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Special Speech Habilitation and Sign Language Training Program for Students with Hearing Impairment: A Study of Concepts, Methods, and Evaluation

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Abstract

Children with hearing impairment face significant barriers in verbal and social communication, making structured intervention essential. This article reviews the concept, legal foundation, scope, implementation methods, and evaluation techniques of speech habilitation (bina wicara) and sign language training (bina isyarat) programs for students with hearing impairment in Indonesian special education. Using a qualitative literature review method, twenty scholarly sources published between 2021 and 2025, together with national regulations, were analyzed thematically. The review shows that speech habilitation encompasses articulation, respiration, phonation, prosody, speechreading, and auditory training, guided by developmental theories such as Vygotsky's Zone of Proximal Development and Chomsky's Language Acquisition Device. Commonly applied methods include Auditory-Verbal, Oral-Multisensory, Phonetic-Phonemic, and Total Communication approaches, while sign language instruction relies on the Indonesian Sign Language System (SIBI). Program success depends on early intervention age, technology suitability, parental involvement, and teacher competence. Comprehensive, authentic, and continuous evaluation is essential to ensure individualized and effective services. These findings emphasize the need for an eclectic, evidence-based, and collaborative approach in delivering communication programs for children with hearing impairment.

Keywords: speech habilitation; sign language training; hearing impairment; SIBI; special education

1. Introduction

Communication ability is one of the fundamental aspects of human life, including for students with hearing impairment or deafness. Hearing loss experienced from an early age significantly affects a child's language development, speaking ability, and social interaction if not addressed appropriately (Jønsberg et al., 2025). Delays in detection and intervention among deaf children remain a challenge in many countries, including Indonesia, causing many children to miss the golden period of language development (Wiggin et al., 2021).

In the context of special education, two main programs have been developed to help students with hearing impairment communicate optimally: speech habilitation (bina wicara) and sign language training (bina isyarat). Speech habilitation aims to optimize verbal speaking ability through articulation, breathing, phonation, prosody, speechreading, and residual-hearing-utilization training (Aldemir et al., 2023), while sign language training develops communication ability through the Indonesian Sign Language System (SIBI) as the

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official sign system recognized by the government (Van Bogaert et al., 2023). Both programs complement one another and are grounded in the constitutional mandate of Article 31 paragraph (1) of the 1945 Constitution of the Republic of Indonesia, Article 5 paragraph (2) of Law Number 20 of 2003 on the National Education System, Government Regulation Number 17 of 2010, and the ratification of the Convention on the Rights of Persons with Disabilities through Law Number 19 of 2011.

Various recent studies reinforce the urgency of these programs. A meta-analysis by Jønsberg et al. (2025) shows that structured language intervention significantly improves the communication skills of school-age d/Deaf and hard-of-hearing children. Casoojee et al. (2025) compared the effectiveness of several early intervention approaches, while Terry and Rance (2023) emphasized the importance of family-system support for program success. At the national level, research by Zusfindhana (2021) and Rafikayati and Jauhari (2021) indicates that the implementation of communication programs for deaf children in Indonesian educational institutions still varies and requires more integrated conceptual guidelines.

Although studies on speech habilitation and sign language training have often been conducted separately, a comprehensive synthesis combining the concepts, legal foundations, scope, implementation methods, and evaluation of both programs remains limited, particularly within the context of special education in Indonesia. Therefore, this article aims to comprehensively examine the basic concepts, legal and philosophical foundations, scope, implementation methods, and evaluation techniques of speech habilitation and sign language training programs for students with hearing impairment, in an effort to provide conceptual guidance for teachers, speech therapists, and special education stakeholders.

2. Method

This article was prepared using a descriptive qualitative approach with a literature review method. The literature review method was chosen because the purpose of this article is to synthesize concepts, findings, and current practices related to speech habilitation and sign language training, rather than to generate primary field data.

The data sources for this study consist of twenty scholarly sources, including indexed international and national journal articles published between 2021 and 2025, reference books, and national regulatory documents such as the 1945 Constitution, Law Number 20 of 2003, Government Regulation Number 17 of 2010, and Law Number 19 of 2011. Sources were retrieved through academic databases such as Google Scholar, ScienceDirect, and accredited national journal databases, using the keywords “bina wicara” (speech habilitation), “bina isyarat” (sign language training), “tunarungu” (deaf/hearing impaired), “speech habilitation deaf children,” “sign language education,” and “SIBI.”

The inclusion criteria for sources were: (1) topic relevance to communication programs for children with hearing impairment; (2) recency, with priority given to sources published within the last five years, except for foundational theories such as Vygotsky's theory of language development and Chomsky's nativist theory; and (3) source credibility, in the form of reputable indexed journals.

The data analysis technique used was thematic content analysis. Data from the various sources were grouped into four main themes: (1) the basic concepts and foundations of speech

habilitation; (2) the scope and objectives of speech habilitation and sign language training; (3) the implementation methods of speech habilitation and sign language training with SIBI; and (4) program evaluation techniques. Each theme was then synthesized and critically discussed to produce a comprehensive picture of the implementation of speech habilitation and sign language training programs for students with hearing impairment.

3. Results and Discussion

3.1 Result

3.1.1 Basic Concepts and Foundations of Speech Habilitation

Speech habilitation (bina wicara) is a comprehensive service designed to improve articulation, breathing, phonation, prosody, speechreading, and sound-awareness skills in deaf students (Aldemir et al., 2023). Philosophically, the program is grounded in a humanistic view that positions deaf children as individuals with communicative potential that can be developed, rather than viewing them solely from a deficit perspective (Casoojee et al., 2025). Theoretically, speech habilitation draws on Vygotsky's theory of language development, particularly the concept of the Zone of Proximal Development, which emphasizes the role of adult mediation in determining training targets (Terry & Rance, 2023), as well as Chomsky's nativist theory of the Language Acquisition Device, which underscores the importance of linguistic stimulation during the critical period of language development. Legally, the implementation of speech habilitation is supported by Article 31 paragraph (1) of the 1945 Constitution of the Republic of Indonesia, Article 5 paragraph (2) of Law Number 20 of 2003, Government Regulation Number 17 of 2010, and the ratification of the CRPD through Law Number 19 of 2011 (Jønsberg et al., 2025).

3.1.2 Scope and Objectives of the Program

The scope of speech habilitation covers six main dimensions: articulation development, breathing function, phonation, prosody, speechreading ability, and sound awareness and discrimination (Daza Gonzalez et al., 2023; Wiggin et al., 2021). Its general objective is to equip students to communicate verbally in an optimal way in social, academic, and occupational interactions (Jønsberg et al., 2025), while sign language training aims to hone receptive and expressive skills in using SIBI as an effective communication tool (Van Bogaert et al., 2023). Both programs provide broad benefits: improved vocabulary, confidence, and academic achievement for students; reduced communication-related stress for families (Curtin et al., 2021); and broader social inclusion for society.

3.1.3 Speech Habilitation Implementation Methods

Several methods are used in varying ways and are often combined eclectically by educators in special schools (Stefánsdóttir et al., 2024). A summary of the four main methods is presented in Table 1.

Table 1. Summary of Speech Habilitation Implementation Methods

No	Method	Main Principle	Source
1	Auditory-Verbal (AV)	Optimizing residual hearing through early amplification and active parental involvement (sandwiching, acoustic highlighting, expansion)	Van Bogaert et al. (2023)
2	Oral-Multisensory	Combining visual, auditory, tactile, and kinesthetic channels for accurate phoneme production	Daza Gonzalez et al. (2023)
3	Phonetic-Phonemic	Tiered assessment and articulation training, from isolated phonemes to spontaneous communication	Curtin et al. (2021)
4	Total Communication	Combining speech, speechreading, and signing simultaneously (SimCom)	Terry & Rance (2023)

The Auditory-Verbal (AV) method emphasizes maximizing the use of residual hearing through early amplification and active parental involvement. The Oral-Multisensory method combines visual, auditory, tactile, and kinesthetic channels to help children produce phonemes accurately (Daza Gonzalez et al., 2023). The Phonetic-Phonemic method focuses on tiered assessment and articulation training, based on the principle of generalizing training outcomes to real communication contexts (Curtin et al., 2021). The Total Communication method combines speech, speechreading, and signing simultaneously to provide broader communication access, particularly for children with severe to total hearing loss (Terry & Rance, 2023).

3.1.4 Implementation of Sign Language Training with SIBI

The Indonesian Sign Language System (SIBI), officially recognized through Decree of the Minister of Education and Culture Number 012/U/1994, was designed to follow the structure of Indonesian grammar and consists of root signs, affix signs, and finger spelling (Van Bogaert et al., 2023; Darmawan et al., 2025). SIBI instruction is delivered in stages, beginning with mastery of finger spelling, introduction of basic vocabulary, vocabulary expansion, and finally improvement of communication fluency (Aldemir et al., 2023). Nugraheni et al. (2023) emphasized the importance of optimizing the use of SIBI alongside Bisindo (Indonesian Sign Language) as a natural sign language, given that the two systems have different functions and contexts of use.

3.1.5 Evaluation Techniques

Evaluation of speech habilitation and sign language training programs is carried out based on the principles of comprehensiveness, authenticity, individualization, and continuity (Jønsberg et al., 2025; Stefánsdóttir et al., 2024). Types of evaluation include diagnostic evaluation at the start of the program, formative evaluation conducted throughout the process, and summative evaluation at the end of a given period. Instruments used include articulation tests, Speech Intelligibility Scales, spontaneous speech sampling, and hearing detection tests such as the Ling 6 Sound Test (Wiggin et al., 2021; Stefánsdóttir et al., 2024), while sign language evaluation includes receptive and expressive sign tests as well as naturalistic communication observation (Van Bogaert et al., 2023).

3.2 Discussion

The findings show that the effectiveness of speech habilitation programs is strongly influenced by the age at which intervention begins. Wiggin et al.'s (2021) finding of significantly better outcomes when intervention begins before six months of age aligns with evidence of brain neuroplasticity presented by Sharma et al. (2025), which shows that additional language therapy influences cortical development in children with hearing loss. These findings reinforce the principle of "early detection, immediate intervention" as the primary foundation of speech habilitation services in Indonesia (Putri & Pangastuti, 2024).

Debate over the Total Communication approach versus approaches more focused on verbal speech (auditory-oral) is also evident in the literature. Although an eclectic approach combining various methods is considered to provide flexibility in meeting diverse children's needs (Stefánsdóttir et al., 2024), Wischmann et al.'s (2025) research emphasizes the importance of strict quality assurance in the implementation of hospital-based Auditory-Verbal methods, in order to keep children's outcomes consistent.

In terms of sign language training, a discourse emerged between the use of SIBI as a sign system that follows Indonesian grammar and Bisindo as the natural sign language of the deaf community. A bilingual-bicultural approach that respects Bisindo as a first language while also developing written Indonesian as a second language is increasingly promoted by special education practitioners (Nugraheni et al., 2023). This underscores that sign language training should ideally not stand alone, but rather be integrated with speech habilitation within a total communication framework that respects the linguistic identity of deaf children.

Beyond methodological factors, program success is also strongly determined by parental involvement and the competence of teachers or therapists. Curtin et al. (2021) showed that responsive parental behavior in daily interactions contributes significantly to the communication development of children aged 0–3 years, while Elyondri and Azizah (2023) emphasized the need for Sound Perception and Rhythm (PKPBI) learning media suited to children's needs in special education units. Correspondingly, field studies by Zusfindhana (2021) and Rafikayati and Jauhari (2021) show that program implementation across various Indonesian educational units still requires standardized guidelines and ongoing teacher training, so that the services provided are truly evidence-based and centered on children's individual needs.

Overall, this study confirms that speech habilitation and sign language training are two complementary programs that need to be implemented in an integrated, scientifically evidence-based manner, involving active collaboration among teachers, therapists, parents, and the students themselves.

4. Conclusion

Speech habilitation and sign language training are two special programs that complement one another in supporting the communication development of students with hearing impairment. Speech habilitation focuses on developing verbal ability through articulation, breathing, phonation, prosody, and the use of residual hearing, while sign language training develops communication ability through the Indonesian Sign Language System (SIBI). The implementation of both programs is grounded in a strong legal framework,

theories of language development, and humanistic principles that position deaf children as individuals with potential. Various methods such as Auditory-Verbal, Oral-Multisensory, Phonetic-Phonemic, and Total Communication can be applied eclectically according to individual needs, with success strongly influenced by the age of intervention, technology suitability, parental involvement, and teacher competence. Comprehensive, authentic, individualized, and continuous evaluation is key to ensuring that programs remain responsive to children's development. Further research in the form of empirical field studies is recommended to test the effectiveness of integrated speech-habilitation and sign-language-training models in special education units in Indonesia.

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