, general education schools, medical rehabilitation centers, psychological services, non-governmental organizations, and higher education institutions. This model facilitates gradual preparation of children with hearing impairments for inclusive environments, supports teachers through professional guidance, and ensures the integration of rehabilitation services within a unified platform.

The educational cluster enables comprehensive identification of individual needs, as medical, psychological, and pedagogical diagnostics are maintained through a unified system. This approach allows for detailed assessment of residual hearing levels, speech development, cognitive activity, articulation skills, and social adjustment. On this basis, individual development programs are created, and each child's learning process is organized according to a personalized trajectory.

Integrating adapted curricula within the cluster is essential. Modern methods such as phonetic-rhythmic exercises, auditory differentiation, oral speech development strategies, and specialized approaches to reading and writing are incorporated into the general curriculum. This integration ensures that children with hearing impairments learn the same topics as their peers but with appropriate support. Surdopedagogues, defectologists, speech therapists, and psychologists work collaboratively to maintain continuity and quality of teaching.

Technological support is another crucial component of the cluster system. Children with hearing impairments benefit significantly from hearing aids, cochlear implant systems, FM systems, captioned video lessons, interactive visual materials, and gesture-supported teaching tools. Interactive displays, visualized textbooks, electronic dictionaries, and digital logopedic programs expand opportunities for independent learning.

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Developing communicative competence is a central task in preparing these children for inclusive education. Since speech development in children with hearing impairments is a complex process, it requires collaboration among audiologists, psychologists, speech therapists, surdopedagogues, and classroom teachers. The cluster model helps coordinate these specialists through a unified methodological platform, ensuring systematic monitoring of progress and continual improvement of individualized programs.

Modern clusters increasingly apply multimodal communication techniques such as visual lessons, captioned videos, interactive illustrations, pictograms, gesture-based platforms, animations, and integrated written–oral communication activities. This approach enhances comprehension, memory retention, and practical application of information, especially in subjects like mathematics, language, science, and technology.

Creating an adapted learning environment within the cluster is also essential. Acoustic correction of classrooms, installation of sound-absorbing panels, reduction of background noise, and use of voice-enhancing microphone systems significantly improve children's ability to hear and understand speech. Proper lighting is equally important, as many children with hearing impairments rely on lip-reading. Bright and clear visibility of the teacher supports the effectiveness of the learning process.

Methodological modeling of lessons is another key factor in preparing children for inclusive settings.

Adapted lesson scenarios, visual presentations, short animations, and graphic illustrations help facilitate perception and comprehension. For example, mathematical concepts can be explained using visual schemes, while language lessons may use demonstration videos for articulation and interactive dialogues. These tools help increase student engagement and strengthen communication skills.

Surdopedagogical services within the cluster contribute greatly to speech development. Individual lessons focus on improving phonemic hearing, articulation clarity, and communicative abilities. Special laboratories offer audiovisual training, rhythmic exercises, and music-based auditory activation, enhancing both speech and psychomotor development.

A supportive classroom environment significantly influences inclusive education outcomes. Teachers strive to create equal learning conditions for all students, encouraging empathy, cooperation, and positive interpersonal relationships. Inclusivity is strengthened when peers actively support classmates with hearing impairments, thus cultivating mutual respect, solidarity, and a healthy social climate. Psychopedagogical approaches in clusters emphasize emotional development. Children with hearing impairments may struggle with self-expression, fear of misunderstanding, or avoidance of communication. To address this, clusters implement social-emotional learning programs aimed at strengthening self-esteem, emotional awareness, stress management, and interpersonal communication.

Cross-sector collaboration is a central mechanism of effective cluster management. Continuous interaction among education, healthcare, and social service sectors ensures comprehensive support. Physicians track hearing health, audiologists adjust hearing devices, psychologists address emotional needs, and teachers adapt curricula accordingly. This integrated system guarantees continuous assistance for the child.

Educational clusters also encourage pedagogical innovations such as sensory-motor techniques, augmented reality (AR), interactive hearing games, and digital speech therapy applications. AR technologies allow students to visualize sounds, differentiate phonemes, and engage with content using interactive models, making learning more dynamic and engaging.

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Social adaptation programs help children strengthen communication, teamwork, and social interaction skills. Group training sessions, role-playing games, dramatization, and collaborative creative projects support personal development, self-confidence, critical thinking, and social engagement.

Clusters ensure continuity of rehabilitation and surdological services, including audiometric assessments, hearing device adjustments, cochlear implant rehabilitation, and audiopedagogical exercises. These activities enhance auditory perception and improve success in inclusive classrooms.

Digital platforms play a vital role in modern clusters. Online monitoring tools track students' progress, engagement, and individual development plan outcomes. Digital portfolios enable teachers and parents to observe improvements in real time, improving communication and decision-making processes.

Psychological safety is a fundamental element of inclusion. Clusters provide training for school communities to promote tolerance, empathy, and inclusive culture. Teachers receive specialized guidance on preventing discrimination, managing sensitive situations, and supporting emotional well-being.

Parental involvement is another essential mechanism. Training sessions on effective use of hearing devices, home-based speech development techniques, and psychological counseling strengthen cooperation between educators and families. This partnership significantly enhances children's academic and emotional outcomes.

Reflective practice among teachers is actively supported. Educators regularly assess their teaching strategies, identify challenges, and collaborate with specialists to refine instructional methods. Reflection strengthens pedagogical skills and increases overall effectiveness of inclusive education.

Humanistic psychopedagogical support underpins the cluster model. Children with hearing impairments often face challenges in developing self-confidence and social interaction. Psychological counseling, group therapy, and parental guidance contribute to emotional stability and social inclusion.

The educational cluster model provides a multifaceted approach to the preparation of children with hearing impairments for inclusive education. Beyond the fundamental mechanisms, clusters emphasize continuous monitoring, adaptive pedagogy, interprofessional cooperation, and technological integration to ensure that learners achieve their full potential in inclusive settings.

Individualized learning pathways

Clusters focus on developing individualized educational pathways that consider each child's auditory capacity, cognitive development, speech abilities, and social-emotional readiness. Continuous assessment allows educators to track incremental progress and adjust teaching strategies in real time. Assessment tools include audiometric evaluations, speech articulation tests, cognitive and linguistic skill assessments, and behavioral observations. Based on these evaluations, clusters implement dynamic Individualized Education Plans (IEPs) that evolve as the child progresses. These plans may incorporate tailored phonemic training, speech recognition exercises, and visual support materials that reinforce classroom learning.

Professional development for teachers is a priority. The shortage of qualified surdopedagogues remains a challenge; therefore, clusters collaborate with higher education institutions to provide training courses, seminars, and workshops on inclusive methodologies and communication technologies.

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Conclusion

Preparing children with hearing impairments for inclusive education within an educational cluster requires a comprehensive, multidisciplinary approach. The integration of medical, psychological, pedagogical, and technological resources makes it possible to identify individual needs accurately, implement adapted curricula, and utilize advanced rehabilitation tools. Collaboration among specialists, parental involvement, and continuous teacher development significantly enhance the effectiveness of inclusive education. Modern educational clusters serve as an essential platform guaranteeing equal learning opportunities and contributing to successful social integration of children with hearing impairments.

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