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Educators' Perspectives on the Ecological Determinants of Well-Being Among Iranian Deaf and Hard-of-Hearing University Students: A Qualitative Multiple-Case Study

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ABSTRACT

In today's evolving educational landscape, student well-being is increasingly recognized as a cornerstone of academic success. This study examines educators' perspectives on the ecological determinants of well-being among Iranian Deaf and Hard-of-Hearing (DHH) university students using an interpretive qualitative multiple-case design and inductive thematic analysis. Guided by Bronfenbrenner's ecological model, the research explores the dynamic interplay of factors in micro- and macro-level of educational ecology that shape DHH students' experiences in a specialized higher education setting in Tehran, Iran. Data were collected through semi-structured interviews and narrative frames with 18 experienced university instructors – both hearing and DHH – each with a minimum of three years of teaching experience with DHH students in higher education. Findings reveal that, at the micro-level, empowering students, optimizing teaching methods, and ensuring instructional accountability significantly enhance DHH student well-being, while at the macro-level, the creation of a supportive, inclusive environment and the facilitation of effective communication are pivotal in promoting equity and overall success. These findings underscore the value of understanding DHH students' experiences in an educational ecology and offer a robust foundation for reimagining higher education practices, guiding policy development, and designing targeted professional training programs.

KEYWORDS

Well-being; deaf and hard-of-hearing students; inclusive education; ecological model; qualitative multiple-case study; higher education

Introduction

Various factors contribute to students' success in academic settings, and one emerging area of focus is well-being. Research suggests a strong link between student well-being and academic achievement, with those experiencing higher levels of well-being more likely to excel in their studies (Cao, 2025; Ghanbar, 2026; Ghanbar & Pourhemat Khanshir, 2026). Students' well-being encompasses physical, mental, and social health of students (Derakhshan et al., 2023; Wang & Kruk, 2024) and can be influenced by different factors such as

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"instructors, course design, class climate, and resources" (Konstantinidis, 2024, p. 1). When students feel supported and valued, they are more likely to engage actively in learning, develop positive relationships, and achieve their full potential (Walkington & Ommering, 2022).

However, well-being is not a one-size-fits-all concept; it must be understood within the context of diverse experiences and needs (Schwanen & Wang, 2014). For the Deaf or hard of hearing (henceforth referred to as DHH in this study) community, well-being is deeply tied to linguistic accessibility, social inclusion, and recognition of DHH culture (Chapman & Dammeyer, 2017). Barriers such as limited access to sign language interpreters (De Meulder & Haualand, 2021), social stigmas (Birtel et al., 2017; Ghanbar, 2026), and inadequate mental health services (Hill et al., 2024) can significantly impact their overall quality of life. Promoting DHH well-being requires a shift from a deficit-based perspective to one that values DHH identity, ensures equal opportunities, and fosters environments where DHH individuals can fully participate and flourish (Leigh, 2009).

Although students' perceptions of their own well-being provide valuable insights, educators' perspectives can also serve as an important source of data (Douwes et al., 2023; Kagan, 1992) and among new trends in education (Kamali et al., 2024). Educators, through their daily interactions with students, can observe behavioral patterns, engagement levels, and emotional expressions that may indicate overall well-being. Their assessments can complement self-reported data by offering an external viewpoint, identifying discrepancies between perceived and actual well-being, and highlighting potential areas for intervention. Additionally, educators' beliefs about student well-being can influence classroom practices, support strategies, and institutional policies, making their perspectives a crucial component in comprehensive well-being research (Braun et al., 2020).

In light of these arguments, this study investigates educators' perspectives on the factors that influence the well-being of Iranian DHH students in higher education, one of the most oppressed and underrepresented groups of students in Iran (see Ghanbar et al., 2024). The significance of this study is twofold. First, given that Iran's Deaf community is under-represented and under-privileged in higher education (see Rezvani et al., 2024), this study explores DHH students' well-being in this niche (Heikkinen, 2020). Another significance of this study lies in its theoretical underpinning – an ecological perspective that considers multiple layers of influence, from individual to institutional levels – which connects different layers of higher education settings to explore the influential factors in DHH students' well-being. Furthermore, this study contributes to the broader discourse on inclusive education by highlighting the role of educators in promoting well-being beyond academic performance (Ghanbar, 2026). Accepting that educators play a crucial role in shaping students' academic experiences and emotional

well-being, their insights provide a valuable lens through which to understand the unique challenges and opportunities faced by DHH students in university settings. By amplifying educators' voices, it seeks to inform training programs, curriculum development, and support services tailored to the needs of DHH students in Iranian higher education, which may be generalized to similar contexts in Iran and across the globe.

Literature review

Students' well-being in higher education

Well-being, a fundamental aspect of Positive Psychology (Derakhshan et al., 2023), has been linked to both individual growth and advanced health across various disciplines (Xie et al., 2022). Students' well-being "is a multifaceted construct, encompassing experiences that span physical, psychological, and social spheres" (Khatri et al., 2024, p. 3). Students' well-being is widely acknowledged as a critical issue that spans multiple aspects of their lives (Pan et al., 2023). Within the educational domain, examining the various determinants of students' well-being is essential, as it not only influences their overall satisfaction and ability to adapt to the learning environment but also plays a crucial role in their academic success (Cobo-Rendón et al., 2020; Derakhshan et al., 2023). This importance becomes even more pronounced in higher education.

The rising prevalence of well-being challenges among students has become a critical issue in higher education, prompting institutions to place greater emphasis on addressing this concern as a central priority (Rawdin & Dhillon, 2024). Although higher education institutions have long been recognized for fostering personal and professional development, the rigorous expectations and pressures, such as exams and competitions they impose, can sometimes place excessive strain on students' mental and physical well-being (Soares et al., 2023). The literature on students' well-being in higher education is rich. For example, Banihashem et al. (2023), in a study with 327 teachers and 547 students, examined teachers' and students' perceptions of blended learning, focusing on their emotions, workload, well-being, and motivation. Findings revealed that both groups experienced high workload and motivation but low well-being. In another study, Douwes et al. (2023) argued that the most important issue pertaining to students' well-being is the concept of balance along with various aspects of well-being, including social, emotional, and mental dimensions. They discussed it within the ecological framework, showing the interrelationship among different layers of academic settings of higher education.

Students' well-being plays a more important role when it comes to students with special needs (e.g., DHH students). Recognizing the unique challenges

that DHH students face in higher education, it becomes essential to consider how these factors influence their well-being. For DHH students, communication barriers, social isolation, and additional academic pressures may further complicate this balance, potentially leading to lower well-being (Chapman & Dammeyer, 2017). Therefore, understanding the specific determinants of DHH Students' well-being and ensuring adequate support systems is vital for fostering an inclusive academic environment that promotes their overall well-being and academic success.

Deaf and hard of hearing students' well-being in higher education

Students with special needs in higher education face a unique set of challenges that can significantly impact their well-being (Zenelaga et al., 2024). These challenges often stem from barriers in communication, social integration, and access to resources, all of which can influence their emotional, social, and psychological dimensions of well-being (Zenelaga et al., 2024). As a result, DHH students, one group of students with special needs, may experience higher stress levels, social isolation, and reduced academic engagement compared to their hearing peers (Chen et al., 2024). Understanding DHH students' well-being requires a holistic approach that takes into account not only their academic experiences but also their social, cultural, affective, and even political ones. By exploring the specific factors that affect their subjective well-being, higher education institutions can create more inclusive environments that promote both the academic success and personal growth of DHH students.

Although inclusivity, equity, and democracy in education advocate for considering the needs of all members of the educational milieu regardless of their conditions, there is a noticeable lack of studies on DHH students' well-being in higher education. In one of these scarce studies, Lukomski (2007) observed that DHH students reported experiencing notably greater challenges in their home life compared to hearing students. Nonetheless, the study findings also revealed that DHH students have fewer difficulties with coping mechanisms than their hearing counterparts. In another study, Peñacoba et al. (2020) examined the variations in psychological well-being between DHH students and their typically hearing counterparts, highlighting the higher prevalence of depression among DHH students, which impacts their well-being. These few studies show the importance of well-being among DHH students in higher education, as they face unique challenges that can significantly affect their academic performance, social integration, and overall quality of life.

DHH students' well-being is very context-specific (Zaidman-Zait & Dotan, 2017); therefore, it is of utmost importance and relevance to examine the current study's context, that is, Iran's higher education. In the Iranian DHH context, children with hearing loss generally do not learn sign language early

unless their parents are Deaf or their families use a home sign system for communication (Ghanbar et al., 2024; Hill et al., 2018). Consequently, they frequently struggle with communication, and these challenges persist into adulthood (Ghanbar et al., 2025). Iran largely adopted an oralist approach in different tiers of education, limiting the recognition and use of sign language in educational settings (Ghanbar et al., 2024; Hassanzadeh & Nikkhoo, 2019; Rezvani et al., 2024). The historical emphasis on oralist methods has left many DHH students with inadequate sign language proficiency, restricting their ability to fully engage in educational and social experiences. Without adequate accommodations, such as qualified interpreters and inclusive teaching strategies, DHH students may struggle with academic achievement and overall well-being, highlighting the need for more inclusive and supportive policies in higher education. As already mentioned, examining DHH students' well-being in its happening niche is necessary to aid the phenomenon (DHH students' well-being in our case) to be analyzed in its specific ecology (Heikkinen, 2020).

Theoretical underpinning

The concept of ecology, first introduced by German biologist Ernst Haeckel, describes the interconnected relationships between an organism and all other living beings it encounters (van Lier, 2004). Unlike Descartes' perspective, which frames humanity as having the right to dominate and utilize nature, ecological thought positions humans as integral components of a broader, interconnected natural system (van Lier, 2004). Ecological studies focus on organisms within their environments, emphasizing that research in this field must be context-dependent. As a result, ecological inquiry is inherently situated and cannot be detached from its surrounding conditions (van Lier, 2004).

Bronfenbrenner (1979, 1993) was the first to introduce the concept of ecology into the field of education, framing it as educational ecology. His model delineates five interrelated layers – microsystem, mesosystem, exosystem, macrosystem, and chronosystem – that collectively shape the educational environment. Since its introduction, this framework has been widely adopted and applied across different dimensions of education such as agency (Nazari & Kamali, 2024), emotion (Nazari et al., 2023), identity (Kamali & Nazari, 2023), inclusiveness (Kern, 2022), mentorship (Kamali, 2024), technology (Meihami, 2023), and social justice (Banegas & Sanchez, 2023), to name a few. An ecological perspective on well-being has also been used widely in the literature, showing its relevance to the concept (e.g., Burkett McKee et al., 2021; Herrera et al., 2022; Irgin, 2025; Xu et al., 2024). It underscores the dynamic interaction between individuals and their environments in fostering well-being. For DHH students in higher education, well-being is shaped by multiple interconnected factors across personal, social, and institutional levels (Bronfenbrenner, 2005; Deci & Ryan,

2000). This perspective accentuates the importance of considering the broader educational and societal context in understanding and supporting their well-being (Hauser et al., 2010; Tinto, 1993). By acknowledging these complex interactions, an ecological approach provides a comprehensive framework for addressing the challenges DHH students face and fostering a more inclusive academic experience (Heikkinen, 2020; Murray et al., 2018).

In this study, we primarily focused on two levels within the ecological framework: the micro and macro levels. The micro level addresses the immediate, personal interactions and experiences of DHH students, while the macro level considers broader societal and institutional factors that influence their well-being. By examining both levels, we aim to provide a balanced understanding of the factors impacting the well-being of DHH students in higher education while acknowledging the interplay between their immediate environment and the larger societal context.

Against this backdrop, the present study aims to investigate DHH students' well-being from the perspective of educators, employing an ecological framework to analyze the findings. Specifically, the study situates its analysis within two interconnected levels of Bronfenbrenner's (1993) ecological model: the microsystem, which encompasses direct interactions and immediate environments, and the macrosystem, which reflects broader societal, cultural, and policy influences. In light of this theoretical approach, the study seeks to address the following overarching research questions:

(1) What factors do educators identify as contributing to the well-being of DHH students in the Iranian higher education context?
(2) How can an ecological perspective be applied to understand the factors influencing DHH students' well-being in this context?

Methodology

Context and participants

The research milieu for this work was a university in Tehran, Iran. This university, founded in 2019, is a special university for DHH students, which offers 23-degree courses in the humanities, sciences, and engineering at the associate, bachelor's, and master's levels for DHH students. Regarding the demographic distribution of students at this university, it should be noted that at least 75% of students in each major must be DHH, while the remaining 25% may consist of hearing students. This distribution aligns with this university's educational policies (cf. Gallaudet University in the US). Admission to the university does not require an entrance exam; instead, students are eligible for enrollment based on their secondary school GPA.

We adopted an interpretive qualitative multiple-case design (see Yin, 2009). In this study, each instructor's account of teaching DHH university students was treated as an individual case, while the broader phenomenon, or quintain, was educators' perspectives on the ecological determinants of DHH students' well-being in a specialized Iranian higher education setting. This design was appropriate because the study sought both to preserve the contextual particularity of instructors' experiences and to identify cross-case patterns in how educators understood, interpreted, and responded to factors shaping DHH students' well-being.

We also used purposive sampling methods to recruit university instructors to participate in this study. Instructors with a minimum of three years of experience who were currently teaching DHH university students at this institution were purposefully selected based on the premise that this duration of engagement would yield adequate insights into the educational dynamics of DHH university students. In this study, as we aimed to delve into the experience of this unique and distinctive set of participants, university instructors teaching DHH university students, a specific type of purposive sampling named intensity sampling was used. In line with Shaheen et al. (2019), such samples are excellent or rich examples of the phenomena of interest, and this enabled us to answer our overarching research questions in breadth and depth. Pertaining to the recruitment of the participants, we sent an e-mail invitation to instructors who were teaching in different academic disciplines at the university. After receiving a positive reply from about 20 instructors, we started to negotiate the time and date for the interview study. Ultimately, 18 participants whose schedule permitted took part in this study. Participants who had less than three years of teaching experience with DHH students or who were not actively teaching during the data collection period were excluded from the study (see Table 1 for the holistic demographic information of the participants). The final sample size of 18 instructors was considered sufficient for generating rich and information-dense data for this qualitative multiple-case study. Data collection continued until data saturation was reached, defined as the point at which no new themes or meaningful insights emerged from additional interviews. Saturation was observed after approximately the sixteenth interview, and two additional interviews were conducted to confirm this point.

Data collection

The semi-structured interview was the main data collection instrument for this study. With its retrospective and exploratory focus, this interview elicited university instructors' perspectives on their practices in maintaining DHH students' well-being. Semi-structured interviews were conducted to allow flexibility in exploring participants' experiences while ensuring alignment

Table 1. Participants' demographic characteristics.

Characteristic	Category	*n*
Gender	Female	14
	Male	4
Age group	30–34	3
	35–39	7
	40–44	4
	45–49	4
Academic title	Ph.D.	8
	Ph.D. candidate	6
	M.A.	4
Broad disciplinary area	Arts and design	7
	Humanities/Linguistics	5
	Applied and professional fields	6
Hearing status	Hearing	15
	Deaf or hard of hearing	3
Years of teaching in HE	0–2 years	2
	3–5 years	8
	6 years or more	8
Years of teaching DHH students in HE	0–2 years	3
	3–5 years	15

N = 18. Demographic information is reported in aggregate form to reduce the risk of deductive identification in a small and specialized participant group. Specific disciplinary affiliations were grouped into broader categories, and individual participant numbers are not linked to demographic profiles. "Applied and professional fields" includes computer science and sports science. DHH = Deaf or hard of hearing; HE = higher education.

with our research questions. Each interview lasted approximately 60–90 minutes and was guided by an interview protocol that included open-ended questions (see Appendix 1 for the interview questions). The interview questions were developed based on the relevant literature and the input of three Deaf specialists. Although the interview questions were prearranged, instructors were given the freedom to share their perspectives and experiences, allowing the interviews to flow naturally except when clarification was needed. All interviews were conducted by the second researcher, who has over five years of experience teaching DHH university students. Interviews with hearing instructors were audio-recorded and transcribed verbatim to ensure the richness of the data was fully captured. The audio recordings were transcribed in Persian by the second researcher. For interviews with DHH instructors, the sessions were conducted in *Esharani* (Iranian Sign Language) with the assistance of a qualified Iranian Sign Language interpreter. The signed content was translated into Persian by the interpreter during the interviews. In these cases, the interviews were video-recorded to preserve the visual-linguistic features of the signed communication and were subsequently transcribed by the second researcher. The recordings were also reviewed by an Iranian Sign Language specialist to confirm the accuracy of interpretation and transcription. Selected quotations were first identified in the original language and then translated into English by the research team. The translations were subsequently reviewed to ensure accuracy and consistency with the original meaning. The original language transcripts were retained by the research team for reference during analysis (see Appendix 3 for a sample of original and translated

quotations). During the analysis process, the research team engaged in reflexive memo-writing and discussions to consider how the interviewer's prior experience with DHH students might influence data interpretation. review board (IRB) approval was secured from the university prior to data collection. To ensure ethical rigor and facilitate member checking, all interview transcripts were returned to participants for verification of accuracy. Based on recommendations in Ghanbar et al. (2026), informed consent was obtained from all participants prior to the interviews. Ethical approval for this study was granted by the Institutional Review Board (IRB) of the authors' university before the commencement of data collection. The authors declare that they have no conflict of interest related to this study.

To complement the interviews, participants were also asked to complete narrative frames – structured prompts designed to elicit detailed accounts of their experiences with Deaf students. These prompts included:

- "Describe a time when you noticed a Deaf student thriving in your class. What do you think contributed to this positive experience?"
- "Recall a situation where a Deaf student faced significant challenges. How did the university environment respond, and what impact did this have on the student's well-being?"

These narrative frames enriched the contextual understanding, enabling instructors to reflect on specific instances and their broader implications for Deaf students' well-being (see Appendix 2 for narrative frames).

Data analysis

Data were analyzed through inductive thematic analysis within an interpretive qualitative multiple-case design using MAXQDA 24.6. Thematic analysis was selected because it enables researchers to identify, analyze, and interpret patterned meanings across a qualitative dataset while remaining theoretically flexible. This flexibility was important because the study aimed not to produce idiographic IPA case portraits, but to examine recurring and divergent educator perspectives on DHH students' well-being and then interpret these patterns through Bronfenbrenner's ecological framework.

The analysis was conducted iteratively, moving between the data and emerging interpretations to ensure a rigorous and reflective process and to maintain a transparent analytic trail. In the first phase, we began by reading and re-reading the interview transcripts and narrative frames to become fully familiarized and immersed in the data. This process, known as prolonged engagement, is essential for developing a deep understanding of participants' experiences (Lincoln & Guba, 1985). Initial notes and analytic memos were written to capture preliminary insights, including recurring ideas, emotions,

and significant statements (Braun & Clarke, 2006). In the second phase, using an inductive approach, we conducted line-by-line coding of the interview transcripts and narrative-frame responses to identify meaningful units of text. The narrative frames were treated as complementary participant-level data and were coded alongside the interviews, allowing us to compare instructors' general reflections in the interviews with their more concrete accounts of specific classroom situations. This integration helped refine codes and strengthen the development of themes. Codes were descriptive and closely tied to the participants' language, ensuring that the analysis remained grounded in the data. For example, *"I celebrate their achievements publicly to boost their confidence"* was coded as celebrating achievements. Similarly, the statement "*I always write what I say on the board*" was coded as using written visual support, which later contributed to the broader theme of optimizing teaching practices and creative instruction. Codes were then grouped into broader themes based on their conceptual similarities (see Figure 1 for the thematic map). This involved constant comparison and refinement to ensure themes accurately reflected the data (Braun & Clarke, 2006). To enhance analytic credibility, coding decisions were regularly discussed among the research team, and discrepancies were resolved through collaborative online discussion. Subsequently, emergent themes were further organized into higher-order themes that captured the overarching patterns in our data (see Figure 1). In this step, we focused on interpreting the connections between themes and their implications for Deaf students' well-being. Reflecting on how instructors made sense of their experiences while at the same time considering the broader ecological context of the university environment, we were then engaged in a double hermeneutic process, interpreting the participants' interpretations of DHH university students' well-being. For example, instructors' emphasis on *"Celebrating Achievements"* was interpreted as a strategy to empower Deaf students and address historical inequalities, intersecting with the theme of "*Promoting Equity and Equality*." An audit trail documenting coding decisions, theme development, and analytic reflections was maintained throughout the analysis to enhance transparency and rigor.

Results

In this section, we present the findings in terms of the emerging themes related to Deaf well-being ecology. The results are divided into two parts: (1) themes pertaining to the microsystem ecology of Deaf well-being, including empowering and inspiring students, optimizing teaching practices and creative instruction, and ensuring accountability in teaching; and (2) themes related to the macrosystem ecology of Deaf well-being, which encompass establishing a supportive and inclusive environment, facilitating effective interaction and communication, and promoting equity and equality in classrooms. A thematic

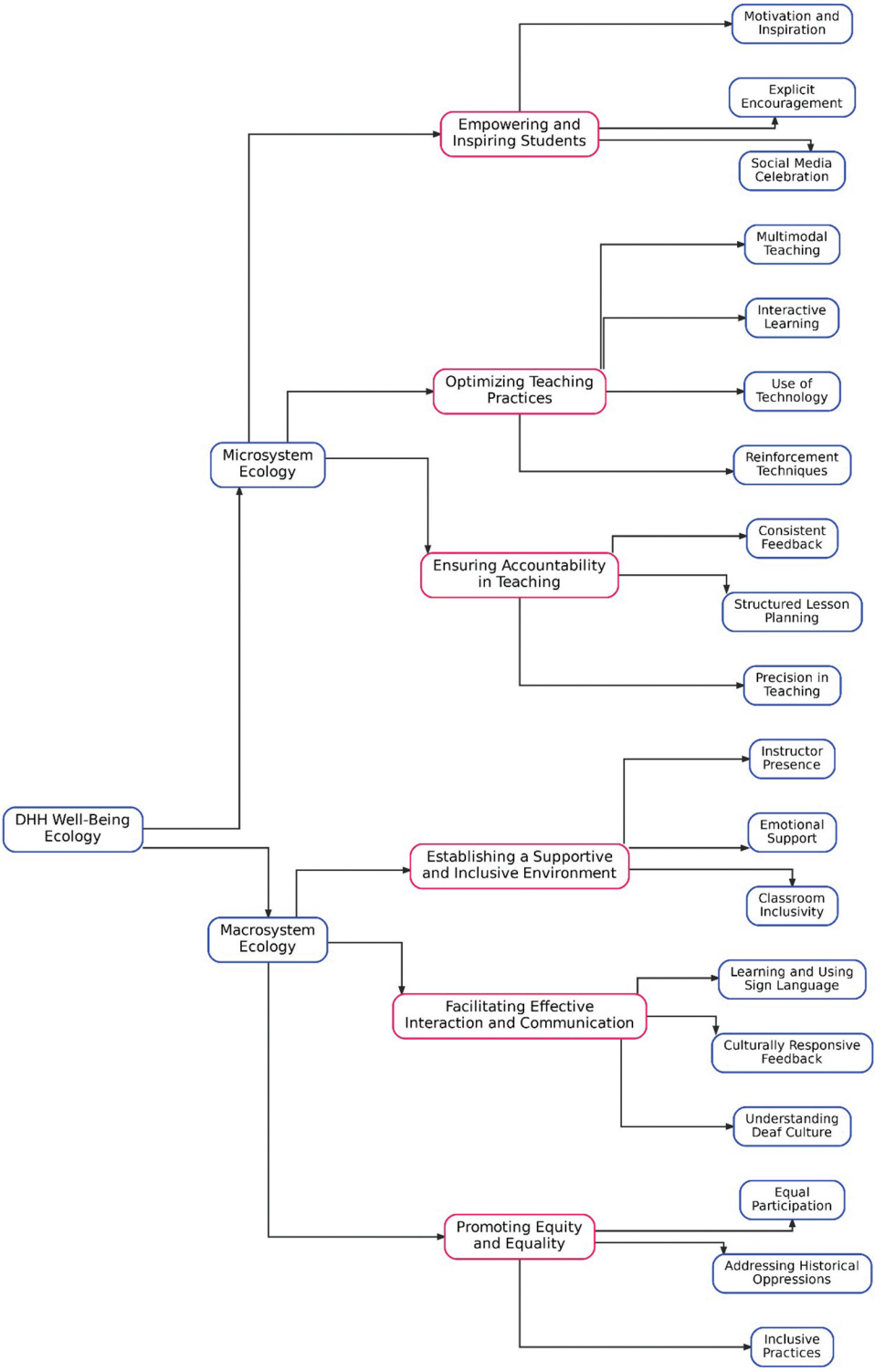

Figure 1. Thematic map of DHH students' well-being ecology.

map illustrating each theme, along with its sub-themes and is presented in Figure 1.

Themes of Deaf well-being micro-system ecology

Empowering and inspiring students

One of the major themes emerging from the instructors' interviews regarding DHH students' well-being was the importance of empowering and inspiring this cohort of university students. Instructors emphasized the need to motivate DHH students to move forward and recognize their potential. By reinforcing the idea that DHH students are equally capable as their hearing peers, teachers help dismantle internalized barriers and promote a positive self-concept. This approach enhances their academic engagement and prepares them for further roles in education, ensuring they view their Deaf identity as a strength rather than a limitation. As one instructor stated: *"I always tell them that there is no difference between them and other hearing students, and they are just as capable. I believe they need to be aware of this"* (Interview excerpt).

Another dimension within this theme is the use of explicit encouragement. Instructors highlighted the importance of acknowledging even the smallest accomplishments to build students' confidence. Recognizing achievements, no matter how small, fosters a sense of accomplishment and hence motivates DHH University students to strive for further success. This practice not only boosts self-esteem but also creates a supportive learning environment where students feel valued – an aspect often neglected during their K-12 education. For instance, one instructor noted: *"Every time one of them successfully accomplished a task, I announced it in the class"* (Interview excerpt). Similarly, another respondent shared: *"In every session, I discuss their strengths and explicitly highlight their efforts"* (Interview excerpt).

Instructors frequently emphasized extending praise beyond the classroom, with six of them highlighting their efforts to celebrate students' achievements on social media platforms like Instagram. By publicly showcasing their work, instructors reinforced students' sense of pride and belonging, helping to integrate them into both academic and social communities. As one respondent explained, "*I always praise them for the smallest successful performances, and when they achieve something significant, like creating an excellent painting, I showcase it on Instagram*" (Interview excerpt).

Optimizing teaching practices and creative instruction

The second theme in the Deaf well-being micro-system ecology relates to the optimization of teaching practice and creativity in the instruction of DHH students in higher education. Instructors unanimously highlighted the necessity of adapting conventional teaching practices used in mainstream higher education, emphasizing the importance of innovation and tailored

instructional strategies when teaching DHH university students. Their insights underscored the role of multimodal teaching, interactive learning, collaboration with interpreters, and the integration of technology in enhancing educational experiences for this student population.

One pivotal issue in this theme is the need for multimodal teaching strategies that go beyond traditional lecture-based methods in mainstream higher education. Given the unique communication needs of DHH students, instructors reported integrating visual aids (e.g., sign language and graphs), written instructions using whiteboards, and digital tools to make content more accessible. As one instructor opined,

I try to incorporate a mixture of sign language, body language, written instructions, and digital resources to ensure that students grasp the concepts effectively. For instance, I always prepare slides with minimal text and rich visuals and also talk right in front of them. (Interview excerpt)

Another instructor noted: *"I always write what I say on the board. I think this can lower their stress, and I try my best to use sign language, although I am not very fluent in it"* (Interview excerpt). This approach not only compensates for the challenges posed by instruction based on oralism but also maximizes comprehension by leveraging the students' strengths in visual processing.

In addition to multimodal instruction, several instructors stressed the importance of interactive, experiential, and project-based learning. Traditional passive learning methods, such as uninterrupted lecturing, were viewed by them as insufficient for engaging DHH students, even with the presence of a sign language interpreter. Instead, they designed hands-on activities and group tasks that required active participation. One instructor stated:

> Instead of just lecturing, I design hands-on activities like infographics, interactive posters, and group tasks that require DHH students and their hearing counterparts to actively collaborate in doing them. This helps DHH students feel more involved and improves their confidence as well as creating a sense of belonging and mutual respect. (Interview excerpt)

As can be seen, such practices not only foster engagement but also encourage active collaboration between hearing and DHH students, helping DHH students build confidence while promoting a sense of belonging and mutual respect among peers.

Another commonly reported instructional adaptation to boost DHH students' well-being was the use of reinforcement techniques, particularly repetition and summarization, and sometimes lowering the speed of speaking, to aid retention. Because some DHH students may experience delays in processing information due to the time required for interpretation, reinforcing key concepts becomes crucial. As one instructor explained, *"I repeat key points multiple times and use summaries at the end of the session. This reinforces important*

concepts and helps students retain information better" (Interview excerpt). Another respondent said: *"Some concepts in the arts are very complex, and I need to explain them very slowly to help them understand and make learning less stressful"* (Interview excerpt). These strategies ensure that students have multiple opportunities to process and better understand the content of courses.

The role of technology in enhancing learning accessibility was another recurrent issue in the interviews on this theme. Instructors reported using captioned videos, assistive applications, and online platforms to provide flexible learning options. One instructor, for example, explained, *"I use captioned videos to provide instructional materials for them; I use it for courses in which visuals cannot be used, like literature"* (Interview excerpt). Another instructor responded: *"I utilized speech-to-text applications and online discussion forums to make learning more accessible, interactive, and enjoyable for DHH students, as I think they need my assistance both in class and out of the class"* (Interview excerpt).

Overall, the instructors' insights underscore the importance of rethinking traditional teaching methods to better serve DHH university students. These efforts not only support students' academic success but also contribute to their confidence, sense of belonging, and overall well-being in higher education settings.

Ensuring accountability in teaching

In the interviews, the instructors repeatedly emphasized the importance of a sense of responsibility in teaching DHH university students and prompting their well-being. They asserted that when instructors hold themselves accountable to DHH students, it substantially optimizes the learning process for this cohort. One facet of accountability stressed by the educators was related to their persistent concern for the learning progress of DHH students. For instance, one educator remarked, *"I am constantly contemplating whether they have truly understood what I taught them. This is why I consistently inquire if they have any difficulties or concerns. On many occasions, this inquiry prompts them to share their issues"* (Interview excerpt). This reflective teaching approach demonstrates educators' accountability in ensuring communication accessibility and consistently checking for understanding, which fosters emotional well-being and psychological safety. It also promotes social connectedness and a sense of belonging. Overall, it supports culturally responsive pedagogy, respecting DHH students' unique linguistic identities.

Another key point noted by instructors is that discipline and precision are fundamental components of accountability when teaching DHH students. DHH students often rely on visual cues, structured routines, and clear communication to access information. A disciplined approach to teaching – such as consistent lesson formats, predictable routines, and organized materials –

reduces the cognitive effort required to follow in this group of students. This allows students to focus their energy on understanding the content rather than deciphering the lesson's structure. For example, one instructor said:

> I always prepare my lessons in advance and follow a very neat and clear structure during class. This helps DHH students know what to expect and allows them to focus on the content rather than trying to figure out what is happening next; they are always asking and worried about this. I think consistency is key to building their confidence and engagement.

Several instructors (10 out of 16) frequently referred to precision in teaching. Precision in teaching is critical for DHH students since it ensures that instruction is clear, accessible, and tailored to their unique learning needs; as one instructor pointed out: *"I always break down complex concepts in math into smaller, more manageable steps and use visuals like diagrams or charts to illustrate key points. This precision in such courses helps my DHH students grasp the material more effectively"* (Interview excerpt). It can be argued that for DHH students, who often rely more on visual and contextual cues, precise communication is essential to avoid misunderstandings, encompassing clear language, well-designed visuals, and appropriate pacing to ensure students can follow along without confusion. As one educator explained:

> I use precise, step-by-step demonstrations in my science classes, especially for lab experiments. This helps my DHH students follow along and participate fully; even if they miss some auditory cues or cannot follow a sign language interpreter, they always say that when they cannot follow the class, they become anxious. (Interview excerpt)

It can be claimed that when instructors are precise and organized in their teaching, DHH students feel more confident in their ability to understand and succeed. Precision eliminates ambiguity, which can be a significant barrier for DHH students who may struggle with incomplete or unclear information. Notably, by carefully planning and delivering lessons with precision and structure, instructors can foster inclusivity and equity in their classrooms, thereby cultivating wellness in them. This teaching orientation helps level the playing field for DHH university students, who might otherwise face barriers due to inaccessible teaching methods and past educational disadvantages, a situation not only in K-12 but also in higher education, they have been grappling with.

Themes of Deaf well-being macro-system ecology

Establishing a supportive and inclusive environment

This theme encompasses not only academic support but also assistance related to the socio-affective dimensions of the lives of DHH university students. One frequently mentioned point in this theme was the educators' constant presence alongside DHH students, whether in physical classroom settings or virtual

environments. In fact, being consistently available and engaged demonstrates a commitment to DHH students' success and well-being. As one instructor explained:

> I make sure to always be present for my DHH students, whether it is during class, office hours, or even outside of formal educational settings. My presence reassures them that they are not alone in their academic journey, and this gives them a reassurance that is highly emphasized in our institution. (Interview excerpt)

Another significant dimension pointed to in interviews was prioritizing inclusivity within classrooms, with nine educators explicitly stating that they consistently endeavored to integrate both DHH students and their hearing counterparts in collaborative instructional activities. One instructor, for example, stated, *"I consistently integrated DHH students with their hearing counterparts in classroom activities; this approach not only made the tasks more engaging but also more stimulating and dynamic"* (Narrative frame); also, another instructor mentioned: *"I noticed that collaborative tasks not only improve academic engagement but also help DHH students feel more connected and included"* (Interview excerpt). It can be claimed that integrating DHH students with hearing peers in collaborative activities enhances their emotional well-being by promoting social connections and reducing feelings of isolation, something that they have been grappling with within society. This inclusive approach also supports a positive sense of identity and belonging for DHH students and encourages mutual respect and understanding, which can contribute to the overall mental and social well-being of DHH students.

Another recurrent issue mentioned in the majority of interviews ($n = 12$) was the affective support of DHH students. Notably, this support extended beyond academic needs, as many instructors demonstrated a deep concern for the students' personal lives and familial challenges, offering them emotional guidance and consultation when needed. This approach underscores the instructors' commitment to nurturing the well-being of DHH students both inside and outside the classroom, as one of them said:

> Their emotional well-being is of utmost importance to me; therefore, when they encounter personal difficulties, I encourage them to share their concerns with me so that I can assist them in resolving these issues. I provide them with strategies to effectively cope with such challenges. (Interview excerpt)

Another instructor also said: *"They frequently confide in me about their familial issues, which, in my view, alleviates their distress and helps bridge the gap between us"* (Interview excerpt). Another educator had placed more emphasis on emotional bonds, saying: *"For me personally, that non-academic connection is crucial – meaning that an emotional bond needs to be established first, so the student feels a sense of closeness; only then does the issue of teaching come into play"* (Narrative frame); this perspective brings

to the fore the importance of emotional well-being as a foundation for effective learning, particularly for DHH students. That is, establishing an emotional connection fosters a sense of trust, safety, and belonging, which is essential before academic engagement can occur for this cohort of students.

Facilitating effective interaction and communication

Effective interaction and communication were one of the most recurrent themes, referred to in all the interviews as well. One of the most important dimensions of this theme was learning and using sign language. One instructor said:

> Although I am not very fluent in Esharani, I always make an effort to communicate with them in that language to the extent that I can, as I believe it is far more effective than relying on lip reading, and I see they become excited and happy when they see that an instructor knows their language. (Narrative frame)

Another educator also highlighted the role of Esharani in giving feedback to DHH students, mentioning that:

> I always give them feedback about their performance in pattern making and draping [i.e., creating software design patterns and applying texture or data draping in computer graphics/GIS], and it is often in written form in Persian, but whenever I give them feedback using Esharani, whether, by myself or an interpreter, it is evident that they like it more, and it is more effective. (Interview excerpt)

These excerpts reveal the emotional and educational impact of using Esharani in teaching DHH students, bringing a multifaceted role beyond mere communication to the fore. When educators in Deaf education make an effort to use Esharani, even with limited fluency, it signals authenticity and respect for the students' cultural and linguistic identity. This effort goes beyond a sole instructional strategy – it, in a way, manifests a genuine willingness to connect, augmenting emotional resonance and trust.

Regarding the relationship between language and culture, six educators identified familiarity with Deaf culture as a key aspect of effective teaching; one educator in this regard said:

> When I showed interest in their culture and showed in practice that I am familiar with it, they started trusting me more. It was not just about teaching; it was about building a relationship where they felt seen and respected. (Interview excerpt)

Another instructor in tandem pointed out:

> I realized in these three years that to truly connect with my DHH students, I needed to understand more than just their language. I think learning about Deaf culture helped me respect their norms and values, which made my teaching more relatable and meaningful, and they feel comfortable communicating with me. (Narrative frame)

As can be seen, when educators take the time to learn and integrate Deaf culture into their teaching, this cultural awareness fosters a sense of inclusion and recognition for DHH students, validating their linguistic and cultural identity. This validation promotes emotional security and self-esteem, key elements of well-being, as students no longer feel like outsiders but an integral part of the learning environment.

Promoting equity and equality in classrooms

Intersecting the theme relating to accessibility, instructors also described instances in their teaching that relate to establishing equity and equality. Having had an overview of educational oppressions DHH university students encountered in secondary education, nine instructors pointed to the assignment of equal time in the class both to DHH students and their hearing counterparts, saying that:

> I know how DHH students were often overlooked in their K-12 education, so I am very considerate about giving them the same amount of time and focus as their hearing peers; for example, I always wait for the interpreter to finish signing before I move on, and I think this small act of patience shows them that their voice matters. Their deafness should not create an obstruction for them. (Interview excerpt)

Another instructor said:

> At first, it was very difficult, but as I moved forward, I became skilled in striking a balance in classroom participation. Now, I structure my lessons so that everyone, including DHH students, has an equal chance to participate. For example, I use a rotating system. (Narrative frame)

These excerpts illustrate the instructors' deliberate efforts to address the historical educational oppressions faced by DHH students by ensuring equal time and attention in the classroom. By giving DHH students the same opportunities to participate in discussions, ask questions, and present their works and ideas, instructors foster a sense of belonging. This is particularly important given the marginalization many DHH students experience in secondary education, which they do not want to happen in the tertiary one.

Another notable issue brought to the forefront by eight instructors was their proactive role in addressing and eliminating instances of inequality in the classroom. Given the historical oppression that DHH students have faced in Iran and other countries, it is expected that educators at this university would be particularly sensitive to this matter, as one instructor stated: *"Before I started working in Deaf education, I was not aware of the inequalities these students faced. Now, however, I am fully aware of them, and I take immediate action whenever I encounter such issues in my classes"* (Narrative frame). Another

instructor even tries to educate hearing students in this regard, mentioning that:

> Addressing inequality requires constant vigilance. I make it a point to educate my hearing students about the challenges DHH students face and the importance of inclusivity by talking to them and getting them to participate in workshops on Deaf culture and sign language. (Interview excerpt)

The proactive efforts of instructors to address and eliminate inequality in the classroom are essential for creating an equitable learning environment in higher education. These practices not only counteract the historical oppression faced by DHH students but also contribute to their academic, social, and emotional well-being. By taking immediate action, educating hearing students, and ensuring fair treatment, instructors play a vital role in fostering a culture of respect and inclusion, as one instructor also mentioned:

> I assign homework based on their individual conditions and capacities, and I also set expectations according to their competencies. For example, since their Persian language proficiency is not as strong as that of their hearing peers, I use different test items for them that are less reliant on lengthy writing tasks. (Interview excerpt)

Discussion

This study sought to investigate the ecological determinants of well-being in Iranian DHH university students by focusing on educators' perspectives within the Iranian higher education context. Through the lens of Bronfenbrenner's ecological systems theory, IPA illuminated the phenomenological landscape of well-being in Deaf higher education, demonstrating that students' experiences are fundamentally shaped by a confluence of interwoven factors operating within their immediate and distal environments, respectively. Our results highlight that while instructors' classroom practices play an immediate role in fostering student engagement and self-efficacy, broader institutional structures, socio-cultural attitudes, and national educational policies significantly influence the extent to which higher education can be truly inclusive for DHH students.

Higher education is often regarded as a transformative milieu for both personal and intellectual development (Tight, 2020). Nonetheless, for students with special needs, including DHH students, access to and participation in university ecosystems is often laden with challenges and hardships. Recent research has brought to light that DHH students face a wide range of persistent barriers pertaining to linguistic accessibility, social integration, and institutional support systems (Chapman & Dammeyer, 2017; De Meulder & Haualand, 2021). The findings of this study align with these concerns, demonstrating that while individual educators adopt inclusive teaching strategies, the broader higher education ecosystem is not always adequately structured to

support the diverse needs of DHH students. These results underscore both the promise and limitations of current educational practices for DHH students in higher education.

Micro-system influences: empowerment, instructional adaptation, and accountability

At the micro level, our results revealed that instructors actively utilized strategies to empower and inspire DHH university students. The emphasis on explicit encouragement, celebration of achievements, and the reinforcement of a positive self-concept suggests that educators are not merely delivering content, or this is not their sole priority; they are actively constructing a classroom culture that seeks to counterbalance historical disadvantages with which DHH students have been dealing (see Ghanbar et al., 2024). By repeatedly affirming that DHH students are as capable as their hearing counterparts, instructors aim to dismantle internalized barriers and foster resilience. This resonates with Deci and Ryan's (2000) assertion that supportive teacher-student interactions enhance intrinsic motivation and well-being. This is of utmost significance when it comes to students from this special group, who have historically been underprivileged in society (Ainscow, 2020). This is why most instructors often emphasize the explicit and pronounced nature of encouragement in teaching practices for these students, aligning with calls for asset-based pedagogies that counter deficit narratives (Dweck, 2006; Paris & Alim, 2014).

The results also brought to the forefront that instructors are reimagining their teaching practices through multimodal instruction. Rather than relying on traditional lecture-based methods, educators employ visual aids, interactive activities, and technology-enhanced tools to make learning in higher education more accessible. For example, the incorporation of sign language – even when instructors are not fully fluent in it – and the use of captioned videos or written summaries not only facilitate comprehension of academic materials but also signal respect for DHH cultural and linguistic identities (Chapman & Dammeyer, 2017; Giti & Siyavoshi, 2020). This pedagogical shift is indicative of an emerging trend in inclusive education, where the emphasis is placed on adapting instructional methods as well as materials to meet diverse students' needs in higher education rather than expecting students to conform to standard modes of delivery (see Byrne, 2019; Stentiford & Koutsouris, 2020).

Accountability in teaching emerges as another critical theme at the micro level. Instructors consistently monitor DHH students' understanding and adjust their methods accordingly. This insistence on precision – through structured lessons and clear communication – addresses the unique cognitive challenges that may arise from the reliance on visual cues and delayed processing in DHH university students. In this way, educators function as both

facilitators and gatekeepers, ensuring that learning is accessible and that no student is left behind. However, while this approach appears beneficial, it also raises questions regarding the extent to which such individualized practices can be sustained across larger class sizes and varied institutional settings. Our findings in this theme align with the concepts of professional responsibility and relationality in Deaf education (see Friedner et al., 2025). Specifically, our results underscore the harm and challenges this cohort of students has experienced throughout their educational trajectory (see Ghanbar et al., in press for a related discussion on DHH students' literacy). As Friedner et al. (2025) highlight, accountability in this context functions as a harm-reduction practice, extending beyond responsibility to DHH individuals themselves to also encompass their families and the broader educational environment in which instructors work.

Macro-system influences: inclusivity, communication, and equity

At the macro level, our findings highlight the importance of a supportive and inclusive institutional climate. Instructors pointed to the creation of a positive learning environment that extends beyond academic instruction. Efforts to integrate DHH students with their hearing peers, foster collaborative learning, and build emotional bonds are integral to a broader strategy aimed at mitigating the social isolation these students often face in all phases of their educational trajectory. By creating inclusive learning environments, instructors can promote meaningful interactions, enhance mutual understanding, and support the socio-emotional well-being of DHH students within higher education settings (see Chen et al., 2024). Such practices not only promote academic engagement but also contribute significantly to the socio-emotional well-being of DHH students. This is consistent with previous research emphasizing the role of social inclusion and cultural recognition in enhancing well-being in higher education (Rawdin & Dhillon, 2024).

At the same time, the meaning of inclusion in a specialized, majority-DHH higher education setting requires careful interpretation. The university examined in this study was designed to respond to the linguistic, communicative, and educational needs of DHH students, and this specialized structure can offer important benefits, including greater accessibility, cultural recognition, peer belonging, and reduced dependence on inaccessible mainstream practices. However, such a setting also raises a broader tension within inclusive education: an institution can be highly supportive for DHH students while still reflecting a degree of separation from mainstream hearing-dominant higher education. In this sense, inclusion should not be understood merely as the physical placement of DHH and hearing students in the same institution, nor should specialized provision be treated as inherently exclusionary. Rather, the findings suggest that inclusion is relational and ecological; it depends on

whether students have meaningful access to communication, academic participation, social relationships, cultural recognition, and future opportunities beyond the specialized setting. Therefore, while the majority-DHH context may protect students from some forms of marginalization common in mainstream universities, it may also limit routine interaction with hearing peers if not accompanied by intentional opportunities for cross-group collaboration, shared academic projects, and broader institutional partnerships.

Furthermore, effective communication was identified as a linchpin of successful interaction in the classroom. Instructors' attempts to learn and use Esharani – the sign language used by the Iranian Deaf community – demonstrate an effort to bridge linguistic divides. Even when instructors are not fully fluent, their willingness to engage in sign language is perceived by students as a sign of respect and genuine commitment to inclusivity. Recent research brought to light that when educators make an effort to communicate in a student's primary language, it not only facilitates learning but also fosters a sense of belonging and cultural validation (Murray et al., 2018). In addition, it has been found that access to one's primary language (sign language in the case of DHH students) is a fundamental determinant of academic success and well-being (Chapman & Dammeyer, 2017; De Meulder & Haualand, 2021). Of note, the use of sign language by hearing instructors – even when imperfect – signals respect for Deaf identity, which aligns with the principles of Deaf gain (Bauman & Murray, 2014). This concept challenges deficit-based perspectives on deafness and, instead, views sign language and Deaf culture (see Holcomb, 2023 for the discussion on the importance of cultural competence of instructors in Deaf education) as enriching educational environments. However, as a precaution, we should consider that the reliance on instructors' limited proficiency may also inadvertently underscore systemic gaps in formal training and professional development. This raises critical questions about how institutions can better support educators in developing the necessary skills to communicate effectively with DHH students. This issue is particularly pressing in Iran, where there is no official sign language training available – not only for K-12 teachers but also for university instructors nationwide (Ghanbar & Rezvani, 2024; Rezvani et al., 2024).

In addition, several instructors reported deliberate measures to allocate equal participation time and adjust assessment strategies for DHH students. Such practices are based on the recognition of the historical marginalization that these students have experienced in their lives (Reagan et al., 2021). Notwithstanding the fact that these endeavors are commendable, they also reveal underlying tensions in the educational system. On the one hand, tailored adaptations are essential for creating equal opportunities and ensuring fair access to education for DHH students. On the other hand, these adaptations underscore the systemic inequities that persist despite well-intentioned efforts, including the very establishment of this special university itself. This

duality highlights the need for deeper structural changes to create a truly inclusive and sustainable learning environment for DHH students in higher education. The critical challenge, therefore, lies in translating these micro-level adjustments into broader policy reforms that address the structural dimensions of inequity in higher education, ensuring that the system better accommodates the unique needs of DHH students. Relating to this, it should be noted that assessment in higher education also remains one of the most significant barriers to students with special needs, including DHH students (Nieminen et al., 2024). While instructors in this study reported adapting assessment methods – such as adjusting grading criteria or offering alternative assignment formats for DHH students – these changes were individualized rather than institutionally mandated. In tandem, Nieminen et al. (2024) found that assessment is a primary barrier to the inclusion of students with special needs in higher education and is directly related to students' well-being, so we, in line with Murray et al. (2018), believe that universities must move beyond case-by-case accommodations and instead restructure assessment frameworks to reflect the linguistic realities of DHH students. Along these lines, drawing on our findings and experiences, we propose three measures that can be implemented in higher education to enhance the well-being of DHH students: 1) offering sign language-based oral exams for students who struggle with written expression, 2) designing visual and project-based assessments to complement traditional text-heavy exams, and 3) training faculty to recognize and address biases in grading DHH students' written responses, acknowledging that Persian (or other majority languages) might be considered as a second language for many DHH individuals (see Ghanbar et al., 2024 for a related discussion).

Implications for policy and practice: enhancing well-being for Deaf students in special higher education

The findings of this study carry several implications for both practice and policy in higher education. For educators, the study underscores the importance of embracing a reflective and adaptive teaching approach. Professional development programs for special education need to prioritize training in culturally responsive pedagogy and effective multimodal communication strategies. Accordingly, institutions must invest in resources – such as qualified sign language interpreters, advanced technological tools, and tailored curriculum materials – that support the diverse learning needs of DHH students (see also Meghdari, 2025).

Our results also underscored the urgent need for systemic reforms in higher education policy pertaining to students with special needs. In tandem, policymakers should focus on embedding inclusive practices into the core structures and policies of higher education institutions to ensure equitable access and

support for all students. This might involve revising assessment practices, creating standardized guidelines for boosting inclusivity in higher education classrooms, and ensuring that teacher training programs include comprehensive modules on special needs and cultural competence. We believe such reforms could help to transform the micro-level practices observed in this study into enduring, institution-wide policies that promote equity and inclusion (see also Alemi & Meghdari, 2020). These reforms should also ensure that specialized DHH higher education does not become an isolated parallel system, but rather functions as a linguistically and culturally accessible pathway into broader academic, professional, and social participation (Ghanbar, 2026; Rezvani et al., 2026).

Furthermore, the study raises important questions about the scalability of individualized interventions. While small-scale, personalized support has clear benefits, its effectiveness may diminish in larger or less specialized settings. Therefore, a dual strategy that combines individualized support with systemic policy reforms is essential. As claimed by Ghanbar (2026), by fostering an educational ecosystem in which all stakeholders – educators, students, administrators, and policymakers – collaborate toward a common goal of inclusivity, higher education institutions can better support the well-being of all students.

Limitations

The contextual specificity of this study, situated in a specialized university in Tehran and based on a small qualitative sample, invites caution in generalizing the results. In addition, because interviews involved both Persian and Iranian Sign Language, the processes of interpretation and translation may have resulted in the loss of some linguistic or cultural nuances. Furthermore, as the data were collected through interviews with university instructors, responses may have been influenced by social desirability or institutional power dynamics.

Conclusion

This study portrayed the complex interplay of classroom-level and institutional factors that shape DHH students' well-being in higher education. By employing Bronfenbrenner's ecological model, the research illuminates the complex interplay between micro-level classroom practices and macro-level institutional and societal factors. Instructors' efforts to empower students through explicit encouragement, innovative multimodal teaching, and stringent accountability measures are integral to fostering a supportive educational environment. Simultaneously, the broader themes of inclusivity, effective communication, and equity underscore the importance of addressing systemic

barriers that have historically marginalized DHH students. However, the study also shows that inclusion in specialized DHH higher education is not a simple or self-evident category. While majority-DHH institutions can offer linguistic access, cultural recognition, and emotional safety, they must also create meaningful opportunities for interaction with hearing peers and wider academic communities so that support does not become institutional separation. Nonetheless, the ecological framework remains a powerful tool for understanding how various layers of influence – from daily interactions to socio-cultural norms – in conjunction with each other form student experiences.

As educators and policymakers strive to create truly inclusive learning environments, the insights from this study offer a valuable springboard for reimagining higher education practices. These reimagined practices can better serve DHH students specifically, as well as students with diverse needs. In moving forward, future research should expand the scope of inquiry to include diverse institutional contexts and multiple stakeholder perspectives. In particular, because the present study examined DHH students' well-being through educators' perspectives, future studies should directly investigate DHH students' own accounts of the factors that enhance or diminish their sense of well-being in higher education. Such research could explore how students themselves experience instructional accessibility, peer relationships, assessment practices, institutional support, sign-language access, and participation in both specialized and mainstream university settings. Comparative studies involving DHH students, hearing peers, instructors, interpreters, families, and administrators would provide a more comprehensive ecological understanding of well-being and help identify which forms of support are most meaningful from students' own perspectives. Only through such multi-perspectival investigations can the field develop more effective strategies that bridge the gap between theory, policy, and practice.

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