# Digital Engagement of d/Deaf and Hard of Hearing TikTok Users: Insights from the Current Literature

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## ABSTRACT

This paper explores the digital engagement of the d/Deaf and hard of hearing individuals on TikTok. While the platform provides captioning of videos, some accessibility challenges persist. These include inconsistent captioning, deficient synchronization, and limited support for sign language content. Although video format prevails, the d/Deaf and hard of hearing users actively use TikTok to build communities and raise awareness through content. In our study, we conceptually reviewed current literature on inclusivity and accessibility of TikTok's design and provided recommendations for improved user experience for these users.

## KEYWORDS

d/Deaf and hard of hearing; social media; TikTok, user experience

## 1 INTRODUCTION

Worldwide, there is a significant increase in the prevalence of hearing loss among the population. Currently, over 5% of the world population, i.e., 430 million people, have a disabling hearing loss, which requires rehabilitation [1]. It is estimated that by 2050, nearly 2.5 billion people are projected to have some degree of hearing loss [1]. In Slovenia, approximately 1,500 deaf individuals reside, and about 1,000 of them use Slovenian Sign Language as their primary language [2].

Deafness and hearing loss are commonly considered disabilities primarily due to their impact on social connectedness [3][4]. Individuals who are d/Deaf and hard of hearing (d/DHH) frequently experience social isolation. Hearing or access to auditory information plays a vital role in establishing relationships, shaping self-esteem, and enabling individuals to function effectively across different contexts, including educational and workplace settings [4][5]. Social media has become a powerful catalyst for change, as it allows individuals and communities to establish connections and communicate with peers in different ways. For d/DHH individuals, accessibility on social media thus represents a crucial point to be able to equally participate in communicating and engaging with content.

Major social media platforms like TikTok can be crucial in providing an inclusive digital space for (d/DHH) individuals. Features like auto-captions, sign language videos, written descriptions and comments, and text adaptability (i.e., adjustable font size, contrast, dark mode) can address their specific communication needs [6]. d/DHH individuals frequently face challenges in digital environments, such as the widespread use of videos without captions [7][8][9]. In 2019, the European Parliament and the Council of Europe introduced the European Accessibility Act (Directive 2010/13/EU) to improve the regulation of captions on digital platforms operated by public broadcasters. The Act (Article 3) defined audiovisual media services broadly as "*services transmitted by electronic communications networks which are used to identify, select, receive information on, and view audiovisual media services".* Their distinct feature is that they provide *"features, such as subtitles for the deaf and hard of hearing, audio description, spoken subtitles and sign language interpretation."*. [10]. Thus, this definition includes video platforms, such as TikTok.


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In this paper, we aim to synthesize findings from the empirical literature to provide an insight into the digital engagement of d/DHH individuals on TikTok. Digital engagement on social media has been understood as diverse behaviours like extending reach (sharing or forwarding), affective evaluations (liking), and deliberation (commenting) [11]. Accordingly, we understand digital engagement both as active and passive consumption of the content on TikTok, where users view, like, comment, share or save the content, or they use specific features like creating duets.

## 2 NEEDS AND REQUIREMENTS OF DEAF AND HARD OF HEARING INDIVIDUALS

According to WHO, hearing loss may affect one or both ears and is classified in the following categories: *normal hearing* (10–15 dB)*, slight or minimal hearing loss* (16–25 dB), *mild hearing loss* (26–40 dB), *moderate hearing loss* (41–55 dB), *moderately severe hearing loss* (56–70 dB), *severe hearing loss* (71–90 dB), *profound hearing* loss (≥91 dB) [1].

People identified as hard of hearing (HoH) may have mild to severe hearing loss. They typically communicate using spoken language and often use assistive devices, such as hearing aids and cochlear implants, or they use subtitles. Their hearing loss ranges from below 40 dB (mild) to over 80 dB (severe). In Slovenia, individuals with more than 95% hearing loss who retain speech and auditory function are also classified as HoH [1]. On the other hand, d/Deaf individuals usually have profound hearing loss, meaning they hear very little or nothing at all. They often rely on sign language for communication [1].

Similar to hearing individuals, d/DHH individuals use social media to connect with their peers. They primarily rely on content that includes captions or text transcripts to access educational and informational material [12][13][14]. Technology serves as an essential tool for social inclusion of these individuals into both their own communities and wider society [15][16]. d/DHH individuals also use digital media for text-based communication [14] [17] as well as for accessing video content through social media platforms where subtitles and transcripts are available. They can also make video calls in sign language [12][13][14]. Moreover, they use social media to reduce loneliness, expand extensive social networks, and seek emotional support [18][19].

## 3 SOCIAL MEDIA AND THE CONCERN FOR USERS WITH DISABILITIES

Social media encompasses a wide range of internet applications based on Web 2.0 principles, which encourage the creation and exchange of user-generated content [20]. Social media extends beyond social network sites to include blogs, professional and corporate networks, collaborative projects, forums, microblogs, and virtual worlds [21][20]. Kietzmann et al. [22] classified social media using a "honeycomb framework" of seven functional building blocks: Identity, conversations, sharing, presence, relationships, reputation, and groups. This framework can be used to describe the user experience of any social media platform.

The fundamental concept behind social media is participation, sharing, and collaboration [20]. Thus, users are not only content consumers, but also content creators. This is particularly true for younger generations who grew up during the rise of digital media and are accustomed to their interactive nature. Social media enables the exchange of information in various formats, allowing content to be created and shared in the form of text, images, video, and audio [23]. They also provide personalised services and give communication power to users, who use their online profiles to interact with one another and share uncensored user-generated content [24].

One of the currently very popular social media platforms is TikTok. It was launched in China in 2016 under the name Douyin. It quickly gained popularity in China, and in 2017, an international version was launched globally. By 2023, TikTok had been downloaded more than three billion times [25][26]. It has established itself as an innovative platform for creating, sharing, and discovering short videos [27]. TikTok's features are designed to facilitate interaction among users and include: *duets* (users can create videos alongside content from other creators), *stitch* (users can clip a scene from another user's video and integrate it into their own), *commenting* (users can comment on videos and respond to comments with new videos), *voice-over* (videos can be enhanced with voice-overs or audio captions) [28].

Social media platforms have shown efforts to accommodate users with disabilities with initiatives, such as the implementation of automatic and manual subtitles for video content (e.g., on YouTube, Facebook, and Instagram), audio descriptions, and text transcripts, which are especially beneficial for d/DHH users [14]. In line with this, TikTok also provides: *auto captions* (transcription of audio in videos to text), and *manual caption creation* (users can add their own captions to videos) [28].

One of the key concerns for d/DHH users on social media is the loss of audio information in video content. Closed captions provide synchronous text display conveying auditory information, including non-verbal cues such as speaker identification [29]. To ensure fully accessible information, captions also include nonverbal elements such as music, sound effects, and paralinguistic signs (intonation, emphasis, speaker details such as male or female voice) [30].

Subtitles can be categorised as open or closed, depending on whether users can toggle them on or off. They can appear in different styles. Zarate [31] identifies four types: (1) scroll-up captioning, (2) pop-up captioning, (3) paint-on captioning (built as speech is delivered), and (4) cinematic captioning, as well as (5) dynamic captioning, where subtitles appear in sync with sounds, highlight spoken words, and visually reflect volume changes. It is important to note that conventional subtitling often fails to convey crucial information needed by d/DHH individuals to fully perceive visual content. The reason lies in complexity of human speech that carries meaning beyond words, while subtitles typically do not capture: (1) prosody (how loud, melodic, or fast the voice is), (2) voice quality (whether it sounds old or young), (3) the speaker's mood (tired, excited), or even (4) emotions (anger, joy, sadness) [30]. Despite advances in captioning methods, users still face challenges, e.g., when several characters appear in a scene and it is unclear who is speaking, which makes comprehension difficult [30].

Technology plays a crucial role in the inclusion of d/DHH individuals into society, and its design should avoid isolating users due to sensory impairments. These efforts not only improve

communication of d/DHH individuals but also enhance access to education, information, and digital social life [12][14][16].

# 4 LITERATURE INSIGHTS: THE DIGITAL ENGAGEMENT OF d/DHH TIKTOK USERS

## 4.1 Barriers to the Digital Engagement of d/DHH

d/DHH users face many content consumption barriers, such as frequent absence of captions in spoken or audio-based content. This leads to frustration with the inaccessibility of uncaptioned or audio-centric content [32]. Across social media platforms, studies have demonstrated that standard metrics such as Word Error Rate (WER) correlate poorly with real-world usability for d/DHH individuals [33]. Even when captions had the same WER, d/DHH users found some captions to be much harder to understand than others. Captions were rated as less usable when they missed important elements like speaker identification or nonverbal sounds. Similarly, [34] showed that metrics, such as WER and automated scores, do not reflect how d/DHH viewers experience captions. Instead, factors like how well the captions are timed, how easy they are to read, and whether they include errors in presentation play a much bigger role in user satisfaction.

While TikTok encourages open-captioning (i.e. captioning that cannot be turned off or hidden), there is an absence of standardised captioning practices, which results in varied accessibility. When d/DHH users use captions, they report on readability issues with font choices, inconsistent timing, and substandard audio representation. Although TikTok introduced automatic captioning features in 2021, user-generated captions vary in accessibility [35].

## 4.2 Opportunities for the Digital Engagement of d/DHH through Content Creation

Despite the challenges, TikTok enables the creation of communities for d/DHH users. By combining sign language, visual storytelling, and creative captioning, they reach both d/DHH and hearing audiences. Their content includes topics such as deaf awareness, entertainment, personal experiences, and advocacy, often incorporating multiple modalities, from captions, sign language, to limited use of audio, which enhances inclusivity [36]. Consequently, the multimodal interactions can bridge the differences between Deaf and hearing users, which contributes to the social inclusion of d/DHH individuals [37].

There are also some risks associated with social media use among d/DHH adults. Schäfer and Miles [38] surveyed German d/DHH adults, showing that higher usage correlated with greater self-reported social isolation and lower self-esteem. While platforms like TikTok offer new forms of digital participation and identity expression, they may also exacerbate feelings of social isolation if accessibility barriers persist. d/DHH users were reported to use social media less frequently than their hearing peers, which might be due to challenges with primarily audio-based formats.

# 5 LESSONS LEARNED FROM THE LITERATURE AND THEIR IMPLICATIONS

## 5.1 Lessons Learned from the Literature

The literature suggests the duality of TikTok as both a promising platform for digital inclusivity and an environment with accessibility barriers for d/DHH users. Although TikTok provides auto-captioning and allows manual captions, there is a lack of standardised practices. Captions often have poor readability, are inconsistently synchronised with audio, and lack contextual audio representation [35]. Moreover, generated captions do not reliably include critical information such as speaker identity or emotional tone. These elements are essential for d/DHH users' comprehension [31][36]. Mere technological provision of captioning tools is thus insufficient without design refinements that are centred on usability for d/DHH users.

In the past years, d/DHH users demonstrated innovative uses of TikTok's capabilities. Many creators have combined sign language with visual capabilities, and different captioning formats to increase content accessibility and connect to d/DHH audiences [36][37]. These practices can foster community-building and expression of identity for users with disabilities.

When examining TikTok, the absence of inclusivity can disincentivise d/DHH user engagement. Since captions are not by default enabled and the content layout is not friendly to sign language, d/DHH users are accommodated less. This contributes to lower participation and experiences of social exclusion. Accordingly, d/DHH often consume less content on TikTok than hearing users, potentially due to video and audio-dominant affordances of the platform [38]. While social media can provide community building and support, the isolation due to inaccessibility is a threat to d/DHH users [39]. For instance, increased screen time without accessible content can negatively impact self-esteem and exacerbate social disconnection [38].

## 5.2 Implications and Recommendations

Based on the abovementioned literature insights on the digital engagement of d/DHH TikTok users, we suggest the most important recommendations to enhance the accessibility and inclusivity of TikTok for d/DHH users:

(a) Platforms could prioritise the development of inclusive captioning standards as a core design feature rather than an optional add-on (e.g., captions are synchronised accurately with spoken or signed content, formatted for readability, and enriched with contextually relevant information).

(b) Platforms could support the production of multimodally accessible content. This includes offering caption editors with automatic synchronisation and real-time preview functionalities, tools for layering visual elements such as sign language and written captions, and features that facilitate the alignment of spoken and signed language.

(c) Recording interface could be optimised to accommodate sign language communication, as d/DHH users currently face challenges when attempting to record sign language content. Platforms could provide intuitive recording tools with framing that captures the upper body, gesture-sensitive features and background stabilisation, as proposed by Mack et al. [32].

(d) Accessibility could be integrated as a default into the platform. This could include persistent caption toggles and preferences, allowing users to tag content as containing signed or captioned material, and improving the visibility of accessible and d/DHH-authored content.

In the future, it would be intriguing to examine whether the implementation of these recommendations actually contributed to higher levels of digital engagement among d/DHH users.

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## REFERENCES

[1] World Health Organization. 2025. *Deafness and hearing loss.* Accessible: https://www.who.int/news-room/fact-sheets/detail/deafness-and-hearing-loss [accessed July 28, 2025]

[2] Association of Deaf and Hard of Hearing Societies of Slovenia. *Gluhota*. Accessible: https://zveza-gns.si/o-nas#gluhota [accessed July 28, 2025]

[3] Margaret Brown P. and Andrew Cornes. 2015. Mental health of deaf and hard-of-hearing adolescents: What the students say. *Journal of deaf studies and deaf education*, *20*(1), 75-81.

[4] Sylvia Olsson. 2021. *Longing to belong: deaf and hard of hearing young adults' social interaction, social relationships, and identity*. Doctoral dissertation, Mälardalen University, Sweden. Accessible: https://www.diva-portal.org/smash/get/diva2:1566410/FULLTEXT02 [accessed July 28, 2025]

[5] Gerhard Andersson and Stig Arlinger. 2007. *Nordisk lärobok i audiologi*. CA Tegnér, Sweden.

[6] TikTok. (2025-b). *TikTok - Accessibility.* Accessible: https://www.tiktok.com/accessibility/en [accessed July 30, 2025]

[7] Andrew Solomon. 2012. *Far from the tree: Parents, children and the search for identity*. Simon and Schuster, New York, NY.

[8] David M. Frost. 2011. Social stigma and its consequences for the socially stigmatized. *Soc. Pers. Psychol. Compass* 5, 11 (Nov. 2011), 824–839

[9] Taylor A. Paglieri, Caroline Kobek Pezzarossi, and Deborah Schooler. 2022. Social media use, acculturation, and self-esteem of deaf and hard-of-hearing adults. *JADARA* 54, 3 (2022), 2.

[10] European Parliament & Council of the European Union. (2019). *European Accessibility Act (Directive 2019/882)*.

[11] Sarah R. Davies, Rebecca Wells, Fabiana Zollo, and Joseph Roche. 2024. Unpacking social media 'engagement': a practice theory approach to science on social media. *J. Sci. Commun.* 23, 06 (2024), y02. DOI: 10.22323/2.23060402

[12] Jess A. Cuculick. 2014. *Facebook among deaf college students: Deaf-gain and funds of knowledge*. University of Rochester, Rochester, NY.

[13] Emem P. Udofia, Daniel A. Aloysius, and Victoria David Jimmy. 2017. Internet resources and information literacy of hearing and speech impaired students in Nigerian academic libraries. *Comput. Inf. Syst.* 21, 1 (2017).

[14] Ehsan Toofaninejad, Esmaeil Zaraii Zavaraki, Shane Dawson, Oleksandra Poquet, and Parviz Sharifi Daramadi. 2017. Social media use for deaf and hard of hearing students in educational settings: a systematic review of literature. *Deaf. Educ. Int.* 19, 3–4 (2017), 144–161.

[15] Julio Abascal, Simone D. J. Barbosa, Colette Nicolle, and Panayiotis Zaphiris. 2016. Rethinking universal accessibility: a broader approach considering the digital gap. *Univers. Access Inf. Soc.* 15, 2 (2016), 179–182.

[16] Shelena Soosay Nathan, Azham Hussain, and Nor Laily Hashim. 2016. Studies on deaf mobile application: Need for functionalities and requirements. *J. Telecommun. Electron. Comput. Eng.* 8, 8 (2016), 47–50.

[17] Sheng Lihua and Jiacheng Xu. 2010. Using social software to improve learning performance of deaf university learners. In *Proc. 2010 2nd IEEE Int. Conf. Inf. Manag. Eng.* (2010), 703–706.

[18] Jingtong Xu. 2025. *From silence to broader connection: Exploring social media's impact on social-emotional learning for deaf and hard of hearing youth.*

[19] Cara L. Wong, Teresa Y. C. Ching, Jessica Whitfield, and Jill Duncan. 2016. Online social participation, social capital and literacy of adolescents with hearing loss: A pilot study. *Deaf. Educ. Int.* 18, 2 (2016), 103–115.

[20] Jonathan A. Obar and Steve Wildman. 2015. Social media definition and the governance challenge: An introduction to the special issue. *Telecommun. Policy* 39, 9 (2015), 745–750.

[21] Thomas Aichner and Frank Jacob. 2015. Measuring the degree of corporate social media use. *Int. J. Market Res.* 57, 2 (2015), 257–276.

[22] Jan H. Kietzmann, Kristopher Hermkens, Ian P. McCarthy, and Bruno S. Silvestre. 2011. Social media? Get serious! Understanding the functional building blocks of social media. *Bus. Horiz.* 54, 3 (2011), 241–251.

[23] Yolanda (Linda) Reid Chassiakos, Jenny Radesky, Dimitri Christakis, Megan A. Moreno, and Corinn Cross. 2016. Children and adolescents and digital media. *Pediatrics* 138, 5 (2016).

[24] Chikezie E. Uzuegbunam. 2020. Digital communication technologies: Concepts, practice and trends. In *Communication and Media Studies: Multidimensional Perspectives* (2020), 513–538.

[25] Urooj Iqbal. 2023. The use of social media by orthognathic patients: A systematic review and cross-sectional survey. (2023).

[26] Maurice J. Meade and Craig W. Dreyer. 2022. Analysis of the information contained within TikTok videos regarding orthodontic retention. *J. World Fed. Orthod.* 11, 5 (2022), 170–175.

[27] Yunita Dwi Pramesti, Fahmi Gunawan, and Muhammad Yunus Anis. 2023. Translating Arabic-Indonesian captions on TikTok social media. *Arabiyatuna: J. Bahasa Arab* 7, 1 (May 2023), 179–200.

[28] TikTok. (2025-a). *TikTok*. Accessible: https://www.tiktok.com [accessed July 30, 2025]

[29] Akher Al Amin, Joseph Mendis, Raja Kushalnagar, Christian Vogler, Sooyeon Lee, and Matt Huenerfauth. 2022. Deaf and hard of hearing viewers' preference for speaker identifier type in live TV programming. In *Proc. Int. Conf. Hum.-Comput. Interact.* (Cham: Springer International Publishing, 2022), 200–211.

[30] Richang Hong, Meng Wang, Mengdi Xu, Shuicheng Yan, and Tat-Seng Chua. 2010. Dynamic captioning: Video accessibility enhancement for hearing impairment. In *Proc. 18th ACM Int. Conf. Multimedia* (New York, NY, USA, 2010), 421–430.

[31] Soledad Zárate. 2021. *Captioning and subtitling for d/deaf and hard of hearing audiences*. UCL Press, London, UK.

[32] Kelly Mack, Danielle Bragg, Meredith Ringel Morris, Maarten W. Bos, Isabelle Albi, and Andrés Monroy-Hernández. 2020. Social app accessibility for deaf signers. *Proc. ACM Hum.-Comput. Interact.* 4, CSCW2 (2020), 1–31.

[33] Sushant Kafle and Matt Huenerfauth. 2017. Evaluating the usability of automatically generated captions for people who are deaf or hard of hearing. In *Proc. 19th Int. ACM SIGACCESS Conf. Comput. Access.* (New York, NY, USA, 2017), 165–174.

[34] Mariana Arroyo Chavez, Molly Feanny, Matthew Seita, Bernard Thompson, Keith Delk, Skyler Officer, Abraham Glasser, Raja Kushalnagar, and Christian Vogler. 2024. How users experience closed captions on live television: quality metrics remain a challenge. In *Proc. 2024 CHI Conf. Hum. Factors Comput. Syst.* (New York, NY, USA, 2024), 1–16.

[35] Emma J. McDonnell, Tessa Eagle, Pitch Sinlapanuntakul, Soo Hyun Moon, Kathryn E. Ringland, Jon E. Froehlich, and Leah Findlater. 2024. "Caption It in an Accessible Way That Is Also Enjoyable": Characterizing User-Driven Captioning Practices on TikTok. In *Proc. 2024 CHI Conf. Hum. Factors Comput. Syst.* (New York, NY, USA, 2024), 1–16.

[36] Jiaxun Cao, Xuening Peng, Fan Liang, and Xin Tong. 2024. "Voices Help Correlate Signs and Words": Analyzing Deaf and Hard-of-Hearing (DHH) TikTokers' Content, Practices, and Pitfalls. In *Proc. 2024 CHI Conf. Hum. Factors Comput. Syst.* (New York, NY, USA, May 2024), 1–18.

[37] Putri Shofi Nabilah, Aulia Rahmawati, and Syifa S. Alamiyah. 2025. Communication Patterns of Deaf Families on TikTok: The Relationship of CODA and the Representation of Deaf Culture. In *Proc. 2025 Conf. on Human-Computer Interaction* (2025).

[38] Karolin Schäfer and Felix Miles. 2023. Social media use and mental health in deaf or hard-of-hearing adults—Results of an online survey. *Frontiers in Communication* 8, 1175461.

[39] Ines Kožuh, Manfred Hintermair, and Matjaž Debevc. 2016. Community building among deaf and hard of hearing people by using written language on social networking sites. *Computers in Human Behavior* 65, 295–307.