



Deaf children's communication needs in social environments: A hearing perspective

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ABSTRACT

Communication is a fundamental need that shapes children's cognitive, social, and academic development, yet deaf children often face communication barriers because most interactions in their environment rely on spoken language. These barriers depend not only on the child's abilities but also on the readiness of the hearing individuals around them, including parents, teachers, and community members. Communication support for deaf children has commonly been designed around the child alone, with limited attention to the communication needs of the hearing environment. This study aimed to identify sign language communication needs within deaf children's social environments from the perspective of hearing individuals to inform the development of more inclusive communication support. The study used a qualitative needs-assessment design and involved parents, teachers, special education students, and community members selected through purposive sampling. Data were collected through in-depth interviews, focus group discussions, and observations, then analyzed thematically with triangulation. The findings show that communication barriers arise from the interaction between children's communication characteristics and environmental readiness, and identify five interrelated needs: sign language proficiency, visual communication elements, visual media, adaptive strategies, and broader environmental support.

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ABSTRAK

Komunikasi merupakan kebutuhan mendasar yang membentuk perkembangan kognitif, sosial, dan akademik anak. Namun, anak tunarungu sering menghadapi hambatan komunikasi karena sebagian besar interaksi di lingkungan sekitarnya masih mengandalkan bahasa lisan. Hambatan ini tidak hanya bergantung pada kemampuan anak, tetapi juga pada kesiapan individu dengar di sekitarnya, termasuk orang tua, guru, dan anggota masyarakat. Dukungan komunikasi bagi anak tunarungu umumnya dirancang berpusat pada anak, dengan perhatian yang masih terbatas pada kebutuhan komunikasi di lingkungan dengar. Penelitian ini bertujuan untuk mengidentifikasi kebutuhan komunikasi bahasa isyarat dalam lingkungan sosial anak tunarungu dari perspektif individu dengar, sebagai dasar pengembangan dukungan komunikasi yang lebih inklusif. Penelitian ini menggunakan pendekatan kualitatif dengan desain needs assessment, melibatkan orang tua, guru, mahasiswa pendidikan khusus, dan anggota masyarakat yang dipilih menggunakan purposive sampling. Data dikumpulkan melalui wawancara mendalam, diskusi kelompok terarah, dan observasi, kemudian dianalisis secara tematik dengan triangulasi. Hasil penelitian menunjukkan bahwa hambatan komunikasi muncul dari interaksi antara karakteristik komunikasi anak dan kesiapan lingkungan, serta mengidentifikasi lima kebutuhan yang saling berkaitan: kemampuan bahasa isyarat, unsur komunikasi visual, media visual, strategi adaptif, dan dukungan lingkungan yang lebih luas.

Kata Kunci: anak dengan hambatan pendengaran; bahasa isyarat; kebutuhan komunikasi; lingkungan sosial

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INTRODUCTION

Communication is a fundamental human need that plays a vital role in individuals' cognitive, social, emotional, and learning development. Through communication, individuals can understand themselves and the world around them while building meaningful connections with others. Through communication, individuals establish social relationships, express ideas, and acquire new knowledge and experiences. These processes do not occur in isolation; the quality and accessibility of the communication systems available to each individual continuously shape them. In education, communication plays a strategic role in supporting successful learning.

It serves as the medium through which teachers deliver instruction and through which students construct understanding and engage in collaborative learning. Effective communication facilitates knowledge transfer, meaning-making, and social interaction that foster students' development. Without clear and accessible communication, the learning process may become fragmented, leading to gaps in comprehension and reduced motivation to learn. However, deaf children often face communication challenges because they have limited access to auditory information. This limitation can create significant barriers in classroom settings, particularly when instructional methods rely heavily on spoken language. Without appropriate communication support systems, this condition may affect language development, academic achievement, and social interaction (Morgan et al., 2026).

Consequently, educational institutions need to design communication strategies that accommodate the specific needs of deaf children in order to support inclusive and equitable learning environments. Communication involving deaf children occurs not only in formal educational settings but also across various social contexts, including families, peer groups, academic environments, and the wider community (Nurita et al., 2025). These contexts collectively shape how deaf children learn to communicate and interact with others daily. Therefore, understanding deaf children's communication needs requires considering not only individual abilities but also the accessibility and support their surrounding environments provide.

This study explores sign language communication needs within the social environment of deaf children from the perspective of hearing individuals to inform more inclusive communication support. Building upon this perspective, previous studies on deaf children's communication have primarily focused on individual aspects, such as language acquisition, sign language proficiency, and communication interventions. However, recent research emphasizes that social environments also influence communication development, including family interactions, parental involvement, and communication accessibility (Dickerson et al., 2025; Holt et al., 2022). These findings indicate that communication outcomes are shaped not only by children's abilities but also by the quality of interactions within their surrounding environments.

Nevertheless, previous studies have often examined social contexts separately, such as family, school, or community settings. Research that comprehensively maps sign language communication needs from the perspective of hearing individuals across multiple social environments remains limited, particularly in Indonesia. Therefore, this study extends

previous individual-oriented approaches by adopting an ecological perspective to identify communication needs within deaf children's social environments. This research's novelty lies in providing an ecosystem-based mapping of sign language communication needs involving families, teachers, special education students, and community members as a foundation for a more comprehensive communication assessment framework.

LITERATURE REVIEW

Communication Development and Social Interaction

Social interaction through communication serves as the primary foundation for language development and cognitive processes, as recent research explains (Sperry et al., 2022). This perspective highlights that language does not develop independently within the individual, but rather emerges through continuous interaction with the social environment. Moreover, effective communication supports the development of self-identity, social participation, and psychological well-being, as Adler, Rodman, and du Pré explain in *Understanding Human Communication*. When communication barriers exist, individuals may struggle to form relationships, express emotions, and participate fully in social life. Therefore, ensuring equal access to communication is essential to safeguard every individual's right to optimal development, particularly for those who face unique communication challenges due to sensory limitations.

Concept of Communication Needs in Deaf Children

Communication needs refer to the conditions and supports required to enable individuals to exchange information, express ideas, develop relationships, and participate meaningfully in social contexts. Communication for deaf children needs extend beyond individual language abilities and include access to appropriate communication systems, responsive interaction partners, and supportive environments. Research emphasizes that deaf children's communication development is influenced by access to language input, opportunities for social interaction, and the availability of communication approaches that match their needs (Matthews & Kelly, 2022).

Therefore, communication needs among deaf children can be understood through several dimensions, including linguistic needs (access to sign language and language competence), interactional needs (reciprocal communication and social participation), environmental needs (support from families, schools, and communities), and technological needs (assistive communication resources). These dimensions show that effective communication support requires not only developing deaf children's communication skills but also strengthening the hearing social environment's capacity to provide accessible communication opportunities.

Sign Language as a Communication System for Deaf Individuals

One of the primary communication modes used by the Deaf community is sign language. As a natural language developed within Deaf communities, sign language allows individuals to communicate fluently and expressively without depending on auditory input. Sign language

is a visual-spatial communication system with a complete linguistic structure that serves as the primary means of communication for deaf individuals, as Othman describes in the chapter "*Structure of Sign Language*." Its grammatical and structural complexity demonstrates that sign language is not merely a substitute for spoken language, but a fully developed linguistic system in its own right.

Beyond facilitating language development, sign language also plays an essential role in shaping cultural identity and promoting social participation among deaf individuals (Asriandhini & Rahmawati, 2021). Through sign language, deaf individuals can build a strong sense of belonging within the Deaf community. The United Nations' Convention on the Rights of Persons with Disabilities further emphasizes sign language as a communication right for individuals with hearing impairments, recognizing it as integral to fulfilling human rights.

The Role of Social Environment in Deaf Children's Communication

Interconnected environmental systems influence individual development (Navarro & Tudge, 2022). For deaf children, the social environment plays a crucial role in shaping their everyday communication experiences. Communication access is not determined solely by deaf children's abilities; it also depends on the readiness and competence of the people around them, including family members, teachers, peers, and community members. Various social contexts collectively shape how deaf children learn to communicate and interact with others. Therefore, communication needs should be understood holistically across all settings in which deaf children are actively engaged.

Strengthening the communication capacity of hearing individuals and creating accessible communication environments are important steps toward supporting inclusive communication for deaf children. The social environment plays a particularly important role in families of deaf children because hearing parents often need to develop new communication competencies after learning their child is deaf. Research shows that hearing parents can learn sign language and use it to communicate with their deaf children. However, the process may be influenced by the availability of learning resources, time, financial constraints, and access to appropriate instruction (Lieberman et al., 2024).

Furthermore, previous research has emphasized that hearing families need coordinated, accessible support systems to facilitate effective communication and family participation (Terry & Rance, 2023). These findings suggest that communication accessibility should be conceptualized not only as a characteristic of the child but also as a capacity that must be developed within the surrounding social environment. Therefore, understanding the communication needs of hearing individuals is essential for developing sustainable communication support for deaf children.

METHODS

This study used a qualitative needs assessment design to identify the sign language communication needs required to support communication between deaf children and their hearing social environment. This approach was appropriate given the exploratory nature of the research problem, which required rich, contextual information rather than numerical

generalization. A qualitative approach enables researchers to develop an in-depth understanding of participants' experiences, perceptions, and needs within their natural social contexts. It is particularly appropriate for exploring complex social phenomena because it allows researchers to examine how participants understand and experience a phenomenon within their everyday environments (Busetto et al., 2020). Through this approach, the study captured the experiences and perspectives of hearing individuals who interact directly with deaf children.

The study adopted a needs assessment design to identify the gap between existing and desired communication conditions from the perspective of the hearing social environment. Needs assessment is a systematic process for identifying existing conditions, determining priority needs, and establishing a basis for developing appropriate programs or interventions (Sankofa, 2021). In this study, the needs assessment was operationalized through four stages: identifying the existing communication conditions of deaf children within their social environments based on participants' experiences; identifying desired communication conditions based on participants' perspectives and relevant literature; analyzing the gaps between existing and desired conditions; and determining priority communication needs as a basis for developing more inclusive communication programs and services.

This design enabled the researchers to systematically map current communication conditions and the improvements participants considered necessary. The study took place across social environments where hearing individuals interact directly with deaf children, including family, school, academic, and community settings. These contexts were selected to capture the diversity of communication experiences deaf children encounter in everyday life, both within immediate family relationships and in broader social environments. We selected 19 participants using purposive sampling. Participants included parents, teachers, special education students, and community members with direct experience interacting with deaf children. We selected participants based on three criteria: experience interacting with deaf children; willingness to participate in the study; and representation of one of the social environments surrounding deaf children, including family, school, academic, or community contexts.

The researchers used purposive sampling because it allows them to intentionally select participants with relevant experiences and knowledge related to the phenomenon under investigation (Campbell et al., 2020). Selecting participants from different social environments allowed the study to capture variation in communication experiences and needs across contexts. The researchers collected data through in-depth, semi-structured interviews with all participants. In-depth interviews were the sole data collection method because the study aimed to explore participants' experiences, perceptions, and needs regarding communication with deaf children from the perspective of the hearing social environment. This method enabled participants to describe their experiences in detail, including communication difficulties, strategies used to facilitate interaction, and forms of support they considered necessary to improve communication accessibility.

The semi-structured format provided consistency in the topics explored across participants while allowing participants to elaborate on specific experiences and communication situations relevant to their social contexts. The interviews explored several aspects of communication, including participants' knowledge and use of sign language, strategies for establishing

communication with deaf children, difficulties encountered during interaction, the use of visual communication elements and media, adaptations made when communication difficulties occurred, and the types of support required from families, schools, universities, and the broader community. These areas were explored to develop a comprehensive understanding of the communication needs hearing individuals experience when interacting with deaf children.

The interview questions also allowed participants to provide concrete examples of communication situations they had encountered and to explain how they responded when communication difficulties occurred. Data collection took place throughout May 2026 on different dates and at locations determined by participants' availability and context. Each participant was interviewed individually using a semi-structured interview guide, and interviews lasted approximately 40–60 minutes. With participants' consent, the interviews were audio-recorded and subsequently transcribed for analysis. Field notes also documented relevant contextual information and researcher reflections related to the interview process.

The field notes complemented the interview records and supported the interpretation of participants' accounts rather than serving as an independent source of empirical findings. The research instrument consisted of a semi-structured interview guide developed from a literature review on communication among deaf children, sign language, communication accessibility, and needs assessment. The interview guide was developed systematically to ensure it adequately represented relevant dimensions of communication needs. The questions addressed participants' experiences in communicating with deaf children, their knowledge and use of sign language, visual communication practices, communication media, strategies for overcoming communication difficulties, and the support required to improve communication accessibility.

Before data collection, experts in special education and deaf communication reviewed the interview guide to assess the relevance, appropriateness, and clarity of the questions and indicators. The expert review improved the interview instrument's content relevance and clarity before administration. The interview data were analyzed using thematic analysis. This method was selected because it provides a flexible framework for identifying, analyzing, organizing, and interpreting patterns within qualitative data. The analytical process included several stages: transcribing the interview recordings, familiarizing myself with the data, initial coding, categorizing related codes, identifying and refining themes, and interpreting the findings.

Thematic analysis enables researchers to systematically identify patterns of meaning within qualitative datasets while maintaining the contextual richness of participants' accounts (Byrne, 2022). Following transcription, the researchers repeatedly reviewed the interview data to become familiar with participants' accounts. Relevant statements concerning communication experiences and needs were then coded. The researchers grouped similar codes into broader categories and examined them to identify recurring patterns across participants. The researchers reviewed the emerging themes against the research objectives and refined them to ensure each theme represented a distinct aspect of the communication needs identified by participants.

The analysis compared responses across different participant groups, including teachers, parents, special education students, and community members, to enhance the credibility of the findings. This comparison enabled the researchers to identify both common and context-specific communication needs reported by participants from different social environments. Thus, rather than relying on methodological triangulation, the researchers strengthened the credibility of the findings by comparing participant perspectives within the interview dataset. This cross-participant comparison also allowed the researchers to examine whether particular communication needs appeared consistently across different social environments or were more closely associated with specific interactional contexts.

The findings are presented thematically to illustrate the knowledge, skills, communication strategies, environmental support, and psychosocial considerations that hearing participants identified as important for promoting more inclusive communication with deaf children. The interview data revealed five major themes: sign language proficiency, visual communication elements, visual media, adaptive communication strategies, and broader environmental support. Together, these themes illustrate the multidimensional communication needs of the hearing social environment surrounding deaf children. The findings provide an empirical basis for developing a conceptual understanding of the communication competencies and environmental support needed to improve communication access for deaf children. The Appendix provides complete interview responses, organized by question and participant group, to support research transparency.

RESULTS AND DISCUSSION

The analysis identified five interrelated themes describing deaf children's communication needs from the perspective of their hearing social environment: challenges in understanding and using sign language, visual communication components, visual media as communication support, flexible and adaptive communication strategies, and broader environmental and institutional support. Although participants differed in their roles and experiences, the five themes consistently showed that communication accessibility depends not only on deaf children's communication abilities but also on the linguistic competence, interactional practices, adaptability, and support available in their surrounding environments. The findings therefore position communication as a reciprocal process in which the capacity of hearing communication partners is an important component of successful interaction.

Challenges in Understanding and Using Sign Language

Across participant groups, understanding and using sign language emerged as a central communication challenge, although specific difficulties varied by participants' roles and experiences. Teachers reported difficulties with limited vocabulary, abstract concepts, sentence structures, and children's articulation, whereas parents had greater difficulty when communication relied mainly on spoken language or involved complex messages. Special education students identified their own limited sign language proficiency as a major barrier to understanding deaf children's intended messages. At the same time, participants with direct interaction experience reported difficulties involving vocabulary, dialectal variation, language structure, and differences in signing speed. Despite these differences, participants

consistently emphasized the importance of strengthening the sign language competence of hearing communication partners.

This finding suggests that communication difficulties should not be interpreted solely as characteristics of deaf children but also as a consequence of limited linguistic readiness within their social environment. Communication becomes more accessible when hearing partners possess sufficient competence to understand and respond to the communication modes used by deaf children. This interpretation is consistent with research showing that hearing parents can develop sign language competence when they have access to appropriate learning resources. However, barriers such as cost, availability, and limited opportunities may restrict their progress (Lieberman et al., 2024). Similarly, research has demonstrated that hearing parents who intentionally learn sign language can develop receptive and expressive signing abilities (Pontecorvo et al., 2025). Thus, the present findings indicate that improving communication requires attention not only to children's communication development but also to the linguistic capacity of the people who interact with them.

The finding also supports a broader understanding of communication barriers as relational rather than exclusively individual. Research has demonstrated that family and social environments influence communication and language development among deaf and hard-of-hearing children (Bowdrie et al., 2022; Holt et al., 2022). Consequently, sign language training for parents, teachers, university students, and community members should be regarded as part of an environmental communication intervention, consistent with evidence that sign language training can strengthen communication skills among hearing and deaf communication partners (Anggraeni & Candrasasi, 2025; Sapada et al., 2025). Strengthening hearing partners' linguistic competence can increase opportunities for reciprocal interaction and reduce dependence on communication strategies that place the primary burden of adaptation on deaf children.

Visual Communication Components

Visual access emerged as another fundamental condition for successful communication. Participants described using face-to-face positioning, eye contact, touch, greetings, gestures, and other attention-getting strategies before exchanging information. Teachers commonly initiated communication through face-to-face interaction and eye contact; parents used touch and eye contact to gain attention; and special education students and other participants reported using greetings, gestures, written messages, or approaches adapted to the child's visual preferences. Facial expressions and gestures were also consistently identified as important because they convey emotion, communicative intent, and meaning, particularly when sign language proficiency is limited; attention and nonverbal cues are likewise important for establishing shared communication (Katembu et al., 2022; Sander et al., 2025).

These findings indicate that communication accessibility depends not only on the linguistic form of a message but also on whether the communication partner establishes adequate visual access before and during interaction. This is particularly important for deaf children because communication may become ineffective when the child cannot see the speaker, signer, facial expression, gesture, or written information. Previous research similarly

emphasizes the importance of accessible communication environments and responsive interaction for supporting communication and language development among deaf children (Damayanti et al., 2022; Goppelt-Kunkel et al., 2022; Holt et al., 2022; Sriwidiastuty et al., 2025). These findings therefore extend this perspective by showing that visual access is a practical requirement that hearing communication partners must actively establish during everyday interaction.

The importance of facial expressions and other non-manual features further indicates that sign language communication cannot be reduced to hand movements or individual signs. Facial expression, eye gaze, and body movement help interpret and organize meaning in visual-spatial communication. Research on sign language has likewise highlighted the linguistic importance of non-manual features in conveying grammatical and communicative information (Kocab et al., 2022). Accordingly, communication training for hearing individuals should extend beyond vocabulary acquisition and include attention to visual positioning, eye gaze, facial expression, gestures, and other interactional behaviors that support accessible communication.

Visual Media as a Communication Support

Participants across all groups identified visual media as an important resource when spoken or signed communication alone was insufficient. Teachers reported using pictures, videos, real objects, written text, and sign language, while parents used pictures, photographs, written information, and digital media. Special education students reported using written text, pictures, communication applications, and other visual resources, whereas participants with direct interaction experience combined sign language with pictures, photographs, written messages, and digital devices. When communication breakdown occurred, participants commonly repeated information, simplified the message, or introduced pictures and written information to clarify meaning.

The findings demonstrate that visual media function not merely as instructional materials but as communication resources that help bridge gaps between the intended message and the child's interpretation. Their use was particularly evident when communication partners encountered unfamiliar signs, complex information, or situations in which verbal or signed communication did not immediately result in mutual understanding. This finding is consistent with research emphasizing the importance of accessible communication resources and environmental support for deaf children (Budiman, 2016; Dickerson et al., 2025; Holt et al., 2022; Mayer, 2024). Thus, the effectiveness of visual media appears to depend less on technological sophistication than on their relevance, accessibility, and appropriateness to the child's communication needs.

Digital technology may further expand these opportunities by providing additional ways to represent information visually and support communication between deaf and hearing individuals. However, the findings suggest that technology should function as a complementary resource rather than a substitute for communication competence. This distinction matters because access to digital resources cannot compensate for inadequate sign language understanding or limited awareness of visual communication practices. Therefore, communication programs should integrate visual media with sign language

competence and responsive interaction strategies rather than treating technology as an independent solution. Recent work on AI-supported sign language production also shows the potential of digital tools when integrated into accessible communication systems (Ayere et al., 2024).

Flexible and Adaptive Communication Strategies

Participants described communication as a process that requires continuous adjustment rather than reliance on a single fixed method. Teachers combined sign language, oral communication, visual media, and hands-on activities; parents used spoken language, sign language, written messages, and gestures; special education students used written communication, gestures, digital communication, and speechreading; and participants with direct interaction experience adjusted sign language, gestures, and visual communication according to individual needs. When communication was unsuccessful, participants commonly repeated information, simplified vocabulary, changed the communication modality, or used additional visual support.

This pattern suggests that communication effectiveness is closely tied to hearing communication partners' ability to recognize communication breakdowns and adjust their approach accordingly. This adaptability matters because deaf children differ in communication preferences, language experience, linguistic competence, and interactional needs. Research similarly indicates that communication outcomes are influenced by the availability of appropriate communication strategies and supportive environments rather than by children's individual characteristics alone (Dickerson et al., 2025; Holt et al., 2022; Matthews & Kelly, 2022). The present findings therefore suggest that adaptive communication should be conceptualized as a shared environmental capacity rather than as an alternative strategy used only when conventional communication fails.

Access to learning opportunities and support also shapes adaptive capacity. Hearing parents, for example, may actively seek resources to develop sign language skills but may face barriers related to time, cost, and access to instruction (Jones & Roberts, 2024; Lieberman et al., 2024). Consequently, communication adaptability cannot depend entirely on the motivation of individual communication partners. Systematic training, accessible learning resources, and institutional support are required to help hearing individuals develop the skills needed to modify communication appropriately across different contexts.

Broader Environmental and Institutional Support

Beyond individual communication strategies, participants identified broader environmental and institutional support as necessary for sustaining accessible communication. Teachers emphasized the need for stronger sign language competence within schools and identified visual media, articulation training resources, and learning materials as important facilities. Parents highlighted family support, sign language training, and greater public understanding, while special education students emphasized inclusive environments, assistive technologies, and accessible communication services. Participants with direct interaction experience

additionally identified the need for sign language interpreters, accessible facilities, and public awareness initiatives.

These findings indicate that social acceptance alone does not guarantee communication inclusion. An environment may show positive attitudes toward deaf children while still creating communication barriers when interaction depends primarily on spoken language or when accessible resources are unavailable. Inclusive communication therefore requires both social recognition and practical capacity to provide accessible communication. This interpretation is consistent with research showing that the quality of family and social environments contributes to language development and participation among deaf children (Bowdrie et al., 2022; Goppelt-Kunkel et al., 2022; Joy et al., 2025; Ocuto, 2024). This study extends this evidence by showing that participants identified environmental communication competence as an important unmet need.

The findings further demonstrate that communication support must operate across multiple environments rather than being concentrated in schools. Families provide early and continuous communication experiences, schools provide structured opportunities for language and learning, peers facilitate everyday social interaction, and communities determine the extent to which deaf children can participate beyond formal educational settings. From this perspective, communication development can be understood as an ecological process in which different social environments interact to shape children's opportunities for accessible communication (Navarro & Tudge, 2022). The quality of family environments is also associated with longer-term language development among deaf children, reinforcing the importance of supporting communication across settings rather than focusing exclusively on individual intervention (Dickerson et al., 2025).

Participants also identified several forms of institutional support, including systematic sign language training, visual communication resources, articulation and vocabulary development, assistive technology, interpreter services, and accessible communication facilities. These needs demonstrate that communication accessibility is multidimensional and cannot be addressed through a single intervention. Instead, linguistic competence, visual access, adaptive communication, and systemic resources must work together. The findings therefore support an ecosystem-based understanding of communication inclusion in which the responsibility for accessible interaction is distributed across families, educational institutions, peers, and the wider community. Finally, participants emphasized the importance of systematically assessing deaf children's communication needs.

The diversity of communication abilities and barriers identified across contexts indicates that a uniform communication program may not adequately address individual needs. Assessment should therefore consider not only children's abilities to receive and express messages but also the competence and accessibility of the environments in which communication occurs. In this respect, the present study contributes an environmental perspective to communication needs assessment by emphasizing that identifying communication needs should include examination of the readiness of hearing communication partners and the availability of supporting systems. Taken together, the five themes demonstrate that communication needs among deaf children are interconnected.

Sign language competence provides the linguistic foundation for interaction, visual communication establishes access to the message, visual media provide additional

representational support, and adaptive strategies allow communication partners to respond to breakdowns. Environmental and institutional support enables these capacities to be sustained across contexts. The central contribution of this study is therefore identifying communication needs not solely as characteristics of deaf children but as shared requirements between deaf children and their hearing social environments. This perspective provides a basis for developing communication assessment and intervention programs that address both individual communication abilities and the readiness of families, schools, peers, and communities to establish accessible, sustainable communication, consistent with evidence supporting early and sustained access to sign language (Lillo-Martin et al., 2023).

CONCLUSION

This study demonstrates that both individual and environmental factors shape communication needs among deaf children. The findings indicate that hearing individuals across family, school, and community settings still face limitations in sign language proficiency, visual communication competence, and access to communication support resources. Effective communication with deaf children depends on establishing visual attention, integrating non-manual elements such as facial expression and gesture, using visual media, applying adaptive communication strategies, and strengthening sign language competence among hearing communication partners.

These findings support the view that communication barriers are relational rather than located solely within the child, aligning with the social model of disability and ecological systems theory. Schools, families, and communities should collaborate to provide systematic sign language training, accessible visual communication resources, and interpreter or assistive technology services. It is further recommended that a standardized communication needs assessment tool be developed for use across educational and social settings to guide targeted intervention and program development for deaf children and their communication environments.

AUTHOR'S NOTE

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APPENDIX

Table 1. Summary of Interview Findings on Sign Language Communication Needs from Hearing People's Perspectives

Interview Questions	Teachers	Parents	Special Education Students	Individuals with Direct Interaction with Deaf Individuals
What challenges do you experience in understanding the sign language used by deaf children?	Difficulty understanding limited vocabulary, abstract concepts, sentence structure, and children's articulation.	Difficulty understanding complex and detailed messages, especially when communication relies solely on spoken language.	Limited sign language proficiency makes it difficult to understand the intended messages of deaf children.	Difficulty understanding sign language vocabulary, dialectal variations, language structure, and the speed of signing.
How do you initiate communication with deaf children?	Use face-to-face communication, maintain eye contact, and gain the child's attention before communicating.	Gain the child's attention through touch and eye contact before delivering the message.	Begin communication through greetings, gestures, or written messages.	Adapt communication to the individual's preferences using eye contact and visual communication.
How important are facial expressions and gestures in communication, in your opinion?	They are essential for clarifying messages and reducing miscommunication.	They are essential for helping children understand emotions and communicative intentions.	They serve as key cues for understanding messages when sign language proficiency is limited.	They are integral components of sign language that determine message meaning.
What do you do when a deaf child does not understand your message?	Repeat the information, simplify the language, and use visual media.	Repeat the explanation and use pictures, written text, or concrete examples.	Simplify the message and provide additional written or gestural support.	Repeat the message, slow down communication, and use visual media.
Which communication strategies are most helpful during interactions?	Sign language, oral communication, visual media, and hands-on practice.	A combination of spoken language, sign language, written text, and gestures.	Written communication, gestures, digital communication, and speechreading.	Sign language, gestures, written communication, and visual communication tailored to individual needs.
Do you use written text, pictures, or gestures when communicating?	Various communication media are used according to the child's needs.	Written text, pictures, photographs, and gestures are used to support communication.	Written text and gestures are the primary communication media when sign language proficiency is limited.	Written text, pictures, gestures, and digital devices are used as communication tools.
Does the communication environment provide adequate support for deaf children to clearly see the person they are communicating with?	The school environment is generally supportive, although communication competence still needs improvement.	The family environment is relatively supportive, but the broader social environment does not yet fully understand the child's communication needs.	A more inclusive and accessible environment is needed.	Environmental conditions vary and do not yet fully support equitable communication.
What types of media are most helpful in supporting communication with deaf children?	Pictures, videos, real objects, written text, and sign language.	Pictures, photographs, written text, and digital media.	Written text, pictures, communication applications, and other visual media.	Sign language, pictures, written text, photographs, and digital devices.
What improvements are needed in the environment to facilitate communication?	Improving communication skills and sign language proficiency within the school environment.	Greater public understanding of sign language and communication with deaf individuals.	Creating a more inclusive and communication-friendly environment.	Improving communication accessibility in social and public environments.

Interview Questions	Teachers	Parents	Special Education Students	Individuals with Direct Interaction with Deaf Individuals
What facilities are most needed to support communication?	Visual media, articulation training tools, and communication learning resources.	Sign language training and visual communication media.	Assistive communication technologies, such as speech-to-text systems and sign language translation applications.	Sign language interpreters and accessible communication facilities.
Does the environment support the use of sign language?	Sign language is generally accepted within the school environment.	It is accepted, although not yet widely understood.	It is generally accepted, although some members of the community are still unfamiliar with it.	Acceptance varies depending on the social environment.
In what situations do deaf children appear comfortable or uncomfortable when communicating?	They are comfortable when communication is reciprocal and appropriate responses are provided.	They are comfortable when they are understood and receive attention from their communication partners.	They are comfortable when others make an effort to understand their way of communicating.	They are comfortable when they can actively participate in conversations and are not ignored.
What kinds of support are most needed to improve communication?	Collaboration between schools and families in developing children's communication skills.	Family support and improved communication skills within the surrounding environment.	Greater public awareness of sign language and active interaction with deaf individuals.	Social support, sign language training, and improved communication accessibility.
How does the school support communication for deaf children?	Through the PKPBI program, articulation training, visual media, and language instruction.	The school supports communication development through specialized programs.	Schools need to provide more inclusive communication services and facilities.	Schools should strengthen communication support and improve service accessibility.
What programs are most needed to enhance sign language communication?	Sign language training, PKPBI, articulation training, vocabulary enrichment, and sentence structure.	Sign language training for families and the community.	Sign language courses or training that are accessible to the general public.	Sign language training, Deaf culture training, and the provision of professional sign language interpreters.
In your opinion, what is the most important communication need of deaf children at present?	The development of sign language, oral language, and written language skills.	A supportive environment that understands and facilitates children's visual communication.	Access to inclusive communication and sign language.	The establishment of equitable and accessible communication.
What are your expectations regarding communication for deaf children within the social environment?	Deaf children are able to communicate independently and effectively within society.	Deaf children are accepted and able to participate actively in social life.	Deaf children experience no communication barriers within the social environment.	Equal opportunities for communication and social interaction.
What should be developed to make communication for deaf children more inclusive?	The development of language skills, vocabulary, and communication competence within the surrounding environment.	Improving sign language proficiency among families and the community.	Social awareness and access to communication technology.	Communication support systems, sign language interpreter services, and an inclusive culture.
Is a specific assessment of the communication needs of deaf children necessary? Why?	Yes. It is needed to identify children's abilities and barriers and to serve as the basis for designing learning programs.	Yes. It is needed to accurately identify children's communication needs.	Yes. Every deaf child has unique communication needs.	Yes. It provides the basis for determining appropriate communication services and support.

Source: Research 2026