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Reconstruction and application of generative AI-enabled practical teaching model for emergency interpreting

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Abstract: Against the backdrop of the New Liberal Arts initiative, emergency language services support national public security and international rescue, and emergency interpreting talent training has become vital for foreign language education reform. Traditional practical teaching suffers from simplistic scenarios, insufficient high-pressure simulation, limited resources, rigid assessment and superficial technology integration, failing to meet cross-border emergency communication demands. Featuring dynamic scenario generation, real-time feedback, personalized training and multi-dimensional evaluation, generative AI offers a new digital path for interpreting pedagogy. Centered on the interdisciplinary "English + Emergency Management" orientation, this study employs lightweight AI tools to construct a five-in-one teaching model of competency standards, resource support, scenario training, intelligent evaluation and iterative optimization. It establishes a hardware-independent classroom teaching system. Theoretical analysis demonstrates that this AI-enabled model compensates for deficiencies in conventional training, improving learners' stress adaptability, interlingual conversion and cross-cultural emergency communication competence. It provides a replicable paradigm for specialized interpreting reform and digital transformation of foreign language education under New Liberal Arts initiative.

Keywords: generative AI; emergency interpreting; practical teaching; teaching model; New Liberal Arts; intelligent evaluation

1 Introduction

With the frequent occurrence of global emergencies and the deepening of international emergency cooperation, the construction of national emergency language service systems has been continuously advanced. The cultivation of interdisciplinary emergency interpreting talents has become a vital focus for foreign language disciplines to serve national strategic needs [1][2]. Distinct from conventional interpreting, emergency interpreting is characterized by sudden scenarios, high communicative pressure, urgent task requirements, standardized expression norms, and an extremely low error tolerance rate. It imposes high requirements on interpreters' psychological resilience, rapid language conversion capability, and industry-specific professional literacy [3][4][5]. The New Liberal Arts initiative breaks the disciplinary boundaries of traditional foreign language training and advocates an interdisciplinary talent cultivation framework of "language + industry + technology + literacy", providing solid policy guidance for the pedagogical reform of emergency-oriented interpreting teaching [6].

At present, the teaching and practical training of emergency interpreting in Chinese universities remain in the

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exploratory stage. Most institutions still adopt general interpreting training frameworks and lack targeted practical teaching systems adapted to emergency scenarios [7]. Traditional training relies heavily on static texts, fixed scripts and standardized paragraphs, lacking the unexpected interference and emergent situations typical of real disaster-response contexts. This commonly leads to the problem that learners achieve satisfactory performance in classroom drills but fail to adapt to practical emergency interpreting scenarios [8]. In addition, traditional virtual simulation training is highly dependent on professional hardware devices, resulting in high construction costs and implementation barriers, which hinder its widespread and normalized application in daily teaching [9].

The iterative upgrading of large generative language models offers an innovative solution for the digital transformation of interpreting teaching [10][11]. The technological advantages of generative AI, including dynamic scenario generation, real-time speech correction, full-process data tracking, and personalized learning diagnosis, can effectively address the inherent limitations of traditional emergency interpreting pedagogy [12]. On this basis, grounded in the interdisciplinary characteristics of emergency management education, this study constructs a lightweight, implementable and replicable generative AI-enabled practical teaching model for emergency interpreting. By reconstructing the theoretical framework and operational system of practical teaching, this research aims to provide new insights into improving the quality of emergency language service talent cultivation.

2 Problems in practical teaching of emergency interpreting

2.1 Unrealistic teaching scenarios and insufficient practical adaptability

Current emergency interpreting teaching generally prioritizes standardized textual materials over contextual simulation. Most training content consists of collated and polished paragraphs, lacking the authentic features of real disaster rescue, such as incomplete information, mixed accents, urgent verbal instructions, and complex environmental interference [13]. Crisis interpreting training emphasizes simulating unpredictable high-pressure situations, whereas static textbook-based training fails to cultivate interpreters' on-site coping capabilities [14]. Long-term training in simplified, stable learning environments results in learners' insufficient stress resistance and weak ability to process sudden and ambiguous information, which cannot match the practical demands of real emergency interpreting work. Disaster interpreting contexts feature chaotic information streams and competing communicative demands, which are rarely reproduced inside conventional interpreting classrooms [15][16].

2.2 Fragmented training resources and lagging systematic construction

Emergency interpreting covers diverse application scenarios, including earthquake rescue, public health emergencies, international disaster relief, emergency command, and official media briefings, all of which involve dense professional terminology and highly specialized situational expressions. At present, China lacks unified and systematic teaching resource banks for emergency interpreting. Existing training scripts, question banks and bilingual corpora are fragmented, outdated, and unsystematic, making it difficult to support hierarchical and progressive practical teaching design. Traditional resource development methods are time-consuming and labor-intensive, unable to rapidly adapt to the evolving training demands of diverse emergency scenarios, thus restricting the overall improvement of practical teaching quality.

2.3 Superficial integration of AI technology and the "disconnection" phenomenon

In most foreign language classrooms, AI technologies are merely applied as auxiliary tools for text proofreading, revision and material retrieval, without in-depth integration into instructional design, situational simulation, process evaluation, and personalized tutoring. The application of AI in interpreter education remains tool-based and superficial, failing to give full play to the core value of large language models in scenario simulation, procedural diagnosis and data-driven teaching empowerment [17]. This separation between technological innovation and pedagogical reform leads to low

efficiency in digital teaching transformation and insufficient improvement in practical training outcomes.

2.4 Single evaluation system without process-based and practical dimensions

Traditional interpreting evaluation is dominated by semester-end summative assessment, which mainly focuses on translation accuracy while neglecting core competencies such as situational adaptability, communication effectiveness, psychological quality and professional literacy. Evaluation results rely largely on teachers' subjective judgment without objective data support. Since the entire training process cannot be systematically traced and analyzed, learners' specific weaknesses are difficult to identify accurately, making the traditional evaluation system incapable of supporting the assessment of comprehensive competencies of interdisciplinary emergency interpreting practitioners.

3 Adaptability and advantages of generative AI in emergency interpreting teaching

Generative AI demonstrates high compatibility with the practical teaching of emergency interpreting and can effectively target and resolve the core pain points of traditional pedagogy, supporting the systematic optimization and innovative upgrading of emergency interpreting training models.

First, dynamic scenario generation matches the uncertainty of emergency interpreting tasks. According to preset teaching objectives, generative AI can randomly generate emergent disaster situations, multi-accent dialogues, conflicting information inputs and time-limited interpreting tasks, which highly restore real crisis interpreting contexts. This effectively compensates for the rigidity of static material training and helps strengthen learners' on-site stress resistance and adaptive capacity.

Second, lightweight application lowers the threshold of practical teaching implementation. Unlike traditional VR simulation that relies heavily on professional hardware facilities, generative AI can support daily practical training through ordinary web platforms without specialized equipment. Teaching drills can be flexibly conducted in regular classrooms at any time, greatly reducing the promotion cost of professional interpreting practical teaching [18].

Third, human-machine collaborative training realizes personalized and precise teaching. Generative AI can record full-process training data in real time, accurately identify terminological errors, logical defects and fluency problems, and automatically generate personalized training feedback reports. This effectively addresses the drawbacks of homogenized teaching and one-size-fits-all training in traditional classroom instruction.

Finally, intelligent multi-dimensional evaluation optimizes the comprehensive teaching system. The combination of AI-based quantitative assessment, teacher evaluation and practical performance assessment measures learners' linguistic competence, situational adaptability and professional literacy, constructing a novel whole-process, multi-dimensional and quantifiable evaluation paradigm for emergency interpreting training.

4 Construction of generative AI-enabled practical teaching system for emergency interpreting

Based on the interdisciplinary concept of the New Liberal Arts and the competency framework of emergency language services, this study constructs an integrated practical teaching system featuring "competency standard – dual-module classroom – resource support – AI training process – multi-dimensional evaluation".

4.1 Construction of a six-dimensional competency standard for emergency interpreting

Referring to the emergency language service competency framework proposed by Wang(2020) and Teng (2021), combined with the practical job requirements of international disaster rescue, this study establishes six core competencies for emergency interpreters: accurate bilingual conversion, emergency terminology proficiency, high-pressure situational adaptability, cross-cultural communication competence, AI-tool application capability, and emergency professional literacy. Meanwhile, hierarchical and observable evaluation indicators are refined, and three progressive teaching levels (basic,

advanced, and high-pressure practical training) are formulated to provide standardized guidance for practical teaching design and implementation.

4.2 Establishment of a progressive dual-module teaching framework

This study designs two interconnected teaching modules: the Basic Emergency Interpreting Module and the High-Intensity Practical Interpreting Module. The basic module focuses on conventional emergency sentence patterns, fundamental terminology and routine scenario interpreting, aiming to consolidate learners' linguistic and professional foundations. The high-intensity practical module follows the crisis interpreting training paradigm by layering time constraints, information uncertainty, environmental interference and multi-task challenges. It is designed to cultivate learners' on-site emergency response capabilities and realize progressive improvement from foundational knowledge learning to practical vocational competency training.

4.3 Development of a systematic resource bank for emergency interpreting training

With iterative content generation by generative AI and professional verification by industry experts, four systematic resource banks are established: a high-intensity scenario script bank, a hierarchical practical question bank, a bilingual emergency corpus, and a four-dimensional evaluation scale bank. The resources cover core emergency scenarios including earthquake rescue, public health press conferences, international emergency negotiations, and on-site command briefings, enabling specialized, systematic and practical scenario-based training design.

4.4 Innovation of a lightweight closed-loop practical teaching process powered by AI

This study constructs a four-driven closed-loop teaching model of "scenario introduction – dynamic AI generation – practical drill – intelligent review". Before class, AI conducts pre-class learning diagnosis to identify learners' individual weaknesses and provide targeted training suggestions. During class, generative AI randomly generates high-emergency scenarios to support immersive role-play training, accompanied by real-time speech error correction, fluency monitoring and logical analysis. After class, AI automatically generates personalized training reports and pushes targeted remedial learning resources, forming a complete human-machine collaborative closed-loop practical training system.

4.5 Establishment of a four-dimensional multi-intelligence evaluation system

A comprehensive four-dimensional evaluation system is constructed, consisting of AI intelligent quantitative evaluation, teachers' comprehensive qualitative evaluation, practical performance evaluation, and peer evaluation. AI quantitatively evaluates objective indicators such as terminology accuracy, information integrity and utterance fluency. Teachers assess learners' logical coherence, professional adaptability and on-site coping performance. Practical performance evaluation focuses on learners' high-intensity adaptability and emergency professional literacy, while peer evaluation supplements the assessment of teamwork and interactive communication competence. This multi-dimensional framework realizes comprehensive and holistic evaluation of emergency interpreting competency.

5 Model characteristics, implementation considerations and limitations

This study theoretically reconstructs and systematically designs a generative AI-enabled practical teaching model for emergency interpreting, targeting the inherent deficiencies of traditional teaching modes. The proposed model features lightweight operation, zero hardware dependence, and full-process human-machine collaboration, which effectively breaks the limitations of traditional emergency interpreting training in scenario simulation, resource construction and evaluation mechanisms. It provides a feasible theoretical framework for the normalized digital transformation of emergency interpreting practical teaching in regular classrooms.

Nevertheless, several practical constraints and potential risks should be noted in model implementation. First, generative AI may produce minor professional discrepancies in scenario setting, terminological expressions and situational

logic, which requires double verification by professional teachers and industry experts to ensure teaching accuracy and professionalism. Second, excessive reliance on AI tools may weaken learners' independent critical thinking and on-site autonomous judgment ability [19]. Therefore, this model adheres to the core principle of "human-led, AI-assisted teaching" [20]. A standardized operating mechanism integrating "AI preliminary training, in-depth teacher evaluation, and manual professional verification" is embedded into the model framework to avoid technological over-reliance and guarantee the rigor and professionalism of practical training.

As a theoretical reconstruction research, this study mainly completes model design and systematic framework construction without empirical classroom experiments. Future research can conduct practical application, data collection and model iteration based on real teaching scenarios to further verify and optimize the effectiveness of the proposed teaching system.

6 Conclusion

Under the background of the New Liberal Arts initiative, promoting the digital and innovative reform of emergency interpreting practical teaching is an inevitable trend for foreign language disciplines to serve national emergency language strategies. Generative AI technology effectively addresses the core bottlenecks of traditional emergency interpreting teaching, including unrealistic scenario simulation, insufficient systematic resources, homogenized training design, single evaluation mechanisms and high implementation thresholds. The lightweight, hardware-free and normalized practical teaching system constructed in this study realizes the deep integration of digital technology and emergency interpreting pedagogy, providing a systematic theoretical model for the cultivation of interdisciplinary emergency language talents.

Future research can further optimize teaching resources based on authentic international emergency cases, refine targeted training paradigms for different emergency sub-scenarios, and improve the long-term operation and dissemination mechanisms of the teaching model. Continuous exploration can be made to improve the interdisciplinary talent cultivation path of "Foreign Language + Emergency Management + Digital Technology" under the New Liberal Arts framework, so as to provide valuable theoretical references and practical paradigms for the reform of specialized foreign language teaching and the digital transformation of university foreign language education.

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Conflicts of interest

The author declares no conflicts of interest regarding the publication of this paper.

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