# Digital Literacy and Hoax Detection among Deaf Individuals: A Systematic Literature Review

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ABSTRACT

Digital literacy plays a critical role in enabling individuals to access, evaluate, and verify online information, particularly amid the increasing spread of misinformation. However, Deaf and Hard-of-Hearing (DHH) individuals continue to experience accessibility and communication barriers that may affect their digital literacy and information verification practices. This study aimed to systematically synthesize existing evidence on digital literacy and misinformation among DHH individuals. A Systematic Literature Review (SLR) was conducted following the PRISMA 2020 guidelines using the Scopus database. From 88 initially identified records, 11 studies published between 2023 and 2025 met the inclusion criteria and were analyzed through thematic synthesis. The findings indicate that digital literacy among DHH individuals extends beyond operational technology skills to include competencies in accessing, searching, evaluating, verifying, and using digital information effectively within accessible communication environments. The reviewed studies also identified persistent barriers, including limited sign-language resources, inaccessible digital content, communication challenges, digital divide, and difficulties in identifying misinformation. Furthermore, accessible digital platforms, captioning, sign-language support, visual learning resources, and inclusive educational practices were consistently recognized as essential factors in strengthening digital literacy and misinformation resilience. Although research in this field has expanded in recent years, empirical evidence remains limited, particularly in developing countries and intervention-based studies. This review highlights the need for more inclusive digital literacy initiatives, accessible information services, and collaborative efforts among educators, researchers, technology developers, and policymakers to promote equitable access to trustworthy digital information for DHH communities.

## I. Introduction

The rapid expansion of digital technologies has fundamentally transformed how information is accessed, evaluated, and disseminated across online environments (Hanandini, 2024). Consequently, digital literacy has become an essential competency for identifying credible information and responding to the growing spread of misinformation (Roblek et al., 2020) While these issues have received considerable scholarly attention in the general population, individuals who are Deaf and Hard-of-Hearing (DHH) continue to face unique barriers in accessing, interpreting, and verifying digital information because of linguistic, communication, and accessibility challenges. Recent studies further indicate that digital participation among DHH individuals is influenced not only by technological access but also by digital literacy competencies and the accessibility of online information environments (Hongcharu, 2024).

One of the most pressing challenges in the contemporary digital environment is the rapid spread of misinformation, disinformation, fake news, and hoaxes (Rubin, 2019). The democratization of content creation allows virtually anyone to produce and distribute information through digital platforms (Ma, 2020). Although this phenomenon enhances freedom of expression and public participation, it also facilitates the dissemination of inaccurate, misleading, or intentionally deceptive information. Misinformation refers to false information shared without the intention to cause harm, whereas disinformation involves deliberately misleading content designed to manipulate public opinion or behavior. Fake news and hoaxes represent specific forms of misleading information that often mimic legitimate news content to increase credibility and influence audiences (Zannettou et al., 2019). The proliferation of misinformation has become particularly evident during major global events, including public health crises, political elections, natural disasters, and social conflicts. Research has shown that false information frequently spreads faster than accurate information because sensational, emotionally charged, and controversial content tends to attract greater user engagement on social media platforms (Rachman et al., 2025).

The increasing prevalence of misinformation has elevated the importance of digital literacy as a fundamental competency in contemporary society. Digital literacy extends beyond the technical ability to use digital devices and online platforms (Anurogo et al., 2023). It encompasses a broad range of cognitive, social, ethical, and critical-thinking skills that enable individuals to access, evaluate, create, and communicate information

effectively within digital environments. In an era characterized by information abundance, individuals must possess the capacity to critically assess information sources, distinguish credible content from misinformation, and make informed decisions based on reliable evidence (Ferreira & Borges, 2020). These competencies are increasingly recognized as essential for democratic participation, lifelong learning, social inclusion, and personal well-being.

The concept of digital literacy has evolved considerably over the past two decades (Park et al., 2021). Early definitions focused primarily on technological competencies and the ability to operate digital tools. However, contemporary perspectives emphasize a multidimensional framework encompassing technical, cognitive, informational, communicative, and socio-emotional competencies. According to the European Commission's Digital Competence Framework (DigComp), digital literacy includes information and data literacy, communication and collaboration, digital content creation, safety, and problem-solving (Cosgrove & Cachia, 2025). Similarly, UNESCO conceptualizes digital literacy as a combination of knowledge, skills, and attitudes required to engage effectively, critically, and safely in digital environments. Scholars have further emphasized that digital literacy involves critical evaluation of information sources, understanding media messages, recognizing algorithmic influences, and developing resilience against misinformation. Consequently, digital literacy has emerged as a crucial educational objective for fostering informed and responsible digital citizenship.

Within this broader framework, the ability to detect hoaxes and verify information represents a critical component of digital literacy. Hoax detection refers to the process of identifying false, misleading, manipulated, or fabricated information circulating through digital media (Guo et al., 2020). Closely related to this concept is fact-checking, which involves systematically verifying claims, evaluating evidence, cross-referencing information sources, and assessing content credibility before accepting or sharing information. Effective fact-checking requires a combination of analytical reasoning, information evaluation skills, source verification strategies, and awareness of common misinformation tactics. Studies indicate that individuals with higher levels of digital and news literacy are more likely to engage in fact-checking behaviors and less likely to disseminate misinformation. Conversely, limited digital literacy may increase susceptibility to false information, potentially resulting in negative educational, social, health, and political consequences.

Although digital literacy and misinformation have become major research topics, evidence specifically addressing Deaf and Hard-of-Hearing (DHH) individuals remains limited (Efrina et al., 2021). The initial search of the Scopus database identified only 88 potentially relevant records combining deafness, digital literacy, and misinformation-related keywords. After applying the PRISMA 2020 eligibility criteria, only 11 studies met all inclusion requirements (Marlina & Samala, 2026). This relatively small evidence base indicates that research on digital literacy and hoax detection among DHH populations remains underdeveloped compared with the broader literature on digital literacy in the general population. The limited number of eligible studies highlights the need for a comprehensive synthesis of existing evidence and identifies important gaps for future research.

The characteristics of deaf individuals' information access differ significantly from those of hearing populations (Efrina et al., 2025). Although digital technologies have created new opportunities for communication, education, and social participation, many online information environments remain predominantly designed for hearing users. Text-based information may present challenges for some deaf individuals due to differences in language acquisition and literacy development (Marlina et al., 2022). Furthermore, audio-based content, podcasts, live broadcasts, and multimedia resources often lack adequate accessibility features, limiting equitable access to information. Research indicates that deaf individuals frequently rely on visual communication modalities, including sign language videos, captions, graphics, and multimodal representations, to understand and engage with digital content effectively.

Communication barriers and accessibility limitations continue to affect deaf individuals' ability to obtain, interpret, and evaluate information in digital environments (Iswari, 2017). One significant challenge involves the limited availability of information presented in sign language. Although captioning services have improved accessibility for many users, captions alone may not fully address the linguistic needs of sign language users whose primary language differs structurally from written language. In addition, inaccurate captions, complex vocabulary, insufficient contextual explanations, and lack of culturally appropriate communication strategies may hinder information comprehension. These barriers become particularly problematic when individuals encounter misinformation or misleading content that requires critical evaluation and verification.

The issue of digital accessibility therefore plays a central role in promoting equitable information access for deaf individuals. Accessible digital environments should incorporate inclusive design principles that accommodate diverse communication needs. Features such as high-quality captions, sign language interpretation, visual representations, multimodal learning materials, and user-centered interface design can significantly enhance information accessibility. Universal Design for Learning (UDL) and inclusive technology frameworks emphasize

the importance of providing multiple means of representation, engagement, and communication to ensure that all users can access and process information effectively (Efrina et al., 2025). In the context of misinformation prevention, accessible communication formats are essential for supporting deaf individuals' ability to evaluate information credibility and participate fully in digital society.

Recent studies have increasingly explored the intersection of digital literacy, accessibility, and disability. Research has demonstrated that digital literacy interventions can improve information-seeking behavior, online participation, and critical thinking among individuals with disabilities. Studies involving deaf communities have highlighted the importance of sign language-based educational resources, accessible social media content, and inclusive digital communication practices. Investigations of Deaf and Hard-of-Hearing content creators on platforms such as TikTok have revealed the significant role of multimodal communication, including sign language, captions, and visual storytelling, in facilitating engagement and information sharing. Other studies have examined accessibility challenges in digital participation, online activism, health communication, and information dissemination among disabled populations.

At the same time, a growing body of literature has examined misinformation, fact-checking behavior, media literacy, and information verification in the general population. Findings consistently indicate that digital literacy and news literacy are important predictors of fact-checking intentions and resistance to misinformation. However, most of these studies focus on hearing populations and rarely address the specific accessibility needs of deaf individuals. Existing research on disability and digital inclusion often concentrates on access to technology rather than on the critical evaluation of information. Similarly, studies investigating misinformation typically overlook the experiences of deaf users and other disability communities. Consequently, knowledge regarding how deaf individuals develop digital literacy skills, identify misinformation, and engage in information verification remains fragmented and limited.

This situation reveals a significant research gap. While substantial evidence exists regarding digital literacy and misinformation among the general population, there is a lack of comprehensive synthesis focusing specifically on deaf individuals. The available studies are dispersed across multiple disciplines, including education, communication, disability studies, information science, media studies, and educational technology. As a result, the current state of knowledge concerning strategies, interventions, challenges, and accessibility requirements related to digital literacy and hoax detection among deaf individuals remains unclear. Furthermore, little is known about the methodological characteristics, geographical distribution, and thematic trends of existing research in this area.

Given these circumstances, conducting a Systematic Literature Review (SLR) is both timely and necessary. A systematic review provides a rigorous and transparent approach to identifying, evaluating, and synthesizing existing evidence. By systematically examining previous studies, an SLR can reveal research trends, summarize current knowledge, identify effective strategies and interventions, highlight accessibility challenges, and uncover gaps requiring future investigation. Such evidence is particularly valuable for researchers, educators, policymakers, technology developers, and disability advocates seeking to promote inclusive digital literacy and strengthen misinformation resilience among deaf individuals.

Therefore, the purpose of this study is to systematically review the existing literature on digital literacy and hoax detection among deaf individuals. Specifically, this review aims to map the characteristics of research in this field, identify strategies and interventions designed to improve digital literacy and misinformation detection skills, and examine the challenges and accessibility needs experienced by deaf individuals when interacting with digital information.

To achieve these objectives, the study addresses the following research questions:

*RQ1: What are the trends and characteristics of research on digital literacy and hoax detection among deaf individuals?*

*RQ2: What strategies, technologies, and interventions have been implemented to improve digital literacy and hoax detection skills among deaf individuals?*

*RQ3: What challenges and accessibility needs do deaf individuals face in identifying and verifying digital information?*

By answering these questions, this systematic literature review seeks to contribute to a more comprehensive understanding of digital literacy, accessibility, and misinformation resilience within deaf communities while providing evidence-based recommendations for future research and practice.

## II. Method

### *A. Research Design*

This study employed a Systematic Literature Review (SLR) approach to comprehensively identify, evaluate, and synthesize existing research related to digital literacy and hoax detection among Deaf and Hard-of-Hearing (DHH) individuals (Kamran & Bano, 2023). A systematic literature review provides a rigorous and transparent methodology for summarizing empirical evidence, identifying research trends, and uncovering gaps in the

existing body of knowledge. Compared with traditional narrative reviews, SLR follows a structured protocol that minimizes bias and enhances the reliability and reproducibility of findings.

The review process was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines. The PRISMA framework provides standardized procedures for literature identification, screening, eligibility assessment, and study inclusion, thereby ensuring methodological transparency and consistency throughout the review process. The adoption of PRISMA 2020 facilitated a systematic selection of relevant studies and enabled clear documentation of the article screening process (Zhang et al., 2020).

### *B. Search Strategy*

The literature search was conducted using the Scopus database, which is recognized as one of the largest and most comprehensive multidisciplinary databases of peer-reviewed scientific publications. Scopus was selected because it offers extensive coverage of high-quality international journals across education, disability studies, communication, information science, and educational technology, which are directly relevant to the topic of this review. Although the review was limited to the Scopus database, this decision was made because Scopus provides broad multidisciplinary coverage of peer-reviewed journals in education, communication, disability studies, information science, and educational technology, which directly correspond to the objectives of this review. Nevertheless, limiting the search to a single database may have excluded relevant studies indexed elsewhere. This limitation should therefore be considered when interpreting the findings and provides an opportunity for future reviews to incorporate additional databases such as Web of Science, ERIC, or PubMed.

The search process was carried out using a combination of keywords related to deaf individuals, digital literacy, and misinformation. The search string was developed based on the study objectives and research questions. The following search query was applied:

(deaf OR "deaf individuals" OR "deaf students" OR "hearing impairment" OR "hard of hearing") AND ("digital literacy" OR "digital competence" OR "digital skills" OR "information literacy" OR "media literacy") AND (misinformation OR disinformation OR "fake news" OR hoax* OR "fact checking" OR "information verification")

The search was conducted in June 2026. To ensure the relevance and quality of the reviewed literature, several filtering procedures were applied, including publication year restrictions, document type selection, language requirements, and subject relevance screening.

### *C. Inclusion and Exclusion Criteria*

To ensure consistency and relevance in study selection, explicit inclusion and exclusion criteria were established prior to the screening process.

#### *1) Inclusion Criteria*

Studies were included in the review if they met the following criteria:

- Published in peer-reviewed journals.
- Written in English.
- Published between 2015 and 2025.
- Focused on Deaf and Hard-of-Hearing (DHH) individuals or populations.
- Addressed digital literacy, information literacy, media literacy, digital competence, or related concepts.
- Discussed misinformation, disinformation, fake news, hoaxes, fact-checking, information verification, or critical evaluation of digital information.
- Provided full-text access for detailed analysis.
- Employed quantitative, qualitative, mixed-methods, review, or other empirical research designs relevant to the study objectives.

#### *2) Exclusion Criteria*

Studies were excluded if they met one or more of the following conditions:

- Conference papers, editorials, notes, book chapters, reviews without sufficient methodological descriptions, or non-peer-reviewed publications.
- Published before 2015.
- Focused on disability populations other than Deaf and Hard-of-Hearing individuals without specific discussion of hearing impairment.
- Addressed digital technology use without discussing digital literacy or information evaluation.
- Did not include topics related to misinformation, information verification, or critical information assessment.
- Duplicate publications.
- Studies with inaccessible full texts or insufficient methodological information.

The application of these criteria ensured that only studies directly relevant to the objectives of this review were included in the final analysis.

### *D. Study Selection Process*

The study selection process followed the PRISMA 2020 framework and is presented in Figure 1.

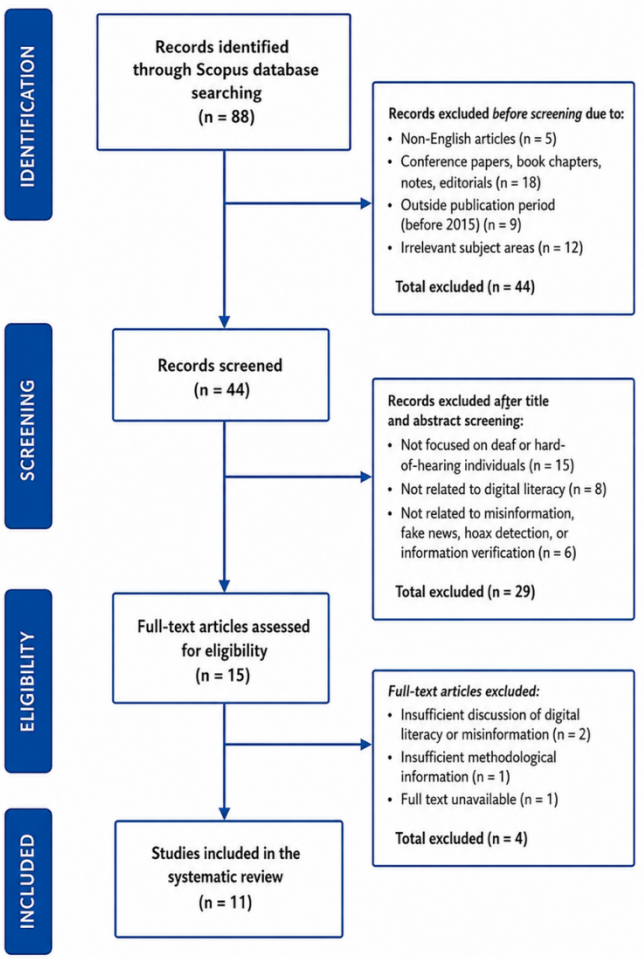


Fig. 1. PRISMA Flow Diagram of the Study Selection Process

The initial search in the Scopus database identified 88 records. During the preliminary screening stage, articles that did not meet the language, publication type, publication period, and subject relevance requirements were excluded. As a result, 44 records remained for title and abstract screening. The title and abstract screening process was conducted to evaluate the relevance of each study to the research topic. Articles that did not focus on deaf individuals, digital literacy, or misinformation-related issues were removed. Following this stage, 15 articles were deemed eligible for full-text assessment.

The full texts of these articles were then carefully reviewed to determine their suitability for inclusion in the systematic review. During the eligibility assessment, studies were excluded due to insufficient discussion of digital literacy and misinformation, limited methodological information, or unavailable full-text access. After completing all screening and eligibility procedures, 11 studies met the inclusion criteria and were included in the final review. These studies formed the basis for data extraction, synthesis, and analysis. Title and abstract screening, followed by full-text eligibility assessment, was conducted independently by two reviewers. Any discrepancies in study selection were resolved through discussion until consensus was reached.

### *E. Quality Appraisal*

To ensure the methodological quality of the included studies, a quality appraisal process was conducted after the eligibility assessment. Because the included studies employed diverse research designs (quantitative, qualitative, mixed methods, and review studies), the Mixed Methods Appraisal Tool (MMAT 2018) was adopted. Each study was assessed according to the criteria relevant to its research design. The appraisal focused on methodological appropriateness, sampling procedures, data collection, analysis, and the validity of the reported findings. The results of the quality assessment were used to support the interpretation of the synthesized evidence rather than as exclusion criteria.

Data Extraction and Data Synthesis

A structured data extraction process was conducted to ensure consistency across all included studies. Relevant information from each article was recorded using a standardized extraction form.

The extracted data included:

- Author(s) and publication year
- Country of study
- Research methodology
- Sample characteristics
- Research focus
- Digital literacy dimensions investigated
- Misinformation or fact-checking aspects examined
- Accessibility issues addressed
- Key findings and conclusions

Following data extraction, a narrative thematic synthesis approach was employed to analyze and integrate findings across studies. This approach was selected because of the diversity of research designs and outcomes represented in the included literature.

The synthesis process consisted of several stages:

- Familiarization with the extracted data.
- Identification of recurring concepts and themes.
- Categorization of findings according to the research questions.
- Cross-study comparison and interpretation.
- Identification of research trends, interventions, challenges, and accessibility needs.

The synthesized findings were subsequently organized into thematic categories corresponding to the three research questions of the study.

### *F. Distribution of Research Methodologies*

The methodological characteristics of the included studies were analyzed to identify prevailing research approaches in the field. The distribution of research methodologies is presented in Figure 2.

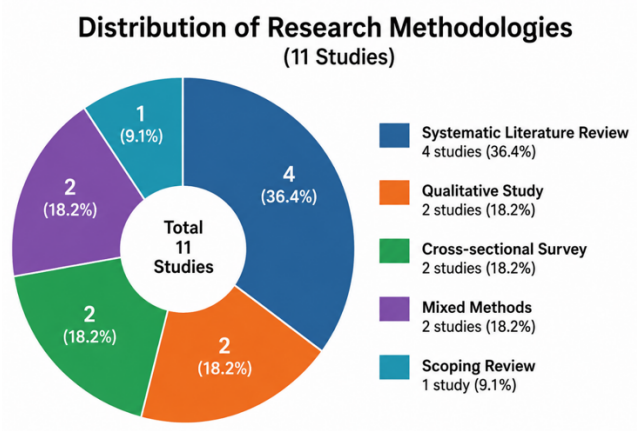


Fig. 2. Distribution of Research Methodologies in the Included Studies

Analysis of the 11 included studies demonstrated a diverse range of methodological approaches, reflecting the multidisciplinary nature of research on digital literacy and misinformation among Deaf and Hard-of-Hearing (DHH) individuals. Quantitative studies constituted the largest proportion of the included literature, employing surveys, questionnaires, and statistical analyses to examine digital literacy competencies, digital participation, information-seeking behavior, and accessibility.

Qualitative studies represented the second largest methodological group. These studies primarily used interviews, thematic analysis, and qualitative exploration to investigate the lived experiences of DHH individuals in accessing digital information, interacting with social media, and responding to misinformation within accessible communication environments.

Several review-based studies, including systematic literature reviews and literature reviews, synthesized previous evidence concerning digital learning, digital accessibility, information literacy, and inclusive educational technologies for DHH populations. In addition, a smaller number of mixed-methods studies combined quantitative and qualitative approaches to provide a broader understanding of digital communication practices, accessibility barriers, and information verification behaviors.

Overall, the predominance of empirical quantitative studies indicates an increasing emphasis on measuring digital literacy and digital participation among DHH individuals. At the same time, the growing number of qualitative investigations provides valuable insights into accessibility challenges, communication preferences, and experiences with misinformation that cannot be captured through quantitative data alone. Together, these methodological approaches offer a comprehensive understanding of digital literacy and misinformation resilience within Deaf and Hard-of-Hearing communities.

## III. Results and Discussion

### *A. Overview of Included Studies*

The characteristics of the studies included in this systematic literature review are presented in Table 1.

Table 1. Summary of Included Studies

| Author(s) & Year | Country | Method | Sample | Focus | Key Findings |
|---|---|---|---|---|---|
| (Schäfer & Miles, 2017) | Germany | Cross-sectional Survey | 166 Deaf and Hard-of-Hearing adults | Social media use, digital participation, and mental health among DHH adults | Social media serves as an important platform for communication, information access, and social participation among DHH adults. However, accessibility barriers and unequal digital literacy continue to influence digital engagement and the effective evaluation of online information. |
| (Cao et al., 2024) | China & USA | Mixed Methods Content Analysis | 308 TikTok videos created by Deaf and Hard-of-Hearing (DHH) users | Content creation practices, accessibility, and audience engagement on TikTok | DHH creators mainly used sign language and captions. Voice features and multimodal communication increased audience engagement and improved accessibility. |
| (Morata et al., 2024) | International (WHO/Wikimedia collaboration) | Comparative Evaluation Study | 145 volunteers and university participants contributing to Wikimedia projects | Digital dissemination of hearing-health information through collaborative online platforms | Educational and volunteer-based campaigns successfully increased accessible health information and public digital knowledge resources. |

| Author(s) & Year | Country | Method | Sample | Focus | Key Findings |
|---|---|---|---|---|---|
| (Wolbring et al., 2024) | Canada & Germany | Scoping Review | 18,069 abstracts screened; 54 relevant studies | Online activism and digital participation among disabled people | Online platforms can empower disabled individuals, but accessibility barriers and ableist attitudes continue to limit participation. |
| (Krasavina et al., 2023) | Russia | Systematic Literature Review (PRISMA) | 50 published studies | Learning experiences of Deaf and Hard-of-Hearing students in digital media | The review identified communication barriers, limited independent digital learning skills, and accessibility challenges experienced by DHH learners. Captioning, sign language support, augmented reality, gamification, and microlearning were identified as effective approaches for improving digital learning experiences. |
| (Kožuh & Čakš, 2023) | Slovenia | Quantitative Survey (Structural Equation Modeling) | Social media users | Fact-checking behavior and misinformation verification | News literacy and trust significantly influence users' intentions to verify information. Higher literacy promotes stronger fact-checking behavior. |
| (Baines et al., 2025) | Switzerland & USA | Survey Research | 2,000 adults aged 60+ | Responses to misinformation on social media | Users employed verification strategies such as source checking and reading comments. Digital skills significantly affected misinformation detection practices. |
| (Li et al., 2025) | China | Cross-sectional Survey | 1,094 respondents | Factors influencing misinformation sharing during COVID-19 | Negative emotions and intensive social media use increased misinformation sharing. Emotional regulation is important for digital information evaluation. |
| (Buenestado-fernández & García-ruiz, 2024) | Spain & Mexico | Systematic Literature Review (PRISMA) | 128 studies | Positive use of ICT and media literacy among youth | Media literacy supports critical thinking, digital participation, and resistance to disinformation. Education-focused interventions showed positive outcomes. |
| (Alonzo & Hau, 2025) | United States | Qualitative Study | 17 Deaf and Hard-of-Hearing social media users | User experiences with misinformation, moderation, and debunking on social media | DHH users frequently encounter misinformation related to sign language and Deaf culture. Existing moderation and fact-checking systems are largely designed for hearing users, emphasizing the need for more accessible and inclusive misinformation detection and verification strategies. |
| (Krasavina et al., 2025) | Russia | Qualitative Study | 5 Deaf and Hard-of-Hearing university students | Digital divide and operational digital literacy among DHH students | Although participants demonstrated adequate operational digital skills, they experienced difficulties in advanced information searching, keyword formulation, evaluation of online information, and summarizing information. The study highlights the need to strengthen higher-order digital literacy competencies and improve accessible digital learning environments. |

The final review included 11 studies published between 2023 and 2025, indicating that research on digital literacy, accessibility, and misinformation among Deaf and Hard-of-Hearing (DHH) individuals is an emerging and rapidly expanding field. The concentration of publications within the last three years reflects increasing scholarly interest in understanding how DHH communities engage with digital technologies, social media, and online information environments.

Geographically, the included studies were conducted across a diverse range of countries, including China, Germany, Russia, Slovenia, Spain, Switzerland, the United States, Canada, and Mexico. This geographical diversity demonstrates the growing international

recognition of digital inclusion, accessibility, and information literacy for DHH populations. Nevertheless, most studies originated from developed countries, while evidence from low- and middle-income countries remains scarce. This imbalance suggests that digital literacy challenges experienced by DHH individuals in less-resourced settings continue to be underrepresented in the current literature.

The reviewed studies employed a variety of research methodologies. Quantitative studies constituted the largest proportion of the included literature, primarily using surveys and statistical analyses to investigate digital literacy competencies, digital participation, accessibility, and information-seeking behavior among DHH individuals. Qualitative studies explored participants' experiences with digital communication, accessibility, social media use, and misinformation through interviews and thematic analysis. In addition, several review-based studies, including systematic literature reviews and literature reviews, synthesized existing evidence regarding digital learning, accessibility, and information literacy, while a smaller number of mixed-methods studies integrated quantitative and qualitative approaches to provide a more comprehensive understanding of digital inclusion and communication practices.

The included studies addressed several interconnected research themes, including digital literacy competencies, digital participation, digital accessibility, social media engagement, misinformation and debunking, digital learning, operational digital literacy, and inclusive communication for DHH communities. Although the specific objectives varied across studies, they consistently emphasized the importance of accessible digital environments, critical information evaluation, and inclusive communication strategies for supporting effective participation in digital society.

Overall, the findings indicate that digital literacy extends beyond basic technological skills and encompasses the ability to locate, evaluate, verify, and effectively use digital information. The reviewed studies consistently identified barriers such as limited accessibility features, insufficient sign-language resources, digital divide, communication barriers, inaccessible information formats, and challenges in identifying misinformation. Collectively, these findings highlight the need for more inclusive digital literacy initiatives, accessible information services, and evidence-based strategies to strengthen misinformation resilience among Deaf and Hard-of-Hearing communities.

### *B. Research Trends Based on Publication Development*

The temporal distribution of publications is illustrated in Figure 3.

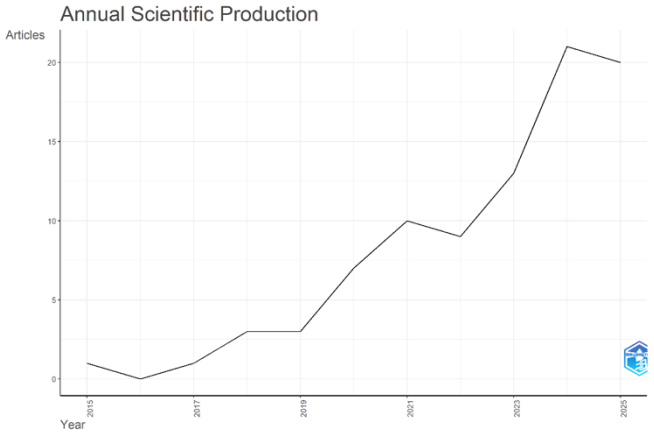


Fig. 3. Annual Scientific Production

The annual scientific production demonstrates a noticeable increase in research activity after 2022. Earlier studies primarily focused on accessibility and digital participation, whereas more recent publications increasingly address misinformation, fact-checking, social media engagement, and digital inclusion. This shift corresponds with global concerns regarding misinformation during and after the COVID-19 pandemic, which highlighted the importance of reliable information access and digital resilience.

The increasing publication trend also reflects broader academic recognition of digital literacy as a critical component of social inclusion. Researchers have gradually moved beyond viewing accessibility solely as a technological issue and have begun to explore the cognitive and evaluative dimensions of information access.

### *C. Geographical Distribution of Research*

The geographical distribution of corresponding authors is presented in Figure 4.

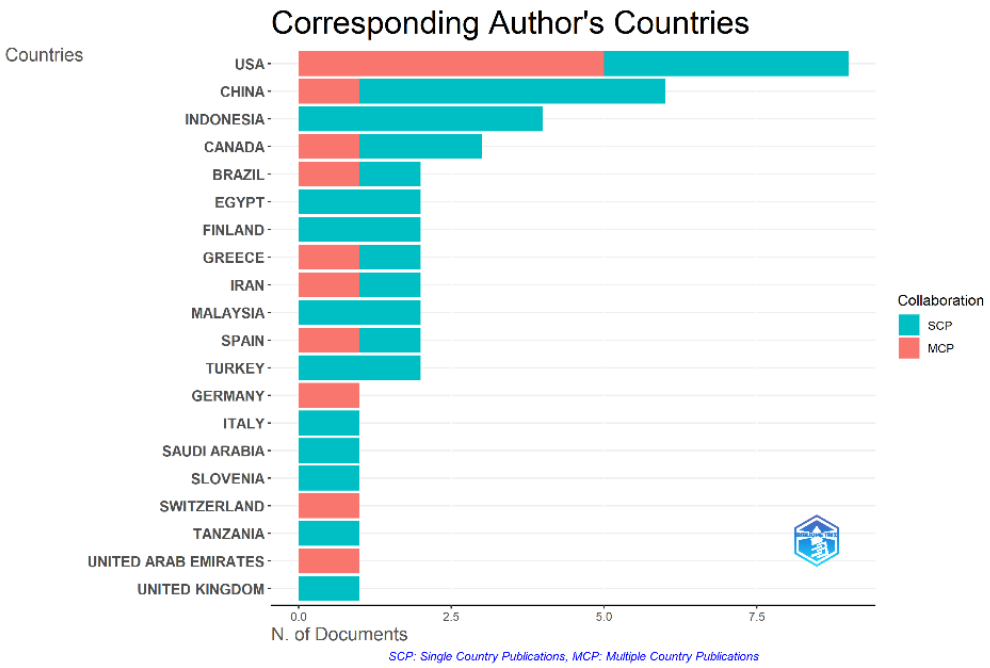


Fig. 4. Corresponding Author's Countries

The reviewed studies were distributed across multiple continents, including North America, Europe, Asia, and Africa. Canada, the United States, China, and several European countries contributed substantially to the literature. This distribution indicates international concern regarding accessibility and digital literacy issues.

Nevertheless, the limited representation of studies from developing countries reveals a significant geographical gap. Regions where digital inequalities are often more pronounced remain underrepresented. Consequently, the findings currently available may not fully capture the diverse experiences of deaf individuals in different socio-economic and technological contexts.

### *D. Most Relevant Sources*

The publication sources are presented in Figure 5.

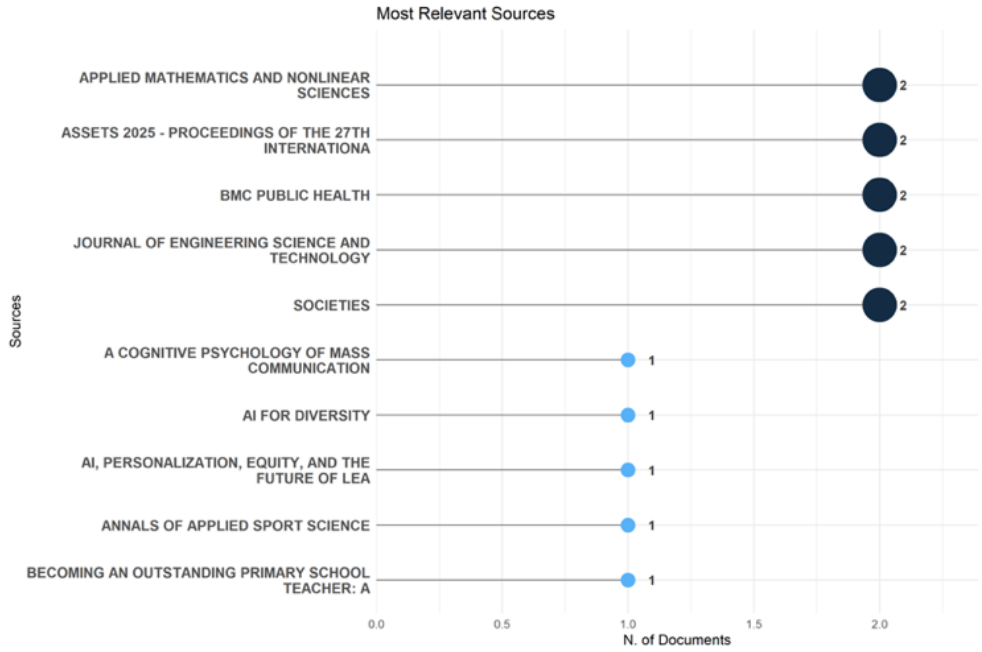


Fig. 5. Most Relevant Sources

The reviewed articles were published in interdisciplinary journals covering disability studies, public health, educational technology, media literacy, communication, and information science. This distribution illustrates the multidimensional nature of digital literacy and misinformation research.

The dominance of journals focusing on accessibility, communication, and social participation suggests that the field remains strongly connected to disability inclusion and information equity. However, relatively few studies were published in specialized educational technology or digital literacy journals, indicating opportunities for further scholarly development.

Dominant Research Focuses and Methodological Approaches

The literature reveals four dominant research focuses:

- Digital accessibility and inclusive communication.
- Digital participation and social media engagement.
- Information literacy and critical evaluation skills.
- Misinformation and fact-checking behavior.

Methodologically, quantitative approaches remain dominant, reflecting researchers' efforts to measure digital competencies and information behaviors systematically. However, qualitative studies provide valuable insights into accessibility experiences and communication barriers that cannot be fully captured through quantitative measures alone.

Collectively, these trends indicate that the field is evolving from a technology-access perspective toward a more comprehensive understanding of information literacy, digital citizenship, and misinformation resilience among deaf communities.

The findings of this systematic literature review provide important insights into the relationship between digital literacy, misinformation resilience, accessibility, and inclusive participation among Deaf and Hard-of-Hearing (DHH) individuals. The synthesis of the reviewed studies demonstrates that digital literacy and hoax detection cannot be understood solely as technical competencies. Instead, they represent multidimensional constructs shaped by communication accessibility, social inclusion, educational opportunities, and technological design. The results can be interpreted through several theoretical perspectives, namely Digital Literacy Theory, Media Literacy Theory, Information Behavior Theory, Accessibility Theory, and Inclusive Education Theory.

*1) Digital Literacy Theory Perspective*

The findings strongly support contemporary Digital Literacy Theory, which conceptualizes digital literacy as a combination of technical, cognitive, social, and critical competencies rather than mere operational skills. Across the reviewed studies, digital literacy was consistently associated with the ability to search for information, evaluate source credibility, verify information accuracy, and make informed decisions in digital environments. The findings also suggest that DHH individuals frequently rely on visual resources, captioned videos, images, blogs, and social media to compensate for barriers in processing complex textual information. This preference reflects adaptive information-seeking strategies rather than limited digital engagement and highlights the importance of accessible digital content in supporting effective information verification.

However, the reviewed studies demonstrate that digital literacy among DHH individuals extends beyond operational digital skills. Although many participants actively use social media and digital technologies, they continue to encounter challenges in advanced information searching, keyword formulation, evaluating online information, and distinguishing credible from misleading content. These challenges are further influenced by the availability of captions, sign language resources, and accessible communication formats, indicating that accessibility and higher-order digital literacy skills are closely interconnected.

Furthermore, the findings indicate that digital literacy should be viewed as an inclusive competency that requires adaptation to diverse communication needs. Traditional digital literacy frameworks frequently assume equal access to information formats, whereas the reviewed studies demonstrate that accessibility barriers may significantly limit opportunities for critical information engagement.

*2) Media Literacy Theory Perspective*

Recent evidence further indicates that misinformation moderation systems, fact-checking mechanisms, and media literacy resources are predominantly designed for hearing users. Consequently, Deaf and Hard-of-Hearing individuals often experience barriers when interpreting misinformation related to sign language, Deaf culture, and accessible communication, reducing the effectiveness of conventional media literacy interventions.

Nevertheless, the findings reveal a significant challenge for DHH communities. Media literacy interventions are often developed for hearing populations and rely heavily on textual or spoken communication. As a result, many media literacy resources remain inaccessible to sign language users. This limitation suggests that media literacy programs must move beyond traditional approaches and incorporate multimodal communication strategies, including sign language-based instruction, visual learning resources, and accessible fact-checking tools.

The review therefore expands Media Literacy Theory by highlighting accessibility as a prerequisite for critical media engagement. Without accessible communication formats, opportunities for media literacy development remain unequal, potentially increasing vulnerability to misinformation among deaf individuals.

*3) Information Behavior Theory Perspective*

Information Behavior Theory explains how individuals seek, access, evaluate, and use information in response to specific needs. The reviewed literature demonstrates that deaf individuals exhibit distinct

information behaviors influenced by communication preferences, accessibility conditions, and technological affordances.

The findings indicate that DHH users frequently rely on visual and social sources of information, including social media platforms, video-sharing services, online communities, and sign language-based content. However, their information-seeking behavior is often constrained by limited access to trusted and accessible sources. Consequently, information verification becomes more complex, particularly when authoritative information is unavailable in sign language or accessible formats.

The review further suggests that information behavior among deaf individuals is shaped by both individual and environmental factors. While personal digital literacy skills influence information evaluation, external factors such as accessibility design, platform features, and information availability significantly affect information-seeking outcomes. This finding aligns with contemporary information behavior models that emphasize the interaction between users and information environments.

*4) Accessibility Theory Perspective*

Accessibility Theory provides one of the strongest explanatory frameworks for understanding the findings of this review. The evidence consistently demonstrates that accessibility is not merely a technological feature but a fundamental determinant of information equity.

The reviewed studies reveal that accessibility barriers remain pervasive across digital environments. Beyond limited sign language interpretation and captioning, the reviewed studies identified broader accessibility barriers, including inaccessible moderation systems, limited sign-language-based fact-checking resources, insufficient visual information support, and difficulties in retrieving and evaluating trustworthy digital information.

From an Accessibility Theory perspective, the inability to verify information should not be interpreted solely as an individual deficit. Rather, it reflects systemic barriers embedded within digital communication systems. This distinction is particularly important because it shifts responsibility from individuals to institutions, technology developers, and information providers.

The findings therefore reinforce the principle that accessibility must be integrated into the design of digital information systems from the outset rather than added as an afterthought. Universal accessibility should be considered an essential component of digital literacy promotion and misinformation prevention efforts.

*5) Inclusive Education Theory Perspective*

Inclusive Education Theory advocates equitable access to learning opportunities regardless of individual differences or disabilities. The reviewed studies strongly support this perspective by demonstrating that digital literacy and misinformation resilience are increasingly important educational outcomes for all learners, including deaf students.

The findings suggest that current educational systems often inadequately address the digital literacy needs of deaf learners. While many institutions emphasize technology use, fewer provide explicit instruction in critical information evaluation, media literacy, and misinformation detection through accessible formats. This gap creates disparities in digital participation and information competence.

Inclusive Education Theory further emphasizes the importance of providing multiple means of representation, engagement, and expression. The reviewed studies demonstrate that sign language resources, accessible educational materials, visual learning supports, and inclusive technologies significantly enhance information comprehension and critical evaluation skills among DHH learners. Recent review evidence also indicates that digital learning environments integrating captioning, sign language support, augmented reality, gamification, and microlearning provide more effective learning experiences for DHH students than text-based approaches alone.

Consequently, the review suggests that digital literacy education should be embedded within inclusive educational frameworks rather than treated as a separate or specialized intervention.

### *E. Implications for Researchers*

The findings reveal several important directions for future research. First, there remains a limited body of evidence specifically addressing digital literacy and hoax detection among deaf individuals. Future studies should investigate how accessibility features influence information verification behavior and misinformation resilience.

Second, researchers should move beyond descriptive analyses and examine causal relationships between digital literacy competencies, accessibility conditions, and fact-checking behaviors. Longitudinal and experimental studies are particularly needed to evaluate the effectiveness of accessibility-oriented digital literacy interventions.

Third, greater geographical diversity is required. Most existing studies originate from developed countries, leaving substantial knowledge gaps regarding the experiences of deaf individuals in developing regions.

### *F. Implications for Teachers*

Teachers play a critical role in developing students' digital literacy competencies. The findings suggest that educators should integrate media literacy, fact-checking skills, and information verification practices into teaching and learning activities.

For deaf learners, instructional approaches should incorporate sign language support, visual communication

strategies, and accessible digital resources. Teachers should also encourage students to critically evaluate information sources, compare multiple perspectives, and verify information before sharing it online.

Digital literacy education should therefore be positioned as a core educational competency rather than a supplementary skill.

### *G. Implications for Higher Education Institutions*

Universities and colleges have an important responsibility in promoting inclusive digital literacy. Higher education institutions should ensure that digital learning environments, online resources, and information services are accessible to deaf students.

Institutions should also develop specialized training programs focusing on digital citizenship, media literacy, and misinformation detection. These initiatives can contribute to improving students' critical information competencies while fostering inclusive academic participation.

Furthermore, universities should support interdisciplinary research exploring the intersection of accessibility, digital literacy, and misinformation.

### *H. Implications for Technology Developers*

The findings indicate that technology developers have a central role in reducing information inequalities. Digital platforms should incorporate accessibility features such as high-quality captions, automated sign language translation, visual information supports, and accessible fact-checking tools.

Emerging technologies, including artificial intelligence, automated captioning, sign-language translation systems, and accessibility-oriented content moderation, offer considerable potential to improve digital inclusion. However, these technologies should be developed collaboratively with Deaf communities to ensure that accessibility solutions effectively address users' communication preferences and information needs.

### *I. Accessibility should be considered a design principle rather than an optional feature.*

#### *1) Implications for Policymakers*

The review highlights the need for policy frameworks that recognize digital literacy and information accessibility as fundamental rights. Policymakers should promote regulations requiring accessible communication in public information systems, educational resources, and digital platforms.

National digital literacy initiatives should explicitly include disability perspectives and accessibility standards. Policies supporting accessible fact-checking resources and inclusive digital education can contribute significantly to reducing vulnerability to misinformation among deaf populations.

Moreover, investment in accessible digital infrastructure is necessary to ensure equitable participation in information societies.

#### *2) Implications for Deaf Communities*

For deaf communities, the findings underscore the importance of strengthening digital literacy and information verification capacities through community-based initiatives. Deaf organizations can play a strategic role in promoting media literacy, producing accessible information resources, and supporting peer learning networks.

The review also highlights the value of community-generated sign language content and accessible information platforms. These resources not only improve information access but also strengthen autonomy, participation, and resilience against misinformation.

Ultimately, empowering deaf communities requires a combination of individual skill development, accessible technologies, inclusive education, and supportive policy environments. The findings suggest that digital literacy and hoax detection should be viewed not merely as educational goals but as essential components of digital inclusion, information equity, and social participation in contemporary society.

## IV. Conclusion

This systematic literature review synthesized evidence from 11 studies published between 2023 and 2025 to examine digital literacy and misinformation among Deaf and Hard-of-Hearing (DHH) individuals. The findings indicate that digital literacy extends beyond basic technological skills and includes the ability to access, search, evaluate, verify, and effectively use digital information within accessible communication environments. Despite increasing research attention, DHH individuals continue to encounter barriers such as limited sign-language resources, inaccessible digital content, communication challenges, and difficulties in identifying misinformation. The review also highlights the importance of accessible digital platforms, inclusive educational practices, and communication support in strengthening digital literacy and misinformation resilience. Although research in this field has grown rapidly, further empirical studies involving diverse geographical contexts and intervention-based approaches are needed to support the development of more inclusive digital literacy strategies and improve equitable access to trustworthy information for DHH communities.

## References

Alonzo, O., & Hau, S. (2025). " I have never seen that for Deaf people ' s content :" Deaf and Hard-of-Hearing User Experiences with Misinformation , Moderation , and Debunking on Social Media in the US. In *CHI Conference on Human Factors in Computing Systems (CHI '25), April 26â•fiMay 01, 2025, Yokohama,*

*Japan* (Vol. 1, Issue 1). Association for Computing Machinery. https://doi.org/10.1145/3706598.3713114

Anurogo, D., Syarif, A., La Ramba, H., Putri, N. D., Putri, U. M. P., Salsabila, A., Karimah, A. A., & Ilmi, A. A. J. (2023). Digital Literacy 5.0 to enhance multicultural education. *Multicultural Islamic Education Review*, 95–104. https://doi.org/10.23917/mier.v1i2.3414

Baines, A., Hargittai, E., & Palfrey, J. (2025). Older Adults ' Response Strategies to Misinformation on Social Media. *Sage Journal*, *X*. https://doi.org/10.-1177/20563051251386360

Buenestado-fernández, M., & García-ruiz, R. (2024). Beyond fear : Opportunities and positive use of ICT among children and adolescents. *Journal of Media Literacy Education*, *16*(3), 133–153. https://doi.org/10.23860/-JMLE-2024-16-3-10

Cao, J., States, U., & Liang, F. (2024). " Voices Help Correlate Signs and Words ": Analyzing Deaf and Hard-of-Hearing ( DHH ) TikTokers ' Content , Practices , and Pitfalls. In *Proceedings of the CHI Conference on Human Factors in Computing Systems (CHI '24), May 11â•fi16, 2024, Honolulu, HI, USA* (Vol. 1, Issue 1). Association for Computing Machinery. https://doi.org/10.1145/3613904.3642413

Cosgrove, J., & Cachia, R. (2025). *DigComp 3.0: European digital competence framework*. Publications Office of the European Union. https://data. europa. eu/doi/10 …. https://doi.org/10.2760/7379058

Efrina, E., Hufad, A., Rochyadi, E., Nandiyanto, A. B. D., Asnil, A., Muspita, R., & Manullang, T. I. B. (2021). Teaching Sound Reflection By Using Solid Objects As a Reflective Medium for Students With Deaf and Hard of Hearing. *Journal of Engineering Science and Technology*, *16*, 65–72.

Efrina, E., Rahmahtrisilvia, R., Safaruddin, S., Arnez, G., & Sukma, Y. H. (2025). Analysis of Constraints for Special Needs Educators in West Sumatra in Conducting Assessments for Students with Deaf and Hard of Hearing. *International Conference on Educational Science and Teacher Education (ICESTE 2025)*, 114–122. https://doi.org/https://doi.org-/10.2991/978-2-38476-489-1_10

Ferreira, G. B., & Borges, S. (2020). Media and misinformation in times of COVID-19: How people informed themselves in the days following the Portuguese declaration of the state of emergency. *Journalism and Media*, *1*(1), 108–121. https://-doi.org/10.3390/journalmedia1010008

Guo, B., Ding, Y., Yao, L., Liang, Y., & Yu, Z. (2020). The future of false information detection on social media: New perspectives and trends. *ACM Computing Surveys (CSUR)*, *53*(4), 1–36. https://doi.org/10.11-45/3393880

Hanandini, D. (2024). Social transformation in modern society: A literature review on the role of technology in social interaction. *Jurnal Ilmiah Ekotrans & Erudisi*, *4*(1), 82–95. https://doi.org/10.69989/-j0m6cg84

Hongcharu, B. (2024). The changing roles of mass media amidst the growth of the digital media. *Cogent Social Sciences*, *10*(1), 2297721. https://doi.org/10.10-80/23311886.2023.2297721

Iswari, M. (2017). Career Guidance Model in Independence of Deaf Children in Time After Special Senior High School. *Journal of ICSAR*, *1*(2), 131–133.

Kamran, M., & Bano, N. (2023). A systematic review of literature on inclusive education with special emphasis on children with disability in Pakistan. *International Journal of Inclusive Education*, *November*, 1–19. https://doi.org/10.1080/13603116.2023.2256321

Kožuh, I., & Čakš, P. (2023). Social media fact-checking: The effects of news literacy and news trust on the intent to verify health-related information. *Healthcare*, *11*(20), 2796. https://doi.org/10.3390/-healthcare11202796

Krasavina, Y. V, Ponomarenko, E. P., Shishkina, A. A., & Gareev, A. A. (2023). Learning experiences of deaf and hard-of-hearing students in digital media: a literature review. *Перспективы Науки и Образования*, *6 (66)*, 317–331. https://doi.org/10.-32744/pse.2023.6.18

Krasavina, Y., Ponomarenko, E., & Shishkina, A. (2025). Digital Divide and Operational Digital Literacy in Deaf and Hard-of-Hearing Students. *Specijalna Edukacija I Rehabilitacija*, *24*(23), 1–19. https://doi.org/10.5937/specedreh24-51366

Li, X., Xu, D., Liu, Y., Wu, D., Li, Y., & Deng, X. (2025). How does physical distance from the epicenter influence misinformation sharing? The roles of negative affect and social media engagement. *Humanities and Social Sciences Communications*, *12*(1), 1–10. https://doi.org/10.1057/s41599-025-05740-9

Ma, W.-Y. (2020). Democratizing content creation and dissemination through AI technology. *Proceedings of the Web Conference 2020*, 3143. https://doi.-org/10.1145/3366423.3382669

Marlina, M., Ningsih, Y. T., Fikry, Z., & Fransiska, D. R. (2022). The importance of sign language use in post-sexual abuse treatment models for women with deafness. *2nd World Conference on Gender Studies (WCGS 2021)*, 235–241. https://doi.org/https://doi.-org/10.2991/assehr.k.220304.035

Marlina, & Samala, A. D. (2026). REBT BiVR: a bibliometric and systematic review of virtual reality-based sign language therapy for deaf women survivors of sexual violence. *The Journal of Adult Protection*, 1–21. https://doi.org/https://doi.org/10.1108/JAP-08-2025-0032

Morata, T. C., Zucki, F., Arrigo, A. J., Cruz, P. C., Gong, W., Matos, H. G. C. de, Montilha, A. A. P., Peschanski, J. A., Cardoso, M. J., & Lacerda, A. B. M. (2024). Strategies for crowdsourcing hearing health information: a comparative study of educational programs and volunteer-based campaigns on Wikimedia. *BMC Public Health*, *24*(1), 2646. https://-doi.org/10.1186/s12889-024-20105-8

Park, H., Kim, H. S., & Park, H. W. (2021). A scientometric study of digital literacy, ICT literacy, information literacy, and media literacy. *Journal of Data and Information Science*, *6*(2), 116–138. https://doi.org/-10.2478/jdis-2021-0001

Rachman, A., Saumantri, T., & Hidayatulloh, T. (2025). Transformation of religious authority in the digital era: A post-normal times analysis by Ziauddin Sardar on

the phenomenon of social media da'wah. *Jurnal Ilmu Dakwah*, *45*(1), 107–122. https://doi.org/10.21580/-jid.v45.1.25644

Roblek, V., Meško, M., Bach, M. P., Thorpe, O., & Šprajc, P. (2020). The interaction between internet, sustainable development, and emergence of society 5.0. *Data*, *5*(3), 80. https://doi.org/10.3390/data5030080

Rubin, V. L. (2019). Disinformation and misinformation triangle: A conceptual model for "fake news" epidemic, causal factors and interventions. *Journal of Documentation*, *75*(5), 1013–1034. https://doi.org/-10.1108/JD-12-2018-0209

Schäfer, K., & Miles, F. (2017). Social media use and mental health in deaf or hard-of-hearing adults — Results of an online survey. *Frontiers in Communication*. https://doi.org/10.3389/fcomm.2023.1175461

Wolbring, G., Nasir, L., & Mahr, D. (2024). Academic coverage of online activism of disabled people: A scoping review. *Societies*, *14*(11), 215. https://doi.-org/10.3390/soc14110215

Zannettou, S., Sirivianos, M., Blackburn, J., & Kourtellis, N. (2019). The web of false information: Rumors, fake news, hoaxes, clickbait, and various other shenanigans. *Journal of Data and Information Quality (JDIQ)*, *11*(3), 1–37. https://doi.org/10.1145/3309699

Zhang, X., Tan, R., Lam, W. C., Yao, L., Wang, X., Cheng, C. W., Liu, F., Chan, J. C. P., Aixinjueluo, Q., Lau, C. T., Chen, Y., Yang, K., Wu, T., Lyu, A., & Bian, Z. (2020). PRISMA (Preferred reporting items for systematic reviews and meta-analyses) extension for Chinese herbal medicines 2020 (PRISMA-CHM 2020). *American Journal of Chinese Medicine*, *48*(6), 1279–1313. https://doi.org/10.1142/S0192415X2050-0639

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