ISSN: 2053-3578 I.F. 12.34

A BISENSORY APPROACH TO TEACHING PRONUNCIATION IN DEAF AND HARD-OF-HEARING PRESCHOOL CHILDREN

Sohiba Barat qizi Djurayeva
Lecturer, Department of Special Pedagogy
Jizzakh State Pedagogical University

Abstract: The development of intelligible oral pronunciation in deaf and hard-of-hearing preschool children remains one of the most complex and debated issues in special pedagogy. Traditional articulation-based and tactile-mechanical methods often lead to artificial speech patterns that differ significantly from natural spoken language. This article presents a scientific analysis of a bisensory (auditory–visual) approach to teaching pronunciation, grounded in systematic auditory training and the use of sound-amplifying technology. Drawing on long-term experimental observations, the study examines the principles, stages, and outcomes of pronunciation development under conditions approximating natural language acquisition. The findings demonstrate that bisensory perception enables spontaneous phonetic generalization, natural rhythm and intonation, and individualized trajectories of speech development. The results support the effectiveness of the bisensory approach as a foundational model for early pronunciation training in deaf and hard-of-hearing children.

Keywords: bisensory approach, pronunciation development, deaf preschoolers, auditory–visual perception, speech rehabilitation, phonetic rhythmics.

Introduction

The last decades have witnessed significant advances in physics, audiology, neurophysiology, linguistics, and deaf psychology, which have profoundly transformed approaches to oral speech instruction for children with hearing impairments. These interdisciplinary developments have reshaped the understanding of hearing loss not as a static deficit, but as a dynamic condition whose impact depends largely on early intervention and neural plasticity. In early childhood, when the nervous system exhibits high adaptability, even congenital or early-acquired deafness does not terminate the child's developmental potential. Although hearing loss disrupts the natural trajectory of speech acquisition, substantial sensory, motor, and cognitive resources remain available for rehabilitation. The central task of modern

special pedagogy is therefore to identify pedagogical conditions and methods that allow these resources to be effectively engaged.

One of the most promising solutions has been the early and systematic use of sound-amplifying technology combined with intensive auditory training. This technological and pedagogical integration enables deaf and hard-of-hearing children to approach the conditions under which hearing children acquire speech. Consequently, the focus of pronunciation teaching shifts from artificial articulation drills to natural imitation based on auditory–visual perception. The present study explores the process of forming the expressive (pronunciation) component of oral speech in preschool children with hearing impairments within a bisensory framework. The aim is to analyze the principles, mechanisms, and outcomes of pronunciation acquisition when auditory and visual perception jointly serve as the primary sensory basis for speech development.

Materials and Methods

Research Design The study is based on a longitudinal pedagogical experiment conducted with preschool children with varying degrees of hearing loss. The experimental design emphasized naturalistic conditions of speech acquisition, supported by continuous auditory stimulation and visual speech perception.

Participants The experimental group consisted of six preschool children aged 2.8 to 3.7 years at the onset of training. Five children were diagnosed with profound hearing loss with residual hearing, while one child presented a borderline auditory condition, with unilateral deafness and severe hearing loss in the other ear. All participants used high-quality sound-amplifying devices throughout daily communication and structured learning activities.

Instructional Principles Pronunciation training was conducted under the following methodological conditions:

- Systematic development of auditory perception using sound-amplifying technology;
- Reliance on auditory–visual perception as the primary sensory basis;
- Absence of tactile-vibrational support and mechanical articulation techniques;
- Exclusion of mirrors and explicit articulation instruction;
- Emphasis on imitation of adult speech in natural communicative contexts.

Teaching Procedures The word was selected as the fundamental instructional unit. Syllabic structure, stress, intonation, and phoneme articulation were acquired implicitly through word pronunciation rather than through isolated sound drills. Children engaged in joint and

reflected speech activities with the teacher, gradually transitioning from imitation to independent word production.

When necessary, temporary syllabic or phonemic segmentation was used, but always followed by reintegration into the whole word. From the second year of training, phonetic rhythmics was introduced, combining speech production with coordinated body and hand movements to reinforce sensorimotor integration.

Data Collection Data were obtained through analysis of children's spontaneous speech across a five-year training period. Pronunciation accuracy, rhythmic structure, intonation patterns, stress placement, and phoneme inventory were examined qualitatively.

Results and Discussion

Development of Prosodic Features By the end of the five-year training period, children demonstrated fluent and continuous speech production. They were able to articulate phrases and syntagms ranging from six to thirteen syllables within a single breath. Speech rhythm and stress patterns closely approximated normative models of spoken Russian, even in newly acquired words. Notably, correct stress placement emerged spontaneously without explicit instruction. This finding underscores the role of bisensory perception in forming implicit phonetic representations through natural communicative interaction.

Intonation and Voice Characteristics Children's speech was characterized by expressive modulation, with clearly differentiated declarative and exclamatory intonation patterns. Interrogative intonation was less stable but present, particularly in children with greater residual hearing. Voice quality, including pitch, intensity, and timbre, developed within functional norms for most participants.

Phoneme Acquisition and Substitution Patterns As in traditional pronunciation development, children initially employed phoneme substitutions. However, under bisensory conditions these substitutions emerged spontaneously rather than being explicitly taught. Over time, auditory–kinesthetic generalizations became increasingly refined, allowing children to transition independently from approximate to accurate articulation. A distinctive feature of the bisensory approach was the presence of unconscious articulation stages. Certain phonemes appeared in spontaneous speech before children could consciously reproduce or correct them. Gradual awareness and voluntary control followed extended auditory–visual exposure.

Emergence of Soft Consonants A particularly significant outcome was the spontaneous emergence of soft consonants in all participants' speech. This phenomenon is rare even among deaf school-aged children and typically requires targeted corrective instruction. In the present

study, systematic auditory stimulation and auditory–visual perception created conditions for their natural acquisition.

Individualization of Pronunciation Development The bisensory approach enabled each child to follow an individualized trajectory of pronunciation development. Rather than enforcing uniform articulation standards, the method supported flexible phonetic exploration and self-regulated refinement, leading to more natural and intelligible speech.

Conclusion

The findings of this study confirm that a bisensory (auditory–visual) approach provides an effective and developmentally appropriate framework for teaching pronunciation to deaf and hard-of-hearing preschool children. By approximating the natural conditions of speech acquisition, this approach facilitates spontaneous phonetic generalization, natural prosody, and individualized speech development.

The results demonstrate that early reliance on bisensory perception reduces the need for mechanical articulation methods and creates a solid phonetic foundation for subsequent corrective work. Pronunciation formed under these conditions is characterized by greater fluency, expressiveness, and communicative adequacy. The bisensory model should therefore be regarded not as an alternative, but as a foundational stage in pronunciation training, upon which traditional corrective techniques can be effectively and selectively applied. Its implementation holds significant implications for early intervention programs and inclusive speech rehabilitation practices.

References

1. Flexer, C. (2011). Auditory-Verbal Therapy: Principles and Practice. Plural Publishing.
2. Goldin-Meadow, S., & Mayberry, R. (2001). How do profoundly deaf children learn to read? Learning Disabilities Research & Practice, 16(4), 221–228.
3. Kuhl, P. K. (2010). Brain mechanisms in early language acquisition. Neuron, 67(5), 713–727.
4. Moeller, M. P. (2000). Early intervention and language development in children who are deaf and hard of hearing. Pediatrics, 106(3), e43.
5. Yoshinaga-Itano, C. (2003). Early intervention after universal neonatal hearing screening. Seminars in Neonatology, 8(6), 425–434.
6. Guberina, P, Škarić, I, Žaja, B. Case studies in the use of restricted bands of frequencies in auditory rehabilitation of deaf. Zagreb, 1972

ISSN: 2053-3578 I.F. 12.34

7. Н. А. Бернштейн. Очерки по физиологии движений и физиологии активности. М., «Медицина», 1966; М. М. Кольцова. Двигательная активность и развитие функций мозга ребенка. М., «Педагогика», 1973.
8. И. Я. Темкина, Е. П. Кузьмичева, Э. И. Леонгард. Развитие восприятия речи на слух у глухих // Дефектология. – 1973. - № 3. – С. 3-12.