PEDAGOGICAL OPPORTUNITIES FOR USING DIGITAL EDUCATIONAL TECHNOLOGIES TO DEVELOP AUDITORY PERCEPTION IN CHILDREN WITH INTELLECTUAL DISABILITIES

I. S. Khamrayeva
Associate Professor, PhD, National Pedagogical University of Uzbekistan
Muxayyo Ishkhodjayevna Nuriddinova
Second-year Master's Student in Oligophrenopedagogy, Faculty of Special Pedagogy and Inclusive Education, National Pedagogical University of Uzbekistan
Email: nuriddinovamuxayyo461@gmail.com

Abstract. This article examines the pedagogical potential of using digital educational technologies to develop auditory perception in preschool children with intellectual disabilities. Particular attention is given to interactive multimedia resources, digital educational games, audio materials, and computer-assisted exercises used in corrective and developmental activities. The article analyzes international experience, recent statistical data, scientific research, and the regulatory framework of the Republic of Uzbekistan in inclusive and digital education. The analysis indicates that digital technologies facilitate individualized instruction, repeated practice, multisensory learning, immediate feedback, and systematic monitoring of children's progress.

Keywords: children with intellectual disabilities, auditory perception, digital educational technologies, preschool education, inclusive education, special education, auditory attention, digital competence.

Introduction

The digital transformation of education has created new opportunities to improve the quality and accessibility of special and inclusive education. Digital technologies are increasingly used to individualize instruction, enhance children's motivation, and provide accessible learning materials for children with special educational needs. In this context, using digital educational technologies to develop auditory perception in preschool children with intellectual disabilities is of particular scientific and practical importance.

Auditory perception is the process by which a person discriminates, recognizes, interprets, and understands the meaning of sounds received through the auditory system. Through auditory perception, a child distinguishes environmental sounds, human speech, music, and sounds of nature and understands what they signify.

The main components of auditory perception are:

1. Sound discrimination — distinguishing high- and low-pitched sounds and loud and soft sounds.
2. Speech-sound discrimination — distinguishing similar speech sounds, such as /s/ and /ʃ/, or /b/ and /p/.
3. Sound localization — identifying where a sound comes from.
4. Sound recognition — recognizing sounds such as birdsong, running water, or knocking on a door.
5. Speech comprehension — understanding the meaning of spoken words, sentences, and instructions.

© 2026 London International Monthly Conference on Multidisciplinary Research and Innovation. All Rights Reserved.

To develop auditory perception in preschool children with intellectual disabilities, educators use sound-based games, music listening activities, speech-sound discrimination exercises, identification of sounds produced by objects, and tasks requiring children to follow spoken instructions.

Auditory perception involves more than simply hearing sounds: it is the ability to discriminate between them, recognize them, and understand their meaning. It is important to distinguish hearing, which refers to receiving sound through the ear, from auditory perception, which involves interpreting and understanding what is heard.

Therefore, developing auditory perception requires systematic, individualized, and correction-oriented pedagogical work. Traditional methods, such as listening exercises, identifying environmental sounds, musical activities, speech exercises, and didactic games, remain important. However, contemporary digital technologies can enrich these methods through multimedia applications, interactive educational games, audio materials, and computer-assisted instruction.

One of the principal pedagogical advantages of digital technologies is individualization. Educators can select auditory tasks according to each child's cognitive abilities, speech development, attention span, and pace of learning. For example, at an initial stage, a child may be asked to distinguish between two clearly different environmental sounds. As the child's skills develop, the number and complexity of the sounds can gradually increase.

Another important advantage is repeated practice. Children with intellectual disabilities often need repeated exposure to learning materials. Digital resources make it possible to present the same auditory stimulus multiple times while maintaining consistency. This can help develop auditory attention, discrimination, recognition, and memory.

International experience confirms the growing importance of digital technologies in inclusive education. UNESCO's 2023 Global Education Monitoring Report emphasizes that technology can improve access to education and support learners with diverse educational needs. At the same time, UNESCO stresses that technology does not automatically improve learning outcomes; its effectiveness depends on how appropriately it is integrated into educational practice.

Recent UNICEF data further highlight the importance of disability-inclusive education. According to the 2024 Global Annual Results Report, UNICEF supported 102 countries in strengthening disability-inclusive education systems. During 2024, approximately 513,000 children with disabilities were reached through UNICEF-supported educational activities. These figures indicate the importance of inclusive education in international education policy.

The development of inclusive and digital education is also an important priority of education policy in Uzbekistan. Presidential Resolution No. PQ-4860 of October 13, 2020, "On Measures to Further Improve the System of Education and Upbringing for Children with Special Educational Needs," established directions for developing inclusive education, strengthening educational institutions, improving teacher qualifications, and introducing modern information and communication technologies.

The "Uzbekistan–2030" Strategy, approved by Presidential Decree No. PF-158 of September 11, 2023, also places particular emphasis on improving educational quality and introducing modern technologies. The strategy envisages the development of new-generation learning materials, multimedia programs, electronic resources, and mobile applications. These measures demonstrate the increasing role of digital technologies in modernizing the national education system.

Furthermore, Resolution No. 818 of the Cabinet of Ministers of the Republic of Uzbekistan, adopted on December 24, 2025, aims to expand access to quality education for children with special educational needs, support their individual development, and strengthen their social integration.

© 2026 London International Monthly Conference on Multidisciplinary Research and Innovation. All Rights Reserved.

Digital technologies should not replace interaction with educators, parents, or peers. Instead, they should be integrated with traditional corrective and developmental activities. For example, after recognizing an animal sound in a digital application, a child can identify the corresponding toy, imitate the sound, name the animal, and participate in a communicative game with the educator. In this way, digital and traditional methods complement each other.

Conclusion

In conclusion, digital educational technologies offer important pedagogical opportunities for developing auditory perception in preschool children with intellectual disabilities. Individualized instruction, repeated practice, multisensory presentation, immediate feedback, and systematic monitoring are among their principal advantages. International experience and recent educational reforms in Uzbekistan demonstrate the growing importance of digital technologies in special and inclusive education. Therefore, digital technologies should be used as supplementary pedagogical tools within a comprehensive system of corrective and developmental support. Developing evidence-based, accessible digital resources in the Uzbek language for preschool children with intellectual disabilities should become a promising direction for further research and educational practice.

References

1. O'zbekiston Respublikasi Prezidentining 2020-yil 13-oktabrdagi “Maxsus ta'lim ehtiyojlari bo'lgan bolalarni o'qitish va tarbiyalash tizimini yanada takomillashtirish chora-tadbirlari to'g'risida”gi PQ-4860-sonli qarori.
2. O'zbekiston Respublikasi Prezidentining 2023-yil 11-sentabrdagi “O'zbekiston-2030 Strategiyasi to'g'risida”gi PF-158-sonli Farmoni.
3. O'zbekiston Respublikasi Vazirlar Mahkamasining 2025-yil 24-dekabrdagi 818-sonli qarori.
4. UNESCO. (2023). Global Education Monitoring Report 2023: Technology in Education—A Tool on Whose Terms? Paris: UNESCO.
5. World Health Organization & UNICEF. (2022). Global Report on Assistive Technology. Geneva: World Health Organization.
6. UNICEF. (2025). Global Annual Results Report 2024: Goal Area 2—Every Child Learns. New York: UNICEF.
7. United Nations Uzbekistan. (2024). Situation Analysis of Children and Adolescents in Uzbekistan. Tashkent: United Nations.
8. Effectiveness of Computerized Auditory Training on Speech Perception in Children With Hearing Loss: A Systematic Review. American Journal of Audiology. https://doi.org/10.1044/2023_AJA-23-00078
9. Effects of Auditory Training on Children With Developmental Language Disorder: A Systematic Review. PubMed PMID: 40606495.

© 2026 London International Monthly Conference on Multidisciplinary Research and Innovation. All Rights Reserved.