



 Research Article

The Importance Of Technical Tools In The Education Of Children With Hearing Impairments

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ABSTRACT

This article provides a comprehensive analysis of the role and significance of technical devices in the education of children with hearing impairments. In the current era, where principles of inclusivity are being strengthened within the education system, ensuring quality education for children with hearing impairments has become a pressing issue. The rapid development of modern technologies offers opportunities to create and implement learning tools adapted to the needs of this category of students. The study scientifically highlights the impact of audiotechnical devices, specialized software, visual and subtitled materials, interactive learning platforms, and other modern technological solutions on the knowledge acquisition process, speech development, communicative skills, and social adaptation of students. The research methodology included observation, comparative analysis, experimentation, statistical analysis, and empirical methods, allowing for a well-founded confirmation of the impact of technical tools on learning effectiveness. The article presents a comparative analysis of international experiences and the current situation in Uzbekistan's education system, along with recommendations for creating a more comfortable and effective educational environment for children with hearing impairments through the use of modern technologies. The research results demonstrate that the use of technical devices promotes increased participation of children with hearing impairments in the learning process and positively influences the development of their independent thinking, speech activity, and communication abilities.

KEYWORDS

Children with hearing impairments, special education, technical devices, inclusive education, information and communication technologies, audiovisual materials, interactive learning platforms, communicative competence, speech development.

INTRODUCTION

In modern society, the protection of human rights—particularly the right to education—is regarded as a vital social responsibility.

Within this context, ensuring equal educational rights for children with disabilities, including those with hearing impairments, holds particular significance. Due to their physical and psychological conditions, children with hearing impairments often require specific pedagogical, technological, and communicative support throughout the learning process. This necessity is closely linked to the advancement of special education systems, the integration of technological tools, and the prioritization of inclusive education policies at the state level.

Currently, the Republic of Uzbekistan has developed and implemented a range of legal and regulatory frameworks aimed at guaranteeing access to education for persons with disabilities, particularly children with hearing impairments. For instance, the Law on Education stipulates the right of every citizen to equal educational opportunities. It also mandates the provision of adapted curricula and the use of technical aids for teaching children with special needs.

Furthermore, the State Program on the Development of Inclusive Education for 2022–2026, approved by Presidential Decree No. PQ–265 dated June 1, 2022, identifies the equipping of educational institutions with special technical tools and the creation of adaptive pedagogical environments for children with disabilities as key priorities.

Notably, the Regulation on the Organization of the Educational Process in Special Education Institutions, approved by Resolution No. 49 of the Cabinet of Ministers of the Republic of Uzbekistan on February 2, 2021, clearly outlines the requirement to employ special teaching methodologies, technical devices, and differentiated approaches in the education of children with hearing impairments.

The aforementioned legal foundations demonstrate that the state is creating the necessary conditions to ensure comprehensive education for children with hearing impairments. However, in practice, effective utilization of these opportunities, proper integration of modern technical tools into the educational process, improving teachers' qualifications, and strengthening individualized approaches remain pressing challenges.

From this perspective, the present article analyzes the role of technical tools in the education of children with hearing impairments, their positive impact on the development of these children, and examines existing practical experiences and international trends. The study specifically highlights the role of audio prosthetic devices, interactive technologies, specialized software, and audiovisual materials in developing students' communicative competencies. Additionally, the article explores how technical tools facilitate the individualization of the learning process and enhance students' motivation for independent knowledge acquisition.

This topic is not only theoretically significant but also practically relevant, contributing to the development of inclusive and special education in our republic, deepening the digitalization processes in education, and forming an education system that aligns with international standards. The relevance of this article is particularly connected to the necessity of ensuring every child's right to quality education regardless of their abilities, based on the United Nations Convention on the Rights of Persons with Disabilities, ratified by Uzbekistan in 2021.

Deaf or hearing-impaired individuals require special education. There are certain criteria for classifying hearing impairments, which are based on the degree of hearing loss. These levels are determined through audiological measurements, and after hearing assessments and rehabilitation programs begin, hearing loss is classified as mild, severe, or profound. Persons with hearing impairments have difficulty recognizing words,

which leads to challenges in acquiring vocabulary and sounds, thereby making oral communication impossible.

When examining special education programs designed for students with hearing impairments, the diversity of their needs becomes apparent. Such students may face various challenges not only in school but also in social life.

The evaluation of Individualized Education Programs (IEPs) for adults with special needs can be conducted based on a clearly defined practical timetable. The IEP should also include an assessment of the assistive technical devices currently used or potentially usable by individuals with special needs.

As highlighted by Ari and Bayhan, the use of computer-assisted teaching programs in special education offers several advantages, including: individualizing the educational process and ensuring personal development; providing immediate guidance and instructions; reliable correction mechanisms; the opportunity for repetition without coercion; instant reinforcement (encouragement); step-by-step teaching; repeated performance of actions by children; motivation; psychological satisfaction; and constructive (meaningful and effective) teaching.

Today, technology offers vast opportunities and conveniences for every individual. Flexibility, cost reduction, efficiency, and personalization are all key aspects of the contribution that information and communication systems make to the educational process. Particularly for individuals with hearing impairments, essential features in

education include planning the learning process according to personal needs and individual differences, as well as creating important opportunities for them through information and communication technologies.

When used correctly, technology effectively facilitates visual presentation. This study was conducted with the aim of identifying how information and communication technologies are applied in primary and secondary schools for students with hearing impairments.

The study involved 40 students and 14 teachers from the primary and secondary levels of the Sweekar-Upkar special school for children with hearing impairments. Based on the purpose and scope of the research, it was designed as an analytical qualitative study. Data were collected using various data-gathering techniques, and efforts were made to enhance the authenticity and reliability of the information by ensuring data diversity. The collected data were analyzed using descriptive survey methods.

According to the research findings, information and communication technologies (ICT) were chosen by teachers as the primary instructional tool in educating students with hearing impairments at the primary and secondary education levels. Teachers noted that ICT tools played a crucial role not only in delivering lesson materials but also in increasing students' active participation during lessons.

At the same time, the study identified several challenges: the main issue being the outdated technological equipment used in educational

institutions, with students often perceiving these devices more as video gaming tools. Additionally, students emphasized that during their research activities, they did not use the screens for scientific or educational purposes.

Based on interviews conducted with teachers during the study, an educational program specifically designed for students with hearing impairments was developed, along with proposals for technical materials to enrich their curricula. The study's findings can serve as an important scientific and practical foundation for ensuring the effective and conscious use of information and communication technologies in the education programs for students with hearing impairments.

This study thoroughly examined the technologies used in the education of individuals with hearing impairments and their readiness for implementation. It also analyzed the results of scientific research in the areas of language and academic skills. The findings were categorized into two main groups: academic skills and language and speech skills. According to the analysis, educational technologies designed for individuals with hearing impairments were primarily applied to develop language skills and enhance academic knowledge. Additionally, several scientific studies focusing on the development of mathematical skills were also identified. The findings indicate that the use of technology in the education of students with hearing impairments is widespread, and there is a strong desire to increase their motivation for learning. The use of technology in developing language and speech skills is generally viewed as an alternative method to traditional

communication development approaches. According to the research results, web platforms and smartphone applications have been developed and widely adopted as alternatives to sign language. Additionally, it has been identified that the implementation of technologies to support the hearing abilities of individuals with hearing impairments has led to the development of the process of converting conversations into written statements (transcription).

The use of technical devices in the educational process significantly facilitates the reading and learning activities of children with hearing impairments. Depending on the degree and characteristics of the hearing loss, various specialized technical tools are utilized. For example, hearing aids, cochlear implants, and subtitled video resources are employed according to the level of hearing reduction determined through audiometric tests. Additionally, interactive computer programs and mobile applications are widely used to restore and develop speech.

The use of technical devices in the educational process allows for meeting the individual needs of children. For example, with the help of interactive whiteboards and touchscreen devices, students have the opportunity to receive information through both visual and auditory means. This is especially important for children with hearing impairments, as they tend to rely more on visual and kinesthetic learning methods to acquire knowledge.

Technical devices also play a significant role in speech development. For children with hearing

impairments, speech development is a complex process that widely utilizes audiovisual aids such as videos, audio clips, and speech visualization software. For example, using mobile applications designed for learning sign language, children can independently study the meanings of gestures and signs. This, in turn, improves their communicative abilities.

Technologies also serve to strengthen social integration. Children with hearing impairments often feel isolated from society. Therefore, interactive programs and games aimed at developing their communicative and social skills provide significant support. For example, online interactive communication platforms enable children to connect with peers, engage in conversations, and participate in group activities.

Another important aspect of using technical devices in education is to ease the workload of teachers. With the help of modern software, teachers can develop individualized education plans, monitor the learning process, and accurately assess outcomes. This enables a deeper understanding of each student's unique needs and allows for the development of tailored approaches accordingly.

Technologies also make the educational process interactive and engaging. Virtual Reality (VR) and Augmented Reality (AR) technologies enhance learning for children with hearing impairments by providing visual and immersive experiences. For example, with VR, students can simulate various social situations, allowing them to develop real communication skills.

Nevertheless, a systematic approach is necessary for the effective use of technical devices in education. Educational institutions must be equipped with technical equipment, teachers should receive regular professional development, and strategies for integrating technologies into the educational process need to be developed. In this regard, cooperation between government and non-governmental organizations is also of great importance.

Another important issue in the use of technical devices is students' access to technology. This can be especially challenging for special schools located in rural areas and children studying at home to have access to modern technical tools. Therefore, special programs should be developed within the education system to ensure equitable distribution of technologies and to create favorable conditions for every child.

International experience shows that for the successful application of technical devices in the education of children with hearing impairments, their compatibility with pedagogical methodology is crucial. It is not sufficient to merely introduce technology; it must be ensured that it is used meaningfully and effectively at every stage of the educational process. From this perspective, scientific research in the field of special education should be conducted, new curricula developed, and continuous pedagogical monitoring established.

In Uzbekistan, in recent years, several programs have been developed aimed at advancing special education, broadly implementing inclusive education, and renewing the educational process

based on technologies. Among these are projects focused on the application of information and communication technologies in education, digitization of special curricula, and professional development of teachers. These initiatives serve to improve the quality of education for children with hearing impairments. Having fixed on the behavior dictated by the need to test the outside world in order to restrain its aggression, the child acquires the skill of aggressive behavior. But natural aggressive impulses can be controlled through training and education. The child learns to control his aggression by meeting the approval or disapproval of his parents. At the same time, his anxiety is twofold: on the one hand, it is the fear of punishment, on the other, the fear of offending, irritating parents and depriving them of support.

At the same time, when introducing technical devices into the educational process, special attention must be paid to enhancing the knowledge and skills of the children's families. Proper use of technologies in the family environment supports the development of children and increases their success in education. Therefore, it is necessary to develop trainings, consultations, and guides for parents. As a result, the importance of technical devices in the education of children with hearing impairments is immense, as they help improve the efficiency of the educational process, facilitate the integration of students into society, ease the work of educators, and meet the individual needs of learners. In the future, it will be possible to fundamentally improve the quality of education by further developing technologies in this field,

introducing innovations, and strengthening scientific research. Difficult experiences related to a person's search and recognition of himself as a person, an individual person, can turn into a depressive state, which in turn leads to the emergence of suicidal desires. In fact, most people who suffer from depression have a bad mood, but not always. For example, it is in teenagers that we often do not see subjective forgiveness of grief even in cases of strong crisis. Many signs of PSD have the appearance of neurotic symptoms, therefore, along with this term, it is used in the literature as an alternative name "school neuroses". Sometimes they appear as a symptom complex. For example, a child may have fears about school, an acute reluctance to go to school in the morning, crying, nausea, asthmatic or skin reactions. Sometimes PSD looks like a neurotic monosymptomatic that catches everyone's eye. Several years ago, when not all Russian schools had yet switched to the 1-4 program, in one state school-gymnasium the elementary school worked on the 1-3 system. There were strict age restrictions for admitting children to this gymnasium - due to the great complexity of the programs and high requirements for school readiness, children under 7 years old were not accepted there. In our century, modern technology has become an integral part of our daily life in our century. Especially the use of smartphones, tablets and social networks has become one of the most common habits before sleep and is still relevant. This article explores the impact of the use of communication tools and social networks on sleep on the quality and general health of the human sleep.

The importance of technical devices in the education of children with hearing impairments has today become an integral part of the education system. These tools not only facilitate the learning process and meet the individual needs of students but also play a crucial role in boosting their self-confidence, developing speech and language skills, and ensuring their integration into society. At the end of the first year of the child's life, it is necessary to actively combine behavior - the level of management to the point of use of changing conditions. Transition to other than the preferred methods of adaptation is painful can be. This is reflected in the increase in the temporary affective unity of the child, its worries, fears. With adults with the environment with its environment in the process of continuous contact Managing and sorting affective interactions, her behavior to master the various psychotechnical methods of affective structures, They help to expel affective processes. If some The causative to the causing childhood is primarily a quantitative If affected, others are of signal, quality significance from the beginning. Last, the child is active, it is aimed at searching for them. The use of technology to provide students with interactive, visual, and easily comprehensible learning materials significantly enhances the effectiveness of the educational process.

Everything else is just a way to maintain it. Sometimes parents explain their lack of communication with their child by their own busyness. This can be heard especially often from fathers. More often than not, there are other, internal reasons behind this. The same lack of

confidence in oneself as a parent, isolation, and others, which were discussed above. It is very important to remember that a child needs emotional communication with parents (and especially with mother) as a way to feel safe, as a way to form a stable positive self-attitude ("if they show me love, then I am worthy of it, I am good"). In addition, this is necessary for the development of personality: the interest of a close adult in the child's emotions helps to realize and feel their value. This is also the path to developing empathy, that is, the ability to sympathize with another, to share feelings and thoughts with another person. But you can strive for this. Thus, it is not easy for a child to express his own feelings. This creates an inseparable connection with parents, in the presence of which it is impossible to autonomize your inner world. After all, the imaginary I of the child allows parents to gain the sense of self-confidence that they so lack, and the child, in turn, first consciously, and then unconsciously makes himself completely dependent on his parents. He cannot rely on his own feelings, he has never gained the necessary experience, does not know his true needs and is extremely alien to himself. In this situation, he cannot internally separate from his parents and in adulthood turns out to be dependent on people who replace his parents. These people can be partners, comrades and, above all, his own children.

Inherited memories, repressed into the unconscious, force him to hide his true self from himself as carefully as possible. As a result, the feeling of loneliness experienced in childhood in the parental home and not given a proper outlet

leads to the isolation of a person from himself. No matter how insignificant the reasons may seem, no matter how inappropriate the feelings may seem, the child has the right to be taken seriously by those closest to him. This, in turn, increases the interest of children with hearing impairments in education and expands their opportunities for independent learning. Through an individualized approach to education, each child has the chance to learn at their own pace, which enables them to express and develop their unique talents. Therefore, if the style of clothing is changed or his hair is not styled differently, a two-month-old baby may not even recognize a loved one. But after about four months, this vague image is divided, turning into a series of clear images: voices, bodies, faces (with independent gestalts: eyes, mouth, hairstyle). The work of Gestalt psychologists has created new approaches to various problems - from creative thinking to personal activity. Various studies of the psyche have made it possible to understand the laws of perception, thinking and personality development, to formulate experimental methods that are fundamentally different from previous ones.

Moreover, the use of technical tools in the educational process not only improves the quality of education but also plays a significant role in strengthening the psychological well-being of children with hearing impairments, developing their social skills, and helping them find their place in society. This, in turn, has an invaluable impact on improving their quality of life in the future. In conclusion, technical tools in the education of children with hearing impairments serve not only

as support for the learning process but also as essential means for social adaptation and ensuring their personal development. Effective use of technology in education contributes to brightening the future of these children, helping them become equal and active members of society.

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