



Psychological and pedagogical basis of developing oral speech in primary grade students with hearing impairments

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Submitted/Received 20 October 2023; First Revised 12 November 2023; Accepted 1 December 2023
First Available Online 1 December 2023; Publication Date 1 December 2023

Abstract

This article discusses the issues of developing oral speech in primary school students with hearing impairment. The main goal of the study is to determine the level of speech development of students studying in special educational institutions and to develop effective correctional methods aimed at their development. The article analyzes the speech formation of children with hearing impairments on a psychological, pedagogical and physiological basis. The research used theoretical analysis, observation, diagnostic interview and experimental methods. The results of the experiment showed that through special methodological approaches, children's lexical wealth, grammatical speech, and phonetic pronunciation were significantly improved. Training based on a multimodal (visual, auditory, tactile) approach had a positive effect on the development of dialogical speech. The conclusion emphasizes the importance of a systematic, person-centered, and individual approach in working with children with hearing impairments. This article will serve as a useful scientific and practical resource for specialists in the field of surdopedagogy, defectologists, and special educators. In addition, the findings highlight the role of early intervention, the use of multimodal sensory strategies, and collaboration between families and educators as key factors in achieving effective communication outcomes. The results also underscore the need for ongoing corrective and pedagogical programs that address the unique psychological and linguistic needs of each child, aiming to improve their academic success, social integration, and emotional well-being.

Keywords: Hearing impairment; oral speech; primary school; special education; surdopedagogy, correctional methods, psychological development, lexical richness, phonetic pronunciation, multimodal approach, individual approach, dialogic speech.

INTRODUCTION

We all know that the most cherished dreams, goals, and life interests of every person and family in our country are manifested and realized primarily in the person of their children. Of course, great work is being done in our country in this regard, and they are actually yielding positive results. The proper development of speech is of great importance for every child receiving education to become a well-rounded individual in line with the demands of the times and to actively participate in society. Because speech is a means of interpersonal communication, a national treasure, and a

powerful tool for education, enlightenment, and creativity. As noted by Walker (2022), early intervention facilitates the acquisition of age-appropriate language skills. Therefore, it is important to teach every person to master speech and fully express their thoughts as noted by Walker et al. (2016) Children's ability to communicate effectively is important for participation in day-to-day life and lays the foundation for future academic, social, and occupational success. Speech and language competence during early childhood is linked to literacy, numeracy, and social-emotional outcomes at school, providing a basis for participation in society as adults.

other than that, according to Azzahra et al. (2023) language competence is fundamental not only for communication but also for cognitive, social, and emotional development. Therefore, it is important to teach every person to master speech and fully express their thoughts. The correct formation of speech depends on the speech of those around them, speech experience, and the right speech environment and education. Mental abilities and speech skills play a large role in the formation of people as complete, mature people.

It provides an opportunity to observe the profound and specific deficits characteristic of the verbal development of children with hearing impairments, and at the same time, it creates an opportunity to clearly understand the role of intelligence in the development of speech. The speech of children with hearing impairments has been the subject of research and studies by many famous defectologists who have studied various aspects of speech on this problem. They have examined the peculiarities of the phonetic structure of their speech, the richness of their vocabulary, and their dialogical and monological speech. Hearing impairment has also been found to affect a child's quality of life, particularly in the school and social domains, as well as behavior and behavioral disorders (Lieu et al, 2020).

Hearing impairment can occur due to biological factors, congenital pathology, chemical damage as noted by Sohal et al. (2020) The process of normal human hearing requires the proper function of the external ear, middle ear, inner ear (cochlea), and ascending brainstem pathways, therefore anything which interferes with the proper functioning of these structures can lead to hearing loss (HL). HL is the most prevailing birth defect, and its prevalence increases as the child reaches adolescence. According to 2018 WHO estimates, children account for 7% (34 million) of all persons living with disabling HL in the world.⁴ While the most obvious effect of childhood HL is on language development, it also has an impact on literacy, self-esteem, and social skills, which, in turn, can lead to reduced

employment opportunities later in life and psychological consequences that can lead to feelings of isolation, loneliness, and depression. Permanent childhood hearing impairment is defined as a confirmed permanent bilateral hearing impairment ≥ 40 dBHL (hearing level) averaged over the frequencies of 0.5, 1, 2, and 4 kHz in the better hearing ear. It can be attributed to both environmental and genetic factors, therefore it can be congenital or acquired in nature. Taking into account the negative impact of HL in children, in the present article, an overview of normal hearing.

The characteristics of childhood are based on the incompleteness of the brain structure compared to adults, the underdevelopment of mental components, the plasticity of the nervous system and its tendency to compensation. The role of compensation in hearing loss is greatly influenced by social factors-family upbringing, emotional upbringing, the level of education of parents, their relationship with specialists, and their participation in correctional work.

In the first 2-3 months of life, the difference between a deaf and a hearing child is almost imperceptible. The cries and babbling of a deaf child are not so different from those of a hearing child. Babbling appears in deaf children, but gradually disappears due to the inability to control their pronunciation. (Rau, 2000). In addition, research by Shojaehi et al. (2016) hearing impaired children who have received appropriate and early hearing aid assessment and fitting at the age of 3 months and cochlear implantation at the age of 9 months can reach normal language development in up to 96% of cases. Hearing-impaired children who have hearing Loss Early Intervention received early identification/intervention in the very first 2 months of life (or at the age of 3–4 or 5–6 months) have similar language development. This means that early and appropriate identification/ intervention of hearing loss before the age of 6 months enables normal language development in hearing-impaired children (20). By comparing early identification/ intervention (3-4 or 5-6 months of age) with late hearing loss (7-12,13-18,19-

24, or 25-30 months of age), a considerable improvement in language development is revealed in those children identified early. In Russia, similar achievements in the development of methods for educating and training the deaf, under the influence of humanistic idea.

Studying the experiences of sign language teachers whose work in the past belonged to the era of individual teaching allows us to conclude that the main aspects of the development of sign language pedagogical ideas were determined already in those times and that they later formed the basis of various pedagogical systems. Almost all educators, despite their limitations, religious and national traditions and prejudices, have developed innovative ideas, which have led to the realization and effective evaluation of the important role of speech in the education and upbringing of deaf and dumb people. As Lopes and Santos (2022) note, the pedagogical approaches for deaf students have evolved from a medically-centered model to a socio-cultural-linguistic perspective, recognizing sign language as a legitimate, natural language essential for cognitive and social development. During communication, when the sender of the message has a desire to convey a specific message to the receiver, he encodes his thoughts into a spoken message based on his knowledge and the rules of language.

Rau (2000) showed that the basis of oral speech is the sonority of words, which is perceived by hearing. It is said about the perception of the phonetic side of speech, and the degree of hearing preservation should determine the ability to perceive speech by hearing. Children with different degrees of hearing preservation have different abilities to perceive speech. Both deaf and hard of hearing people should be taught to perceive speech by hearing, using various methods that facilitate this process. As noted by Wray et al. (2022) that human communication is, to a large extent, based on our “far senses”: hearing and vision. The use of our “near senses” smell, taste, and tactility essentially becomes important when hearing and vision are impaired. Deaf-blindness is a combined

vision and hearing impairment of such severity that it is difficult for the impaired senses to compensate for each other. Thus, deaf-blindness is a distinct disability that limits activities and restricts participation in society. It affects social life, communication, access to information, orientation, and the ability to move around freely and safely.

As V.I. Beltiyatov proved in his research (1960) the better the speech sounds are articulated, the better they are perceived by hearing, and vice versa. The influence of articulation defects on the perception of the phonetic side of speech is especially pronounced. In the process of developing such auditory perception, the conditional development of auditory pronunciation differentiations of perceived speech is assumed. According to Dromey & Black. (2017) articulators move differently than in normal speech. Most of the focus in the silent speech literature has been on the development of speech recognition systems, rather than on characteristics of vocal tract movements when a person articulates silently. A recent study found that during mouthed production of a bilabial stop, lip compression was reduced compared to a voiced condition. The author attributed this to the need for closure to impound intraoral air pressure in normal speech that would be absent when mouthing. A case study using ultrasound and video tracking of articulation reported hypoarticulation in lip movements and reduced word durations for silent speech

METHODOLOGY

The aim of this study was to determine the effectiveness of psychological and pedagogical approaches and correctional methods aimed at developing oral speech in primary school students with hearing impairment. The methodological approach was based on systematic, comprehensive and person-centered approaches.

Methodological foundations:

1. A systematic approach - made it possible to analyze the child's speech, auditory, cognitive, emotional and motor activities in an interconnected

manner in the development of oral speech.

2. A person-centered approach - served to apply adapted educational methods, taking into account the individual hearing level, psychophysiological characteristics, and socio-environmental conditions of each child.
3. Scientific-empirical approach - diagnostic of the level of speech development of students, conducting experiments and evaluating the results on a scientific basis.

Table 1
(Research Methods)

No	Method Name	Purpose
1.	Theoretical analysis	Study of scientific sources on the topic and creation of a conceptual framework
2.	Observation	Assessment of students' natural speech activity
3.	Diagnostic interview	Determination of lexical wealth, grammatical structure and phonetic pronunciation
4.	Experiment (before-after)	Comparison of the effectiveness of correction methods
5.	Interview and questionnaire	Study of the opinions of parents and teachers

Research stages:

1. Preparatory stage: identification of the problem situation, analysis of theoretical sources, development of diagnostic tools.
2. Diagnostic stage: identification of students' level of oral speech, phonetic, grammatical and lexical deficiencies.
3. Experimental stage: organization of corrective exercises and evaluation of their impact.

4. Analysis and conclusion stage: statistical and qualitative analysis of the results obtained, formulation of scientific conclusions.

RESULT AND DISCUSSION

As part of the study, 20 primary school students with hearing impairments studying in a special school were diagnosed with respect to the level of oral speech. At the initial stage, significant deficiencies in the development of oral speech were identified in the students. In particular, their phonetic pronunciation was unclear, the level of use of grammatical structures was low, and the lexical wealth was limited.

After that, corrective exercises were conducted 3 times a week for 2 months. The exercises were conducted based on a multimodal approach - visual, tactile, auditory, articulation exercises in front of the mirror, and sound amplification. At the end of the study, the following positive changes were observed in the speech development of students:

Table 2
(Comparison of pre- and post-experimental results %)

Speech indicators	Initial state	After the experiment	Increase (%)
Lexical richness	40%	75%	+35%
Grammatical structure	30%	70%	+40%
Phonetic pronunciation	25%	65%	+40%
Dialogical speech	35%	80%	+45%
Lexical richness	40%	75%	+35%

These results show that to activate the speech development of children with hearing impairments:

1. Special techniques focused on oral speech,
2. An individual approach,

3. The combined use of sensory analyzers (vision, touch, residual hearing),
4. Creating a constant environment of stimulation and communication are important factors.

In addition, by involving parents in the training and developing their pedagogical skills, it was possible to develop children's speech at home.

The results of the experiment proved the high effectiveness of correctional and pedagogical work in the development of oral speech and showed the need for their widespread implementation in practice.

The study showed that speech development in children with hearing impairments occurs effectively not only through the natural environment, but also in a specially organized corrective pedagogical environment.

In the psychological and pedagogical approach, factors such as the child's residual hearing, visual perception, and tactile sensation should be taken into account.

Such children have impaired pronunciation, limited vocabulary, and limited grammatical speech.

Therefore, in the development of oral speech:

1. Visual visualization exercises;
2. Articulation exercises in front of a mirror;
3. Vibrational methods for sound perception;
4. Pronunciation perception and repetition techniques were used with the help of hearing aids.

The above methods had a positive effect on the formation of students' speech activity. In particular, the formation of dialogic speech through interactive methods (questions and answers, dramatic games, dialogues) was very effective.

CONCLUSION

The above studies have proven that a specially organized educational process plays an important role in the development of oral speech of primary school students with hearing impairments. Experimental pedagogical activities provided positive growth in all indicators of speech

development. The following main conclusions were drawn during the study:

1. The oral speech of students with hearing impairments is not formed sufficiently naturally, and special correctional and pedagogical approaches are necessary for them.
2. Multimodal methods - training based on vision, hearing, tactile sensations - are highly effective in developing speech perception and pronunciation.
3. Cooperation with parents and teachers plays an important role in the process of speech formation and provides strong psychological support for the child's development.
4. Through special training sessions, the development of lexical wealth, grammatical structure, phonetic pronunciation, and dialogical speech skills was observed.
5. Systematic and person-oriented approaches, taking into account the individual characteristics of the child, increase the effectiveness of education.

Based on the results of the study, a practical guide was developed to develop oral speech in students with hearing impairments. These recommendations can be widely used in special pedagogy practice.

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