

Research on the Optimizing Strategy for the Cultivation of International Language Service Talents in China Higher Education: A Case Study on the Emergency Language Services for the Hearing-Impaired Group in China

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Abstract: This study explores the possible strategy for the cultivation of international language service talents in higher education in China to resolve the urgent need for enhancing emergency language services for the hearing-impaired population, which is a necessity highlighted especially during the Coronavirus pandemic. The study evaluates the current research and services to identify the absence of tailored solutions for users of sign languages. This study suggests that higher education institutions should focus on developing specialized talents through interdisciplinary studies, practical training, and standardization building, aimed at overcoming communication barriers for the hearing-impaired and ensuring equitable access to emergency services.

Keywords: Emergency language service; Hearing-impaired group; Cultivation of language service talents in China higher education.

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1. Introduction

The outbreak of the coronavirus pandemic has underscored deficiencies in the emergency management system in the world, particularly regarding the provision of emergency language services to vulnerable groups. Due to the insufficient attention and awareness among world societal groups, and a scarcity of specialized professionals, research and practices concerning emergency language services for the hearing-impaired population have consistently lagged. The escalating demand for emergency services within the hearing-impaired population presents significant challenges, imposing new demands on higher education institutions while also necessitating advancements in the field of sign language translation training and standardization.

As of the February 2024 data released by the World Health Organization, more than 5% of the world's

population, namely 430 million people, requires rehabilitation treatments to address their disabling hearing loss conditions, including 34 million children. It is estimated that by 2050, over 700 million people, or one in every ten individuals, will experience disabling hearing loss. The urgency to enhance emergency language services for the hearing-impaired extends beyond the mandates of current technological and social advancement, representing a profound humanitarian concern for millions of hearing-impaired individuals. Globally, the hearing-impaired population has been marginalized in the language services field. This study summarizes the current demand and service status of emergency language services by combining theory and industrial development to address the difficulties in emergency language services for the hearing impaired. This study analyzes from the perspective of language service talent cultivation in colleges and universities of China's higher institutions and proposes relevant suggestions to optimize the construction of the discipline related to emergency language services for the hearing impaired.

2. Status quo of emergency language service for the hearing-impaired

2.1. Theoretical research on emergency language services

Following the outbreak and spread of global public health emergencies, research on emergency language services has garnered significant attention from scholars worldwide and has become one of the focal points in language service research.

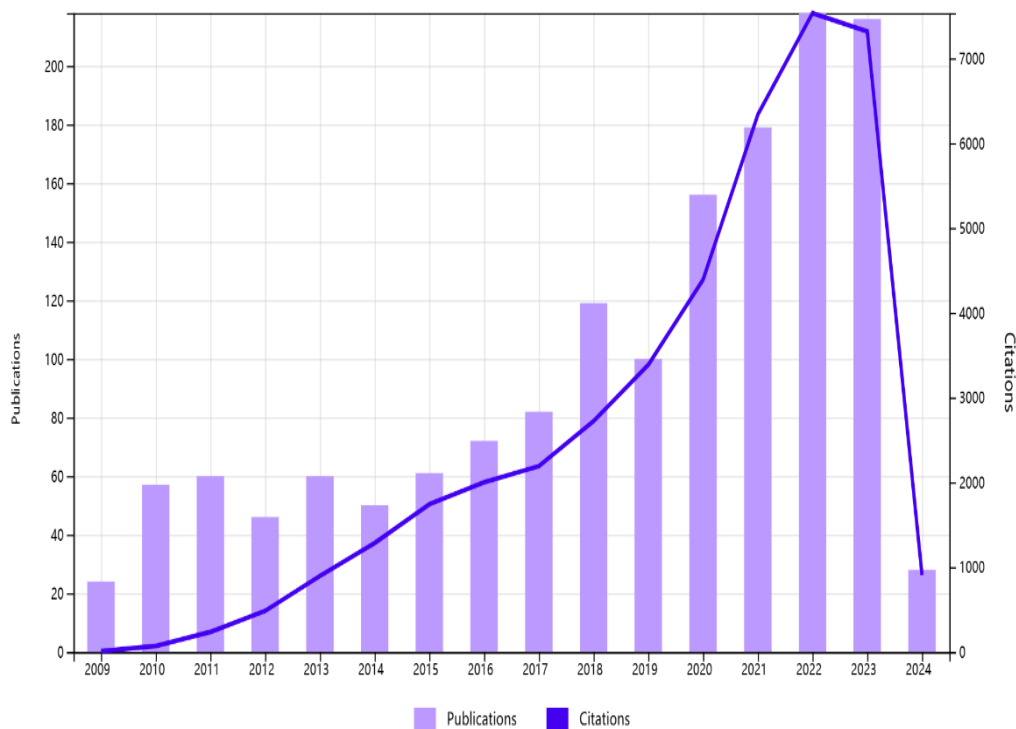


Figure 1. Emergency language service publication and citation (2009–2024), from Web of Science (Accessed: 10 March 2024)

As of March 2024, a search for “emergency language services” as a keyword in the Web of Science revealed 1,528 related articles with the earliest article dating back to 2009 and closely associated with health services (**Figure 1**). The peak year for publications and citations is 2023, which could be attributed to a particularly influential publication or a series of publications from previous years gaining recognition in the

research community. This trend also demonstrates the ever-growing interest in emergency language services. The number of publications related to emergency language services experienced a significant increase in 2009 and 2020, the same years as the outbreaks of major epidemics. This demonstrated a strong correlation between the interest in emergency language services and the occurrence of major natural disasters and public crises.

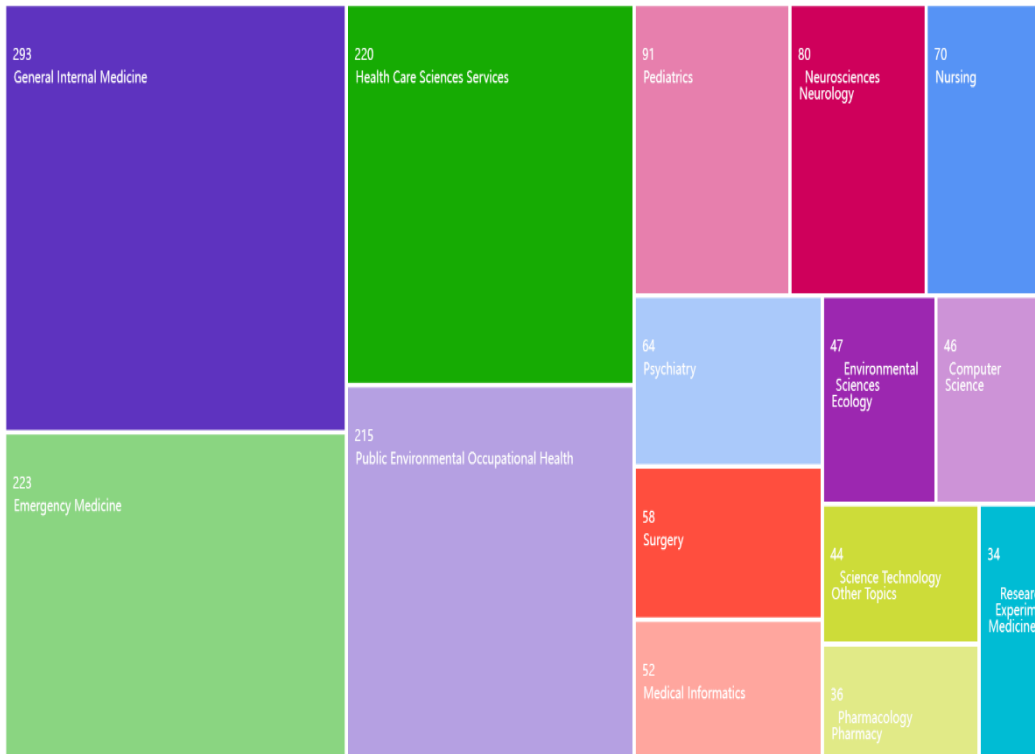


Figure 2. Research areas of emergency language service, from Web of Science (Accessed: 10 March 2024)

As of March 2024, a search on “emergency language services” reveals that the highest number of articles are published in the fields of general internal medicine and healthcare sciences and services, indicating a comprehensive body of research on emergency language services within healthcare. Emergency language services mainly focus on topics including medical communication, public health, and computer science, which are highly related to the healthcare and technology revolution as shown in **Figure 2**. However, research on education for emergency language service talents remains scattered and limited.

Scholars have offered a more precise description of the concept of emergency language services from various perspectives. Fearn-Banks defines emergency communication as “the dialogue between an organization and its public(s) before, during, and after a negative event” [1]. Sellnow and Seeger focus on “the ongoing process of creating shared meaning among and between groups, communities, individuals, and agencies, within the ecological context of a crisis, to prepare for, reduce, limit, and respond to threats and harm” [2]. McKinsey stated in its COVID-19 briefing note that global health and crisis response placed special emphasis on emergency translation services, including outbreak prevention, disaster response, multichannel communications, outbreak risk communications, outbreak reporting, and situational awareness [3].

Scholars in China have defined emergency language services from various perspectives within the field of language services. Wang states that “emergency language services pertain to language application issues for specific domains and purposes, representing a unique aspect of linguistic life” [4]. Wang et al. focus on the form of service, “emergency language services involve providing rapid-response linguistic products, language

technologies, or participating in linguistic rescue actions aimed at the prevention, immediate handling, and recovery from major natural disasters or public crises”^[4]. In terms of service scope, Cai states, “emergency language services should encompass language rescue activities occurring in all public domains and sectors in the event of emergencies”^[5]. Based on the essence of the service, Teng notes that emergency language services refer to linguistic services provided in domestic and international emergencies, such as natural disasters, wars, medical aid, accidents, and conflicts, that involve national or personal safety and property, aimed at overcoming communication barriers caused by language obstacles^[6]. Their essence lies in eliminating divisions, enhancing communication, and resolving crises.

Also, the legal and regulatory framework for emergency language services is being improved. The State Language Commission in China describes emergency language services as the preparations and measures taken by organizations or individuals in response to sudden public emergencies. In 2001, the US government recognized the importance of preserving and training key language personnel for national security, leading to the establishment of the U.S. National Language Service Corps. Its operational mechanisms, funding sources, service targets, and recruitment procedures have all developed into proper models with established safeguards^[7]. Japan has also issued a basic disaster management plan outlining the development of information exchange systems for disaster response by local governments. The establishment of these acts and institutions provides specific legal bases and organizational structures for the concerned countries in the field of emergency language services. Meanwhile, China issued the National Mid and Long Term Language and Script Work Reform and Development Plan Outline (2012–2020) in 2012 and the National Language and Script Work Thirteenth Five-Year Development Plan in 2016, which advocated for the establishment of an emergency language service system to bolster language assistance capabilities in emergencies.

Theoretical research on emergency language services is multi-dimensional. As natural disasters and public crises occur more frequently in the world, research into emergency language services has become more systematic. Theoretical research offers clearer definitions, scopes, and models for emergency language services, thus laying the groundwork for their practical implementation in various industries.

2.2. Development of emergency language service industry

Emergency language service is indispensable to the disciplinary construction with two main objectives, which are developing emergency language formats and protecting the rights of linguistically vulnerable groups^[8]. In 2014, Russia established a dedicated automated sign language calling system for the hearing-impaired, enabling bidirectional video sign language communication. The 2019 amendment to the federal law about the social protection of disabled people stipulates that Russian sign language is a means of communication for the hearing-impaired and (or) in the field of spoken Russian^[9]. The U.S. National Language Service Corps provides various emergency language service hotlines for immigrants with lower levels of English proficiency, mandating that federal or state governments ensure the protection of linguistically vulnerable groups through legislation^[10]. In April 2020, the National Association of the Deaf (NAD) in the United States explicitly set standards for sign language interpretation and captioning services. Furthermore, institutions like the Federal Office for Civil Protection in Switzerland are responsible for providing multilingual emergency notifications and guidelines to the public. The Finnish National Emergency Supply Agency offers multilingual emergency information and alerts, while Australia’s Multilingual Phone Translation Service provides translation services for linguistically vulnerable groups. The evolution of corporate emergency language service products in China is ongoing, with examples including the Epidemic Prevention and Control: Foreign Language Pass and Fighting the Epidemic: Hubei Dialect Pass. During the COVID-19 pandemic, non-profit organizations and volunteers

provided translation services for minority languages, assisted translation for individuals with visual and hearing impairments, and dialect translation.

Despite the early initiation and the relatively comprehensive theoretical research on emergency language services, these services are predominantly utilized for disaster prevention, emergency medical assistance, and crisis response. There exists a significant gap in the systematic development of training programs for professionals in emergency language services. This study aims to explore the challenges encountered in providing emergency language services for the hearing impaired. Subsequently, the study will analyze the issue from the perspective of professional development in language services at universities and colleges, and propose relevant suggestions to enhance the development of a discipline focusing on emergency language services for the hearing impaired.

3. The difficulties in emergency language service for the hearing-impaired

3.1. A lack of standard sign language training norms

The hearing-impaired community is diverse, embracing a wide array of sign languages, communication preferences, and cultural nuances ^[11]. This diversity includes but is not limited to American Sign Language (ASL), British Sign Language (BSL), other national or regional sign languages, lip-reading, and written communication. The existence of natural sign languages, developed organically within the deaf communities, introduces unique grammatical structures and vocabularies distinct from the spoken languages of their respective regions. Additionally, dialectal variations influenced by regional, socioeconomic, and educational factors can complicate communication further ^[12]. For example, ASL users from different parts of the United States or BSL users across the United Kingdom may encounter unintelligible signs due to these variations, posing significant challenges during sign language interpretation, especially in high-pressure situations like emergencies.

The integration of sign languages into the cultures of the deaf communities underscores the importance of understanding cultural nuances for effective translation. This is particularly crucial in emergencies where stress, complexity, and the necessity for precise communication elevate the risk of misinterpretation. However, interpreters face the challenge of not only mastering the primary sign language but also being aware of its regional dialects and idiosyncrasies. This requirement severely limits the pool of interpreters qualified for such tasks, as few have a comprehensive grasp of these aspects. Moreover, interpreter training programs often emphasize standard forms of sign languages, neglecting the intricacies of dialectal differences. This oversight can lead to delays or inaccuracies in communication during critical times.

3.2. Insufficient professional sign language interpreters

Currently, interpreters specializing in sign language primarily consist of teachers from schools for the deaf. These interpreters are considered natural due to their proficiency in sign language and empathy towards the deaf community when engaging in translation work. Consequently, their translation efforts are often semi-voluntary or altruistic, not yet rising to the level of professional conduct. As the world's most populous country, China hosts the largest hearing-impaired population globally. According to the National Basic Information Database of Persons with Disabilities in 2022, China had a staggering 37.86 million registered persons with disabilities, including approximately 3.33 million individuals with hearing disabilities. However, China's systematic training programs for sign language interpreters currently are confined to the Zhengzhou University of Technology and the Nanjing Normal University of Special Education, both of which are three-year institutions. Nevertheless, considering the immense size of the deaf community, the number of sign language interpreters trained by these

institutions is markedly insufficient to meet the community's needs.

3.3. Technological limitation

The provision of online language services for the hearing-impaired community faces significant technological limitations, especially when it comes to the translation and interpretation of sign languages. Despite the strides made in automatic speech recognition (ASR) and machine translation (MT) for spoken and written languages, advancements in sign language technologies lag behind. Firstly, the visual and gestural nature of sign languages presents a unique challenge. Sign language is not merely a series of hand gestures but involves facial expressions, body movements, and the space around the signer. Capturing this complexity requires sophisticated technology that goes beyond the capabilities of standard video capture and recognition systems. Accurate sign language recognition and generation through AI demand high-definition video, advanced motion detection, and the ability to interpret nuanced movements and expressions. Video relay services (VRS), which is a critical technology for the hearing-impaired to communicate over distance, are particularly affected by these technological shortcomings. Poor video quality can significantly degrade the fidelity of sign language interpretation. Lag or technical issues, such as buffering or connection drops, can interrupt the flow of conversation, leading to misunderstandings or the need for repeated signing ^[13].

Infrastructure limitations further exacerbate these challenges. Not all areas have access to high-speed internet or the necessary hardware to support sophisticated sign language recognition and generation technologies. This results in coverage gaps, where hearing-impaired individuals may have limited or no access to online language services. In areas with inadequate infrastructure, response times for emergency services or access to critical information can be delayed, impacting the safety and well-being of the hearing-impaired community.

4. Strategic paths for the cultivation of international language service talents

4.1. Enhance the educational training system

In the process of cultivating emergency language service professionals at universities, numerous challenges arise, including a limited number of institutions offering relevant majors, simplistic course designs coupled with practical difficulties, a scarcity of qualified teaching staff, and challenges related to internships and graduate employment. From the perspective of curricular development, emergency language professionals are multidisciplinary linguistic experts, educated across the domains of language services and emergency management, primarily focusing on specialized emergency sectors ^[14]. Institutions should transition from education bring mere acquisition of language skills to their application, establish directions for emergency language services, and introduce courses aligned with the competencies, literacy, and ethical standards required in emergency language services. Regarding course design, interdisciplinary courses should be developed and executed, incorporating sign language translation education with disciplines such as psychology, sociology, and information technology, thereby fostering students' multicultural awareness, technological prowess, and empathy.

Professional courses in emergency language services should include comprehensive coverage of the fundamental knowledge of emergency services, specialized language instruction, and cross-cultural communication training. This necessitates elevated social and individual competencies for professionals in the language domain beyond mere linguistic expertise. Furthermore, colleges may establish on and off-campus training centers or internship partnerships with the deaf community, leveraging authentic professional settings to foster a robust professional ambiance, routinely enabling students to undertake sign language translation

training at genuine employment positions, thereby enhancing their sign language translation competencies. Deaf individuals frequently necessitate extensive mental preparation before seeking assistance from others, harboring concerns about potential harm to their self-esteem ^[15]. Consequently, the experience of empathizing with others enables students to develop professional ethics and acquire a profound comprehension of the psychological needs of individuals with hearing impairments during their practical experience. Upon fulfilling the on-campus educational obligations, and based on the training center's capacity, institutions may offer paid services like sign language instruction and skill assessments to the public, thereby invigorating the institution's operational dynamism and progressively establishing a comprehensive training center that integrates education, production, vocational training, skill certification, and social services.

From the above analysis, the development of specialized faculty in emergency language services involves various dimensions, such as professional knowledge, pedagogical expertise, psychological resilience, and practical experience. Institutions actively integrate professionals specializing in sign language translation and practitioners from diverse fields, thereby enhancing the specialization and applicability of sign language translation in meeting societal demands and the unique requirements of various sectors. Building upon the existing curriculum, the program is augmented to incorporate sign language courses critically needed by certain industries. For example, the Korea Nazarene University offers detailed courses in sector-specific sign languages, including medical, media, and legal. Simultaneously, emphasis is placed on bolstering academic exchange and research, integrating theoretical inquiry and practical application, facilitating the participation of sign language translation educators and researchers in international exchange programs, the organization of pertinent international seminars, and the advancement of in-depth and nuanced research in sign language linguistics and translation.

4.2. Promote professional certification of international language service

The field of sign language translation holds a significant place in the training of international language service talents due to its uniqueness. Factors such as regional differences, educational levels, and personal lifestyle habits significantly influence sign language translation, leading to substantial differences between natural and standardized sign language. This phenomenon underscores the necessity of professional and vocational training in sign language translation specifically for emergency language services.

Currently, sign language interpreters can obtain professional qualifications through certifications issued by professional associations, government bodies, and academic institutions with a practice predominantly observed in common law countries ^[16]. For example, with the establishment of the Registry of Interpreters for the Deaf in the United States in 1964, the process of professionalizing sign language translation was initiated. Its testing standards, developed by native or highly proficient users of American Sign Language, take into account the capabilities in different regions and categories of sign language, being continuously updated as the language evolves. Institutions such as the Council for the Advancement of Communication with Deaf People (CACDP) in the UK and the National Accreditation Authority for Translators and Interpreters (NAATI) in Australia conduct assessments and certifications of sign language interpreters, evidencing the necessity and effectiveness of formal sign language translation training. However, despite the utilization of government certification in the field of sign language translation, development has proceeded relatively slowly in civil law countries. Challenges faced by these countries include low synchronization efficiency, lack of universality, and the absence of a systematic sign language translation training process.

Therefore, the government should continuously refine the standardization of sign language, formulate and release national occupational standards and evaluation norms, and amass and organize sign language video

materials, case studies, and practical reports to establish national sign language corpora, thus further enhancing the quality and efficiency of sign language translation. For example, the Canadian Sign Language corpus project, having collected a wide range of ASL and Quebec Sign Language (LSQ) videos, provides rich resources for researchers and learners. This corpus should be regularly updated. Simultaneously, higher education institutions should establish sign language translation training programs that are accredited by professional organizations, aligning with international certification standards to elevate the professionalism and vocational level of sign language interpreters. Countries should engage in cooperation and exchange, sharing best practices and training resources related to sign language translation to advance the international standardization of the sign language translation profession. This approach would not only enhance the international competitiveness of sign language interpreters but also aid in standardizing and mutually recognizing sign language translation services globally, thereby meeting the growing demand for sign language translation internationally. Through the continuous development of professional training and vocational certification, the quality of sign language translation services can be guaranteed, providing the deaf community with enhanced and dependable language support.

4.3. Integrate AI technology into training programs

The widespread use of technology has continuously aided in emergency language services, with crisis communication acting as a technological showcase. The technology showcase emphasizes the application of communications technologies, usually advanced technologies, for crisis communication ^[13]. In 1983, Grimes of the American Telephone and Telegraph Company (AT&T) obtained the first patent for the single-handed wearable tech glove capable of recognizing 72 letters and numbers. With the advancement of artificial intelligence, computer vision-based sign language recognition has also progressed. However, the accuracy of sign language recognition is affected by different recording devices and environmental conditions. Subsequently, deep learning has been applied to sign language translation. As sign language translation technology continues to advance, there is a growing demand for strong technical support in the language services industry.

Currently, AI technology and ChatGPT can transform language services for the hearing-impaired by providing real-time speech-to-text conversion, enabling immediate and accessible communication. Through natural language processing, these tools can interpret context and nuances in conversations, offering a deeper level of understanding and interaction for users. Additionally, AI-driven sign language recognition technology can convert sign language into spoken language and text, bridging communication gaps. At the same time, the language services industry needs to establish massive corpora to achieve global information sharing. Mastering essential language information technology application skills, understanding and using tools and software, familiarizing oneself with common data analysis platforms and environments, and acquiring platform management and data analysis capabilities are crucial for professional development in this field for learners ^[17]. In the process of training language service professionals, there is an urgent need to emphasize the teaching of learners who are proficient in computer use. Courses can include fundamental theories of corpus linguistics, applications in corpus construction, digital humanities, and more, enabling them to proficiently master the software and hardware systems related to language services, such as translation management systems, and computer-assisted translation (CAT). In addition, it is essential to enhance the learners' information retrieval skills. This includes developing their ability to conduct thorough and efficient searches for relevant information, critically evaluate sources, and synthesize findings to stay abreast of industry advancements. Such training provides them with a wider range of professional skills, helping them follow the technology renovation in the

language services industry.

5. Conclusion

This study begins with an overview of the existing research on emergency language services for individuals with hearing impairments, identifying persisting gaps in both theoretical frameworks and practical implementations. The availability of sign language interpreters, both in number and capacity, falls short of the significant demand within the deaf community, necessitating increased attention from academic circles. This study advocates for the development of an emergency language service talent training system with a focus on nurturing talent within universities, emphasizing enhanced efforts in areas such as curriculum development, standardization of training, and the fusion of technological advancements with language service talent development, leveraging their respective benefits and roles to bolster the training of global language service professionals.

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Disclosure statement

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Reference

- [1] Fearn-Banks K, 2016, *Crisis Communications: A Casebook Approach* (5th ed.). Routledge, New York. <https://doi.org/10.4324/9781315684857>
- [2] Sellnow TL, Seeger MW, 2013, *Theorizing Crisis Communication*. Wiley-Blackwell, New Jersey.
- [3] McKinsey & Company, 2020, *Global Health and Crisis Response COVID-19: Briefing Materials*, <https://www.mckinsey.com/~media/mckinsey/business%20functions/risk/our%20insights/covid%2019%20implications%20for%20business/covid%2019%20july%209/covid-19-facts-and-insights-july-6.pdf>
- [4] Wang LF, Mu L, Liao RX, et al., 2020, Multidimensional Considerations on Emergency Language Service Response and Talent Preparation in the Global Fight Against the Epidemic. *Contemporary Foreign Languages Studies*, 2020(04): 46–54.
- [5] Cai JG, 2020, Exploration of Emergency Language Services and Emergency Language Teaching. *Journal of Beijing Second Foreign Language Institute*, 2020(03): 13–21.
- [6] Teng YJ, 2020, Emergency Language Services: Research Topics and Paradigms. *Journal of Beijing International Studies University*, 42(1): 31–44.
- [7] Zhang TW, 2016, Case Analysis of the US National Language Service Corps. *Language Strategy Studies*, 1(05): 88–96. <https://doi.org/10.19689/j.cnki.cn10-1361/h.2016.05.016>
- [8] Zhang TW, 2020, The Main Paths and Methods of Foreign Emergency Language Research. *Language Strategy Studies*, 5(05): 67–78. <https://doi.org/10.19689/j.cnki.cn10-1361/h.20200506>
- [9] Zhao L, 2021, Russian Emergency Language Services in National Language Committee: *Language Life Yearbook* —

World Language Life Status Report. The Commercial Press, 158–164. <https://10.26914/c.cnkihy.2021.040448>

- [10] Teng YJ, 2020, Emergency Language Services: Research Topics and Paradigms. *Journal of Beijing International Studies University*, 42(1): 31–44.
- [11] Zheng X, 2020, Considerations on Emergency Language Services for the Hearing-impaired Group during the COVID-19 Pandemic. *Language Strategy Studies*, 5(03): 40–49. <https://10.19689/j.cnki.cn10-1361/h.20200304>.
- [12] Winger J, 2017, Plain Language Emergency Alerts. *Journal of Emergency Nursing*, 2017(5): 451–456.
- [13] Babatunde KA, 2022, Public Relations and Social Media for Effective Crisis Communication Management. *Journal of Home Affairs Governance*, 14(3): 543–553.
- [14] Wang LF, Li Z, 2023, The Construction and Interpretation of the Emergency Language Education System Framework. *Shandong Foreign Languages Teaching Journal*, 2023(01): 8–18. <https://10.16482/j.sdwy37-1026.2023-01-002>
- [15] Mayer C, Leigh G, Carey A, et al., 2008, Hearing-impaired Children in Mainstream Schools: Peer Status, Communication Competence, and Self-esteem. *Journal of Deaf Studies and Deaf Education*, 13(2): 172–186.
- [16] Meng FL, 2013, The Current Situation, Issues, and Countermeasures of Sign Language Translation Education in China. *Journal of Zhongzhou University*, 2013(03): 87–90.
- [17] Han LT, Liu HP, 2020, Exploration of the Translation + Technology Model in Undergraduate Language Service Talent Training. *Chinese Translation*, 2020(03): 59–66 + 188.

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