Perspectives of Peers as a Microsystem for Supporting Deaf Students in Inclusive Elementary Schools

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Abstract. Peers play a crucial role in facilitating student participation, fostering interaction and unlocking the potential for development, thereby providing an experiential glimpse into living within inclusive or diverse societal settings. This study delves into the perspectives of peers regarding the inclusion of their hearing-impaired counterparts within the classroom microsystem. Focused on the relatively unexplored terrain of typical peers' viewpoints on the presence of hearing-impaired students, this research engages one hundred and twenty-one peers from students with hearing impairments at regular elementary school levels in Banjarbaru City, Indonesia, and their teachers from six classes across different schools. The recruitment process utilized purposive sampling for interviews and a questionnaire, with the gathered data subjected to thematic analysis. Employing the Miles & Huberman model, the data analysis follows a three-fold path encompassing data reduction, presentation, and conclusion/verification. The study underscores the significance of peer management within the microsystem, highlighting its role in aiding the development of proximal zones in the classroom for students with hearing impairments. Drawing from the findings, the study recommends two key interventions. Firstly, teachers are encouraged to foster understanding among peers about hearing-impaired students through targeted learning activities, thereby transforming the microsystem into a supportive environment. Secondly, within the classroom microsystem, both teachers and peers are urged to establish a common language applicable to all elements of the class. This concerted effort aims to enhance communication and interaction, fostering an inclusive and supportive learning environment for all students.

Keywords: Peers Inclusion; Inclusive Education; Hearing-Impaired Students; Classroom Microsystem; Thematic Analysis

1. Introduction

In today's educational landscape, inclusivity stands as a cornerstone principle, heralding a paradigm shift towards environments that honor the diverse needs of all learners. With a growing recognition of the importance of diversity and inclusion, educational institutions are increasingly embracing inclusive practices to create equitable learning opportunities. Inclusive education settings play a crucial role in fostering an environment where individuals with hearing impairments can thrive socially, emotionally and academically (Jungjohann & Gebhardt, 2023). The challenges faced by deaf individuals extend beyond communication and psychological aspects, often leading to social withdrawal behaviors (Quirke & McGuckin, 2024). Researchers have highlighted the multifaceted difficulties that deaf individuals encounter, emphasizing the need for comprehensive support (Khasawneh et al., 2024). The impact of hearing impairment on communication skills is profound, making interactions challenging for those with hearing difficulties (Aguis, 2024). Moreover, the psychological implications can contribute to feelings of isolation and hinder overall well-being. Social withdrawal behaviors become apparent as a coping mechanism, as individuals may find it challenging to navigate social situations effectively (Nguyen et al., 2024). Recognizing the significance of inclusive education, researchers like Masi et al. (2023) emphasize the pivotal role of peer support in facilitating positive behavioral changes among hearing-impaired individuals. Peer support in inclusive settings acts as a catalyst for personal growth, allowing everyone to contribute to and benefit from the learning environment (Fong et al., 2023).

Simultaneously, inclusive education, with a focus on peer support, creates a space where hearing-impaired individuals can engage with their peers in a meaningful way (Kamran & Bano, 2023). Peers become core agents in the transformative process, influencing positive changes in behavior and fostering a sense of belonging (Iacono et al., 2023). The supportive relationships formed in these settings contribute not only to academic success but also to the development of crucial social skills. Hearing peers, through their understanding and assistance, become vital allies for their hearing-impaired counterparts (Snoddon & Murray, 2023). They serve as bridges, facilitating effective communication and breaking down barriers. This inclusive model promotes empathy, awareness, and shared responsibility for creating an environment where everyone feels valued (Rocha et al., 2023). Research also shows that individuals with hearing impairments often face formidable challenges in honing their communication skills, which subsequently affect their overall ability to interact effectively (Snoddon & Murray, 2023). The multifaceted nature of these challenges extends beyond the realms of communication and encompasses psychological difficulties coupled with observable social withdrawal behaviors among deaf children (Nelis et al., 2023). The intricate interplay of these challenges underscores the critical need for the support of hearing peers in inclusive educational settings.

Moreover, inclusive education, as a cornerstone in addressing diverse learning needs, recognizes the importance of fostering an environment where every

student can experience holistic growth (Chow et al., 2023). In this context, peer support emerges as an inclusive model that not only accommodates the unique needs of students with hearing impairments but also creates a space for the collective development of all individuals involved. In this context, the role of peers, as delineated by Rrofiah et al. (2023), is pivotal, acting as a core agent capable of instigating transformative changes in a child's behavior. Hence, it needs to be given due consideration in scientific inquiry. In addition, Bronfenbrenner's ecological theory provides a theoretical framework to understand the depth of peer influence within a child's environment (Navarro & Tudge, 2023). Peers are conceptualized as a microsystem, a layer of influence characterized by its intimacy, intensity, longevity, and profound impact on a child's development across various domains, ranging from language and nutrition to safety, health, trust, and social and emotional aspects (Nolan & Owen, 2024).

This influence extends beyond mere academic realms; it permeates the intricate fabric of emotional learning within a child's environment (Aguis, 2024). The relationships formed between children and their classmates, according to this perspective, hold the potential to shape and influence the proximal domains in a child's developmental trajectory (Al-Rahmi et al., 2020). Simultaneously, these relationships serve as catalysts for the enhancement of communication skills and cognitive development, particularly in areas such as perspective-taking (Akrami, 2022). Research also shows that peer support within this microsystem operates on the principles of respect, shared responsibility, and mutual agreement on what is beneficial (Alamri et al., 2021). Within this framework, the study seeks to unfold the layers of the peer perspective, exploring its depth and potential to serve as a support system for students with hearing impairments. The overarching goal is to elucidate the various dimensions of peer influence and leverage this understanding to optimize the learning environment for students with hearing impairments.

Furthermore, inclusive education, as a philosophy, strives to integrate students with diverse needs seamlessly into mainstream classrooms (Arifah & Marzuki, 2021). Peers in such inclusive settings play a significant role in providing expansive opportunities for students with hearing impairments to engage in social interactions, ultimately impacting their language development barriers (Fadda et al., 2022). Communication, particularly between hearing and hearing-impaired partners, establishes a shared language experience that contributes significantly to vocabulary acquisition (Almashhadani & Almashhadani, 2023). This is particularly crucial as much of a child's vocabulary knowledge is acquired indirectly through daily interactions with adults, siblings, and peers during conversations about routines, games, nursery rhymes, songs, and activity readings (Atinaf et al., 2023).

Additionally, promoting social interaction between children with hearing impairments and their peers within the microsystem is imperative for the creation of positive relationships (Arias-Pérez & Vélez-Jaramillo, 2022). Positive peer contact during free play has been identified as a key influencer, shaping

positive views and acceptance of peers with disabilities (Jun, 2020). This acceptance perspective triggers reciprocal relationships, functioning as a microsystem for children with hearing impairments, subsequently impacting the development of their proximal zone abilities (Rasheed et al., 2023). The significance of peer relationships extends beyond the immediate social context. These relationships contribute valuable experiences that go beyond the realm of social interaction, offering opportunities for critical thinking, self-confidence, creativity, academic ability, and motivation among peers (Kim et al., 2022). The study positions itself to examine these intricate dynamics and their cumulative impact on the developmental trajectory of students with hearing impairments. The ultimate objective is to discern how positive peer relationships can serve as catalysts for fostering a supportive microsystem within the classroom setting. Hence, the current study aims to: (1) Investigate the nuanced impact of peer support as a microsystem on the multifaceted development of students with hearing impairments; (2) Delve into the intricate dimensions of the peer perspective, aiming to understand its influence and potential within the inclusive educational framework; (3) Identify and articulate effective strategies to enhance social interactions within the classroom, creating positive microsystems that actively support the development of abilities in children with hearing impairments.

By addressing these objectives, the study aspires to contribute substantively to the existing body of knowledge in inclusive education and provide practical insights for educators, policymakers, and stakeholders invested in creating inclusive learning environments conducive to the optimal development of all students, including those with hearing impairments.

2. Literature Review
This study focuses on the multifaceted aspects of peer support within inclusive education, particularly in the context of students with hearing impairments. This comprehensive review spans various dimensions, including the role of peers in inclusive settings, the impact of hearing impairments on social interactions, and the potential of microsystems in facilitating the development of students with hearing impairments. The review draws from a range of scholarly works to provide a robust foundation for understanding the dynamics at play within the inclusive classroom microsystem.

2.1 Inclusive Education and Peer Support
Inclusive education is a transformative philosophy that endeavors to seamlessly integrate students with diverse needs into mainstream classrooms, fostering an environment that accommodates and actively supports their unique requirements (Hajisoteriou & Sorkos, 2023). Central to the success of inclusive education is the fundamental concept of peer support, which plays a pivotal role in creating a microsystem within the classroom that is inherently supportive and conducive to the growth of all students, including those with disabilities such as hearing impairments (Kilag et al., 2023). The concept of peer support is grounded in the belief that students with disabilities, including hearing impairments, derive significant benefits from meaningful and substantial

contributions to the overall growth and development of their classmates with disabilities.

Annahar et al. (2023) elaborate on the importance of peers as active participants in fostering an inclusive environment, emphasizing that the collaborative efforts of all students contribute to a richer learning experience for everyone involved. Pratama and Christiani's (2023) research underscores the positive impact of inclusive education models, particularly in the realm of peer interactions. Integrating students with hearing impairments into regular classrooms exposes them to age-appropriate academic content and facilitates social interactions that are crucial for their holistic development (Sunandar, 2023). These social interactions extend beyond acquiring academic knowledge, encompassing the cultivation of social skills, emotional intelligence, and a sense of belonging within the larger school community (Alam & Mohanty, 2023).

The literature consistently supports the idea that inclusive education models, bolstered by peer support, create an environment where students with hearing impairments can thrive academically and socially (Grájeda et al., 2024). This holistic approach to education not only addresses the academic needs of students but also recognizes the importance of social interactions in shaping well-rounded individuals (Liang et al., 2023). As the present study delves into the perspectives of typical peers regarding the presence of hearing-impaired students within the classroom microsystem, it builds upon this foundational understanding of the symbiotic relationship between inclusive education, peer support, and the overall development of students with diverse needs.

2.2 Social Interactions and Communication Challenges for Hearing-Impaired Students

The challenges confronted by students with hearing impairments extend far beyond the realm of academic pursuits, permeating the intricate nuances of social interactions (Quirke & McGuckin, 2024). Communication, a linchpin of social engagement, assumes heightened significance for individuals with hearing impairments, becoming a formidable hurdle in their path to effective interaction (Efthymiou & Katsarou, 2024). Greenhalgh et al. (2023) illuminate the landscape of communication and psychological difficulties faced by deaf children, underscoring the pervasive impact of these challenges on their social interactions. For students grappling with hearing impairments, communication barriers often manifest as social withdrawal behaviors (Rocha et al., 2023).

The intricate dance of social dynamics becomes challenging when individuals face hurdles in effective communication. The need for tailored and effective communication strategies is paramount and, within the inclusive classroom microsystem, the role of peers emerges as a critical factor in facilitating these interactions (Quirke & McGuckin, 2024). Understanding the specific challenges encountered by students with hearing impairments is imperative for designing and implementing targeted interventions that not only address their unique needs but also foster inclusivity and positive social interactions within the microsystem of the classroom (Snoddon & Murray, 2023). By gaining insight into the experiences of these students, educators and peers alike, it can contribute

meaningfully to creating an environment that not only accommodates but actively supports the social development of students with hearing impairments (Jungjohann & Gebhardt, 2023).

This knowledge serves as the cornerstone for the present study, which seeks to explore the perspectives of typical peers regarding the presence of hearing-impaired students within the classroom microsystem (Kamran & Bano, 2023). In delving into these perspectives, the study aspires to uncover nuanced insights that can inform practical strategies to enhance inclusivity and positive social interactions, thereby contributing to the overall well-being and development of students with hearing impairments within the inclusive classroom setting

2.3 Peers as a Microsystem

Within a child's environment, Bronfenbrenner's ecological theory intricately explores the depth of peer influence, offering a conceptual framework of substantial value (Veiga et al., 2023). Within this theoretical perspective, peers are conceptualized as a microsystem, an influential layer characterized by intimacy, intensity, and profound impact (Nolan & Owen, 2024). This microsystem, situated within the inclusive classroom, serves as a dynamic space where the development of students with hearing impairments is intricately interwoven with the attitudes and behaviors of their peers. Navarro and Tudge (2023) further elaborate on the profound impact of this microsystem by emphasizing the emotional learning facilitated through relationships between children and their classmates. Positive and supportive relationships within this microsystem significantly contribute to the development of proximal domains in a child (Goering et al., 2022). This is particularly crucial for hearing-impaired students, where the microsystem of peers becomes a pivotal determinant in shaping not only their communication skills but also their cognitive development and overall social competence.

The microsystem, as per Bronfenbrenner's ecological theory, operates as an immediate, intense, and influential layer of a child's environment. In the context of inclusive education, this microsystem is marked by the coexistence and interaction of students with diverse abilities, including those with hearing impairments (Maguvhe & Mutambo, 2023). The attitudes and behaviors of typically developing peers within this microsystem play a fundamental role in shaping the developmental trajectory of their hearing-impaired counterparts (White et al., 2023). Positive peer relationships within the microsystem contribute to emotional learning, providing a supportive backdrop for the social and cognitive development of students with hearing impairments (Cederbaum et al., 2023). As peers engage in positive and inclusive interactions, they contribute not only to the academic well-being of their hearing-impaired counterparts but also foster a sense of belonging, self-esteem, and overall positive self-concept (Barath et al., 2023). Importantly, the microsystem of peers becomes a dynamic agent in shaping communication skills for hearing-impaired students. Effective communication involves not only the conveyance of information but also the nuances of understanding, empathy, and shared experiences (Al-Rahmi et al., 2020). In a positive microsystem, peers contribute

to creating an environment that encourages effective communication, allowing hearing-impaired students to overcome the barriers they may face in social interactions. Cognitive development within this microsystem extends beyond the academic realm, encompassing the cultivation of perspective-taking skills and a deeper understanding of diverse abilities (Leung et al., 2024). Positive peer relationships encourage collaborative learning, where students with hearing impairments not only benefit academically but also contribute meaningfully to the overall cognitive development of the entire microsystem.

Furthermore, the social competence of hearing-impaired students is intricately linked to the supportive microsystem of peers. Positive interactions contribute to the development of social skills, emotional intelligence, and adaptive behaviors, fostering an inclusive environment that recognizes and values the unique strengths of each student (Sirem & Çatal, 2023). Hence, Bronfenbrenner's ecological theory, coupled with insights from Hur and Testerman, illuminates the pivotal role of the microsystem of peers in the inclusive classroom. For students with hearing impairments, this microsystem becomes a dynamic and influential force shaping their development across various domains. From communication skills and cognitive development to overall social competence, the positive interactions within the microsystem contribute to the holistic well-being of hearing-impaired students within the inclusive educational setting. This study seeks to delve into the perspectives of typical peers within this microsystem, aiming to understand how their attitudes and behaviors influence the developmental trajectory of students. Through this exploration, the study endeavors to inform strategies that enhance the positive impact of the microsystem, fostering an inclusive and supportive environment for students

2.4 Peer Perspectives on Hearing-Impaired Peers

Amidst the extensive body of research exploring the experiences of students with disabilities in inclusive settings, there remains a conspicuous gap in the literature concerning the perspectives of typical peers regarding the presence of hearing-impaired students within the classroom. This dearth of exploration necessitates focused attention, given that the attitudes and perceptions of peers wield substantial influence over the microsystem dynamics inherent in inclusive educational environments (Aguis, 2024; Armstrong et al., 2023; Chow et al., 2023). Iacono et al. (2023) underscore the significance of positive peer contact, particularly during free play, as a determinant in shaping favorable views and fostering acceptance of peers with disabilities. This emphasis on positive interactions reflects the pivotal role that typical peers play in influencing the microsystem dynamics within inclusive classrooms. Understanding how these peers perceive and interact with their hearing-impaired counterparts becomes vital, laying the groundwork for devising strategies that actively promote positive microsystems within the inclusive educational setting (Efthymiou & Katsarou, 2024). The existing literature predominantly leans toward investigating the experiences and challenges faced by students with disabilities, with a notable focus on their academic progress, social integration, and overall well-being within inclusive classrooms (Rrofiah et al., 2023).

Typical peers form an integral part of the inclusive microsystem, shaping the socio-emotional landscape within the classroom: their attitudes, behaviors, and interactions carry significant weight in influencing the overall experiences of students with hearing impairments (Kamran & Bano, 2023). Thus, the need to comprehensively understand and address the dynamics of typical peer perceptions arises as a crucial aspect of fostering an inclusive environment. The emphasis on positive peer contact aligns with the broader principles of inclusion, emphasizing the creation of environments where students with diverse abilities are not just present but actively engaged and accepted by their peers (Efthymiou & Katsarou, 2024). Positive interactions during free play periods not only contribute to breaking down barriers but also lay the foundation for building meaningful relationships that extend beyond the academic realm (Rocha et al., 2023). The study's focus on understanding how typical peers perceive and interact with their hearing-impaired counterparts is pivotal for several reasons. Firstly, it provides an opportunity to uncover any existing misconceptions or stereotypes that might influence peer dynamics. Secondly, gaining insights into the attitudes of typical peers can inform targeted interventions aimed at fostering inclusivity and positive microsystem development. Thirdly, understanding the perspectives of peers contributes to a more holistic understanding of the social dynamics within inclusive classrooms. Hence, the limited exploration of typical peer perspectives within the inclusive classroom setting highlights a crucial gap in the existing literature. The study at hand endeavors to bridge this gap by delving into the nuanced attitudes and interactions of typical peers with their hearing-impaired counterparts.

3. Methods
This study utilized a mixed method approach to delve into the nuanced perspectives of peers toward their hearing-impaired counterparts within inclusive classroom settings. The chosen method involved distributing questionnaires with open-ended questions, allowing for an in-depth exploration of the rich tapestry of views and experiences of typical peers in their interactions with students with hearing impairments. The participants in this study comprised 121 students, reflecting the same age as their fellow students with hearing impairments at regular elementary school levels in Banjarbaru City. This sample included peers from six classes across five different elementary schools, purposefully selected from learning classes where students with hearing impairments were integrated. This intentional selection aimed to capture a diverse and representative range of perspectives from peers actively engaged with hearing-impaired students within the classroom environment. A meticulously designed questionnaire consisting of open-ended questions served as the primary tool for data collection. The questionnaire aimed to provide a detailed understanding of peer perspectives on their hearing-impaired counterparts, aligning with the research objectives. The questions were structured based on a model considering various factors influencing peer assessments of students with special needs in their class. The questionnaire, a vital tool in collecting primary data, encompasses a total of 16 open-ended question items. These questions utilize a combination of scales and subjective inquiries to comprehensively explore various facets of the participants'

perspectives. The questionnaires were distributed during designated study hours, accompanied by explicit instructions from the researcher regarding the purpose of the questions. Participants were encouraged to provide comprehensive answers and offer explanations where necessary. To ensure clarity, participants who faced difficulties in understanding the questions were provided with detailed directions and the opportunity to seek clarification.

The collected data were categorized into primary and secondary sources. Primary data, obtained directly through the questionnaires, were complemented by secondary data derived from observations and interviews. The questionnaire, comprising 16 open-ended questions, was structured around five thematic areas: peer perspectives on hearing-impaired peers in the class. The design of the questionnaire is rooted in specific themes, such as age (1 item), gender (1 item), self-esteem (3 items), academic ability (3 items), physical ability (2 items), communication skills (4 items), communication style (2 items), and understanding of special needs (2 items). This structured approach ensures a systematic and thorough examination of the subjects' viewpoints. The questionnaire incorporated a scale and subjective questions, delving into the reasons behind the participants' responses. Each item was strategically designed to capture a comprehensive view of the multifaceted factors influencing peer perspectives. Furthermore, an interview protocol was implemented to triangulate the qualitative data and enhance the quantitative findings derived from the questionnaire.

The data collection process spanned a period from 1st April, 2023 to 31st December, 2023, to ensure comprehensive coverage and representation of various contextual factors. This timeline encompassed the distribution of questionnaires, the collection of responses, and the subsequent phase of interviews and observations. This research adhered to ethical standards, ensuring participant confidentiality, informed consent, and respectful treatment throughout the study. Ethical approval was obtained from the authors' Institutional Review Board to guarantee the ethical integrity of the research process. Several challenges were encountered during data collection, including variations in participants' comprehension of certain questions and potential biases in self-reporting. To address these challenges, additional explanatory sessions were conducted, and participants were assured of the anonymity of their responses. These measures aimed to enhance the accuracy and reliability of the collected data. In-depth interviews were conducted with a subset of participants, selected purposefully to provide deeper insights into specific themes emerging from the questionnaire responses. A semi-structured interview format allowed for probing questions and a more nuanced exploration of participants' perspectives. Interviews were audio-recorded with participants' consent and transcribed for further analysis. Thematic analysis was employed to identify patterns, recurring themes, and outliers within the collected data. To enhance the depth and breadth of the study, an interview protocol was employed as a complementary method to triangulate qualitative data and enrich the quantitative insights gathered through the questionnaire. The formulation of interview questions was guided by a sociocultural framework, allowing for a

more nuanced exploration of the social and cultural influences that may shape the participants' perspectives on hearing-impaired peers in the educational context. This dual-method approach not only facilitates a comprehensive analysis but also ensures the validity and reliability of the findings by cross-verifying information obtained through different channels.

4. Analysis and Discussion

The analysis process involved coding responses, categorizing themes, and iteratively refining codes to ensure a comprehensive understanding of the data. Data saturation was achieved when no new themes emerged, signifying a robust analysis capturing the depth of peer perspectives. The triangulation of data from questionnaires, interviews, and observations enhanced the validity and reliability of the study findings. Comparative analysis across different data sources allowed for a comprehensive understanding of the multifaceted dynamics influencing peer perspectives within inclusive classrooms.

4.1. Findings

This finding identifies the peer perspective as part of the microsystem of students with hearing impairments in the classroom. The peer perspective on students with hearing impairments is described in a questionnaire with four indicator themes, namely: (1) understanding of the special needs of their peers, (2) age, gender, self-esteem (self-efficacy), (3) academic and sports abilities, (4) communication skills and style, (5) promoting empathy and emotional intelligence.

Table 1: Thematic Analysis Results: Peer Perspectives in Inclusive Classrooms

Theme	Key Finding
Understanding of Special Needs	1. 90% of peers demonstrate awareness of learning barriers faced by hearing-impaired classmates. 2. Recognition of communication difficulties is coupled with an understanding of effective communication strategies.
Age, Gender, and Self-Esteem	1. 89% of respondents cite gender equality as a reason for wanting to befriend hearing-impaired peers. 2. High self-esteem among peers contributes to confidence in forming meaningful connections.
Intellectual and Physical Abilities	1. 84% of peers perceive hearing-impaired counterparts as not facing disruptive academic barriers. 2. Intellectual and physical-motor abilities are not considered hindrances in peer relationships.
Communication Skills and Style	1. 93% of respondents express a high desire for communication with hearing-impaired colleagues. 2. 68% of peers actively use sign language for communication. 3. Both peers and hearing-impaired students consistently employ agreed-upon forms of communication. 4. Peer interactions contribute to the development of empathy and emotional intelligence among all students.

Promoting Empathy and Emotional Intelligence	1. 86% of respondents expressed favorable responses toward promoting empathy and emotional intelligence among hearing-impaired colleagues. 2. Inclusive classrooms provide a conducive environment for fostering empathy and emotional intelligence among peers. 3. Shared experiences and understanding contribute to the emotional growth of all students.

Table 2: Survey Result

No	Questions / Statements	Results		
		In accordance	Don't know	Not in accordance with
1	I am friends with my hearing-impaired counterpart because we are of the same gender	91 %	0%	2%
2	I am friends with my hearing-impaired colleagues because they need my help	71%	2%	37%
3	I am friends with my hearing-impaired colleagues because they are nice to me	82%	4%	14%
4	I am friends with my hearing-impaired colleagues because they often provide assistance when I need it	76%	9%	5%
5	I know that my hearing-impaired colleagues have the same academic ability as me	89%	8%	3%
6	I want to help my hearing-impaired colleagues in their studies, if they need help	89%	1%	0%
7	I know that my hearing impaired partner excels in certain subjects	84%	8%	8%
8	I know that my hearing-impaired colleagues have the same ability in sports subjects	90%	4%	0%
9	I know that my hearing-impaired partner has the same physical motor abilities as me	88%	2%	1%
10	I want to communicate with my hearing-impaired partner in class	92%	1%	6%
11	I often use signs when communicating with my hearing-impaired colleagues in class	68%	1%	31%
12	I understand what my hearing impaired partner is telling me	89%	2%	9%
13	My hearing-impaired colleague had no trouble understanding what I was saying	78%	9%	13%
14	My hearing-impaired partner prefers to use signs when communicating with me and other classmates	78%	3%	19%
15	My hearing-impaired partner uses any form of communication to convey messages to me and others in the class (Not always with Signs)	87%	1%	7%
16	My hearing-impaired colleague has no particular difficulty during the lesson	84%	6%	10%

| 17 | I want to learn a language that can be used to communicate with my hearing-impaired counterparts in the classroom | 91% | 5% | 4% |

*Rounding percentage results

4.2. Discussion
4.2.1 Understanding of Special Needs
The thematic analysis illuminates the depth of awareness among peers concerning the learning barriers encountered by their hearing-impaired classmates. This heightened awareness, exemplified by an overwhelming 90% of respondents, represents a pivotal stride toward fostering inclusivity within the classroom microsystem. The significance of this finding cannot be overstated, as it lays the foundation for a supportive and empathetic environment, challenging preconceived notions and fostering a community where differences are not only acknowledged but actively accommodated (Sirem & Çatal, 2023).

Simultaneously, placing hearing-impaired children in regular classes with listening partners does not automatically facilitate meaningful social interaction, peer acceptance, and/or improvement in children's social communication skills (Rocha et al., 2023). The microsystem arrangement of students with hearing impairment through peers who hear will influence each other through the perspective of the interaction between the two. Interaction can refer to any attempt to get attention by communicating with each other through linguistic and/or non-linguistic ways (Snoddon & Murray, 2023). Hence, good peer support should strive to think creatively, harmoniously and nonjudgmentally about the way individuals live and create meaning in life. To get all forms of involvement support, peer acceptance of their hearing-impaired peers must be formed. Peer acceptance of hearing-impaired colleagues who have special needs is influenced by an understanding of their special needs (Rrofiah et al., 2023). An understanding of the barriers and needs of their deaf colleagues can be formed through teacher initiation in learning. Providing collaborative activities in solving problems from the material provided by the teacher is a good way to place children with hearing impairments and their peers to understand each other and create relationships in the microsystems needed so that mutual understanding arises (Rocha et al., 2023).

Moreover, the recognition of communication difficulties among hearing-impaired peers goes beyond a mere acknowledgment of challenges. Peers, as revealed by the thematic analysis, exhibit a sophisticated understanding of effective communication strategies (Atasoy et al., 2022). This nuanced comprehension suggests that peers are not content to be passive observers of the communication barriers faced by their hearing-impaired counterparts (Wasserman et al., 2023). Instead, they actively seek ways to bridge these gaps, displaying a commitment to inclusivity that extends beyond a superficial level. This finding underscores the transformative potential of peer relationships within inclusive classrooms, positioning peers as active agents in creating an environment that accommodates diverse communication needs. The demonstrated understanding of effective communication strategies within the peer group is crucial to creating an inclusive learning environment (Ali et al.,

2022). This extends beyond the immediate classroom setting, shaping a broader culture of acceptance and support within the educational community (Al-Rahmi et al., 2020). By actively engaging with and addressing communication challenges, peers contribute to the creation of an environment where every student, regardless of their hearing abilities, feels valued and heard. Furthermore, the finding underscores the importance of educators fostering an environment that encourages open communication about diversity and unique learning needs. By recognizing and celebrating differences, educators can contribute to the development of a positive microsystem within the classroom, where students are empowered to support each other's growth and development.

In this study, peer acceptance of their hearing-impaired peers was found to be very high due to their understanding of the needs and barriers that their peers have, so that their hearing-impaired colleagues do not experience difficulties, both in socialization and learning in class. Researchers observed this through observational data. Children with hearing impairments do not experience problems playing with their peers (Junod Perron et al., 2013): their interactions are as good as their listening peers. Children with hearing impairments can adjust to group activities just as well as their hearing counterparts but are not, however, experienced in initiating these activities (Setiawan et al., 2023). Hence, the thematic analysis results related to the understanding of special needs highlight the proactive role peers play in creating an inclusive microsystem. The heightened awareness and sophisticated comprehension of communication challenges not only signify a positive step toward inclusivity within the classroom but also set the stage for meaningful interactions and support.

4.2.2 *Age, Gender, and Self-Esteem*
The exploration of age, gender, and self-esteem within the peer perspectives of inclusive classrooms unravels critical insights into the factors influencing social dynamics. The resounding endorsement of gender equality, cited by an emphatic 89% of respondents, emerges as a beacon for fostering genuine connections beyond traditional societal norms. This finding indicates a collective desire among peers to transcend conventional gender-based barriers, fostering an inclusive microsystem where friendships are formed based on shared interests rather than prescribed gender roles. Previous research also endorsed that the community of children with the same gender makes it easier for them to understand one another (Nelis et al., 2023). Children learn by imitation and reinforcement mechanisms to behave in gender-appropriate ways, such as playing with certain toys and not others (Rocha et al., 2023). Gender stereotypes have a long-term impact on children's development. For example, stereotypes about masculinity prevent boys from playing with toys that foster the feminine side of their upbringing and develop socio-cognitive skills, placing them at risk of future emotional dissonance (Efthymiou & Katsarou, 2024). This confirms the findings in this study that one of the reasons they want to be friends with their hearing-impaired peers is because of gender equality.

Moreover, in a class setting, the level of education has become an absolute rule in placing students in the class. This is to facilitate teaching in accordance with their developmental milestones. Moreover, the negligible consideration of age as a significant factor in peer relationships, attributed to predetermined grade-level groupings, aligns seamlessly with the principles of inclusive education. In classrooms where students are grouped based on academic levels rather than age, the barriers traditionally associated with age-related differences diminish, creating an environment conducive to diverse peer interactions. This aspect of the findings underscores the importance of structural considerations within educational institutions that consciously promote inclusivity, enabling students to form connections based on shared academic experiences rather than age-related stereotypes (Quirke & McGuckin, 2024).

Additionally, the high levels of self-esteem reported by peers represent a cornerstone in the development of positive microsystems. The confidence of 89% of respondents in their ability to form meaningful connections with hearing-impaired peers contributes significantly to establishing an inclusive culture. Self-esteem as a prerequisite for creating interaction is very important, because enhancing and protecting self-esteem is a basic human need. Interaction in a relationship will be directly related to self-esteem. Self- and teacher-reported peer acceptance results in increased self-esteem in mid and late childhood (Mustapa et al., 2020). Peers, as part of the microsystem, have been shown to effectively build reciprocal relationships that have benefits for a child's social-emotional abilities. Self-esteem influences children's social interaction relationships which, in turn, affect all stages of positive development in their life (Ahmed et al., 2020). When students possess a positive self-perception, they are more likely to approach relationships with empathy, openness, and a willingness to learn from one another. This self-assurance not only fosters positive peer relationships within the microsystem but also sets the stage for collaborative learning experiences that transcend perceived differences.

4.2.3 *Intellectual and Physical Abilities*

The examination of peers' perspectives on the intellectual and physical abilities of their hearing-impaired counterparts unveils encouraging insights into the changing dynamics of inclusive classrooms. Notably, 84% of peers perceive their hearing-impaired classmates as not encountering disruptive academic barriers. These findings challenge long-standing stereotypes surrounding hearing impairments and academic performance, indicating a positive shift in peers' attitudes toward recognizing the diverse abilities of their classmates. Peers are motivated to form communities and relationships based on attractiveness intellectual and physical abilities. This motivation has an influence on peer perspectives on the abilities of their deaf colleagues who have the abilities they have or have superior abilities in certain fields that will help them. Perceived beliefs of others influence the expectations and value placed on achieving success, which is a direct determinant of achievement behavior (Snoddon & Murray, 2023). This is also caused by children who, in their environment, like to compare themselves with their peers in all ways of characteristics, abilities, and beliefs. These social comparisons ultimately influence how a person interacts

with other people, who they befriend, and how they think and feel about themselves.

The inclusive considerations expressed by peers further underscore a broad acknowledgment that hearing impairments do not inherently limit intellectual or physical-motor abilities. This shift in perception is crucial for dismantling preconceived notions and fostering an environment where every student, regardless of their hearing abilities, is recognized for their unique talents and contributions (Greenhalgh et al., 2023). Such positive perceptions contribute to the development of a microsystem within the classroom that promotes diversity, inclusion, and collaborative learning experiences. Moreover, the findings highlight the importance of dispelling misconceptions and fostering a culture of understanding regarding diverse abilities within educational settings. Educators and stakeholders can leverage these insights to design interventions that not only address academic barriers but also promote an inclusive ethos that recognizes and celebrates the diverse intellectual and physical-motor abilities of all students (Nolan & Owen, 2024). Hence, the thematic analysis results related to intellectual and physical abilities underscore the transformative potential of peers in shaping positive microsystems within inclusive classrooms. The positive perceptions observed among peers not only challenge stereotypes but also lay the groundwork for an environment where diverse abilities are acknowledged, respected, and celebrated.

4.2.4 Communication Skills and Style

The examination of communication skills and styles within the peer perspectives of inclusive classrooms unravels a tapestry of insights into the dynamics of interpersonal connections. The robust desire for communication, expressed by an impressive 93% of respondents, signifies a collective eagerness among peers to engage meaningfully with their hearing-impaired counterparts. This eagerness forms a cornerstone for the development of positive microsystems within the inclusive classroom, where open communication is not only encouraged but actively embraced. The active use of sign language by 68% of peers emerges as a powerful manifestation of adaptability and commitment to inclusive communication styles. This finding reflects a conscious effort among peers to bridge communication gaps, fostering an environment where diverse forms of communication are not only accepted but integrated into daily interactions. The acknowledgment that both peers and hearing-impaired students consistently use agreed-upon forms of communication underscores the importance of establishing shared norms, promoting mutual understanding and effective communication.

Furthermore, the findings emphasize the significance of incorporating communication skill-building activities within educational curricula. Educators can leverage these insights to design interventions that not only enhance communication skills but also cultivate an environment where students, regardless of their hearing abilities, feel confident and empowered to express themselves (Ali et al., 2022). This proactive approach to communication skill development contributes to the creation of a microsystem within the classroom

that prioritizes inclusivity, respect, and shared understanding. Hence, the thematic analysis results related to communication skills and styles highlight the pivotal role of peers in fostering positive microsystems within inclusive classrooms (Al-Rahmi et al., 2020). The collective desire for communication, active use of sign language, and consistent adherence to agreed-upon communication forms collectively contribute to an environment where effective communication becomes a shared responsibility.

4.2.5 Promoting Empathy and Emotional Intelligence

An integral facet of the microsystem within inclusive classrooms is the deliberate cultivation of empathy and emotional intelligence among peers. The study's findings illuminate the profound significance of these qualities in fostering meaningful connections and creating an environment conducive to the emotional well-being of all students, including those with hearing impairments. Empathy, the ability to understand and share the feelings of another, plays a pivotal role in shaping positive peer relationships within the microsystem (Setiawan et al., 2023). As peers extend empathy toward their hearing-impaired counterparts, it becomes a cornerstone for building bridges of understanding. The microsystem, rather than being a mere coexistence of students, transforms into a space where emotional well-being is not only acknowledged but prioritized.

Moreover, the cultivation of emotional intelligence among peers is essential for creating a supportive microsystem. Emotional intelligence encompasses a range of skills, including recognizing and managing one's own emotions, understanding the emotions of others, and navigating social interactions effectively. In the context of inclusive education, emotional intelligence becomes a key driver in building positive relationships, fostering a climate of acceptance, and nurturing an inclusive learning environment (Hajisoteriou & Sorkos, 2023). The significance of empathy and emotional intelligence within the microsystem is twofold. Firstly, it creates a sense of belonging for students with hearing impairments, reassuring them that their emotional experiences are understood and valued (Armstrong et al., 2023). This acknowledgment contributes to the development of a positive self-concept, crucial for overall well-being and academic success. Secondly, fostering empathy and emotional intelligence among typically developing peers promotes an inclusive culture within the microsystem. Peers actively engaging with and understanding the emotions of their hearing-impaired counterparts contribute to a harmonious classroom dynamic (Maguvhe & Mutambo, 2023). This, in turn, has a ripple effect on the broader school culture, fostering an ethos of acceptance, understanding, and celebration of diversity.

Educators and school administrators play a pivotal role in facilitating the development of empathy and emotional intelligence within the microsystem. Implementing targeted interventions and educational programs that promote empathy, perspective-taking, and emotional regulation can contribute significantly to the emotional well-being of all students. Classroom activities that encourage open discussions about emotions, differences, and shared experiences

can foster a sense of empathy and understanding among peers. Additionally, educators can model and reinforce positive emotional intelligence through their interactions with students. By creating a classroom environment where emotions are acknowledged, expressed, and respected, educators contribute to the overall emotional climate of the microsystem (Chow et al., 2023). This not only benefits students with hearing impairments but enriches the overall educational experience for every student.

5. Implications of the Study

The findings of this study carry profound implications for the field of inclusive education, emphasizing the critical role of the microsystem formed by peer interactions in shaping the experiences of students with hearing impairments. Understanding and addressing these implications is vital for educators, policymakers, and practitioners committed to fostering inclusive environments. The study underscores the importance of fostering inclusive microsystems within classrooms. Educators play a central role in initiating activities that promote collaborative problem-solving and mutual understanding among students. Creating an environment where learning barriers are acknowledged and actively addressed is essential. As such, strategies that encourage positive peer interactions should be integrated into educational practices, ensuring that the microsystem becomes a dynamic space for inclusivity. The theme of gender equality and age-related dynamics within peer groups highlights the impact of societal norms on the formation of microsystems. Recognizing and addressing these norms is crucial for promoting equitable relationships within classrooms. Educational interventions should aim to challenge stereotypes, fostering an environment where students are valued for their unique qualities and abilities rather than conforming to societal expectations.

The study reaffirms the role of self-esteem as a fundamental factor in successful peer interactions. Educators should implement strategies that enhance and protect self-esteem among students, creating a positive feedback loop that contributes to social and emotional development. Peer relationships within the microsystem become a vehicle for boosting self-esteem, emphasizing the need for a holistic approach to education that goes beyond academic achievements. Intellectual and physical abilities significantly influence peer relationships within the microsystem. Recognizing and celebrating diverse abilities is essential for creating an inclusive environment where every student feels valued. Thus, educational institutions should implement initiatives that highlight and appreciate the unique strengths of students with hearing impairments, fostering a culture that celebrates diversity and promotes a positive learning atmosphere.

Furthermore, the communication challenges faced by students with hearing impairments underscore the need for enhanced communication strategies within the microsystem. Educators should collaborate with students to establish effective communication methods that accommodate diverse needs. This may involve integrating sign language into the curriculum or providing resources that facilitate communication, ensuring that the microsystem becomes a space where barriers are actively dismantled. Additionally, the study emphasizes the

crucial role of educators in shaping inclusive microsystems. Professional development programs should be designed to equip teachers with the knowledge and skills necessary to foster inclusive environments. Training should focus on understanding the unique needs of students with hearing impairments, implementing effective communication strategies, and promoting positive peer interactions. A well-prepared teaching staff is essential for creating microsystems that support the overall development of every student. Finally, creating an inclusive microsystem requires collaboration among various stakeholders, including educators, parents, policymakers, and community members. Schools should actively engage with parents to ensure that the principles of inclusivity are reinforced at home. Policymakers play a vital role in shaping educational policies that support inclusive practices, and community involvement fosters a broader understanding of the importance of inclusive education.

6. Conclusion

This research is expected to contribute to students with hearing impairments by presenting a rich and detailed picture of their peers' views of their presence in the classroom. Peer perspective will form a microsystem that can influence students' abilities. The level of potential development of a person's ability to complete tasks and solve problems can be supported through adult guidance or when collaborating with more competent peers (Downes et al., 2021). Peer perspective can also be used to maximize learning activities in the classroom as well as in collaborative classroom settings (Fu et al., 2022). This research can provide a reference for teachers to make the best classroom arrangements that are suitable for hearing-impaired students with their peers. Based on the findings, peers have an important role in supporting the participation of students with hearing impairments in learning in inclusive schools. However, further research is needed to evaluate the effectiveness and appropriateness of the recommendations in enhancing the learning participation support of students with hearing impairments in the classroom.

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