

## INVESTIGATION INTO THE UTILIZATION OF AI IN INSTRUCTING CHINESE AS A SECOND LANGUAGE



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### ABSTRACT

*With the emergence of the 'artificial intelligence +' trend in the realm of education, exploration in this area has gradually become a current focal point. This article merges the technological aspects of artificial intelligence with the core principles of instructing Chinese as a non-native language. It identifies that the primary challenges lie in the intricacies of the Chinese language itself and the significant disparities among the learners. Through an examination of the requirements and distinctive features of teaching Chinese as a foreign language, this study delves into the application approaches of combining artificial intelligence with foreign language teaching. The emphasis is placed on the implementation models of 'AI assistant + instructor' and 'AI tutor + educator,' leveraging artificial intelligence solutions to address prevailing obstacles and achieve personalized, efficient teaching. This paper comprehensively explores the integration of artificial intelligence into the teaching of Chinese as a foreign language, covering aspects such as context and methodology.*

**Keywords:** AI, teaching Chinese as a second language.

### INTRODUCTION

Teaching Chinese as a non-native language involves language education and secondary language instruction, facing challenges due to various factors. Artificial intelligence has become pervasive in society, including education. National initiatives in China highlight the use of AI in education, aiming for intelligent and interactive learning.

Currently, AI has various applications in education, such as iFlytek's high accuracy speech recognition in exams and remote instruction. In teaching Chinese as a foreign language, AI can understand Chinese and offer immediate feedback, aiding foreign language instruction. However, there is a need for a systematic and mature theoretical exploration of AI's application in this field in domestic practices. This examination focuses on integrating AI into Chinese language instruction.

**2. Challenges in the Implementation of Foreign Language Instruction for Chinese**

In recent times, the phenomenon of 'Chinese Popularity' has gained global prominence. Chinese culture's vast and profound heritage, along with its captivating allure, has drawn the interest of numerous international acquaintances. While the essence of Chinese instruction revolves around language teaching, it necessitates the incorporation of cultural and economic dimensions, demanding educators of Chinese as a foreign language to possess an extensive repository of knowledge. They must comprehend historical and contemporary aspects, enabling them to convey both the enduring charm of Chinese antiquity and the evolving vocabulary and meanings shaped by the passage of time, thus aiding students in their language acquisition.

Furthermore, Chinese stands distinguished as 'the world's most intricate language to master,' a classification officially acknowledged by the United Nations Educational, Scientific, and Cultural Organization (UNESCO). When approaching the practice of instructing Chinese as a foreign language, the foremost challenge lies within its tonal intricacies. Mandarin, the lingua franca of modern China, employs four distinct tones. In contrast, Cantonese, prevalent in regions like Hong Kong and Macau, encompasses a staggering nine tones. While Cantonese diverges from the scope of Chinese language instruction, mastering the four tones of Mandarin remains a formidable hurdle for the majority of learners whose native tongues lack tonal distinctions. Unless they have been immersed in the Chinese language since childhood or reside within Chinese-speaking environments, achieving a level of tonal proficiency comparable to native speakers proves arduous. Even those familiar with tonal languages encounter challenges. Illustratively, certain artists hailing from Hong Kong and Macau, despite their television appearances, exhibit non-standard Mandarin pronunciation.

### **3. Interplay of Artificial Intelligence and Educational Pedagogy**

Artificial intelligence constitutes a comprehensive domain that encompasses fields such as computer science, cybernetics, informatics, and linguistics, among other disciplines. The interplay between these diverse areas has effectively propelled the advancement of artificial intelligence. Positioned as one of the foremost technologies in the 21st century, artificial intelligence technology has already showcased notable advantages in the realm of education and instructional methods.

Since its inception in 1956, artificial intelligence systems have maintained a close relationship with education and teaching. At its core, the artificial intelligence system represents a scientific technology that delves into how computers can seamlessly assimilate educational processes and amplify cognitive capabilities. The outcomes of artificial intelligence research hold immense significance for every facet of education and pedagogy, exerting a pervasive influence across the educational landscape and directly contributing to the enhancement of teaching standards. To illustrate, envision the effective integration of artificial intelligence systems within educational practice – such integration can result in a discernible augmentation of teaching efficiency and a reduction in the workload and time commitments of

primary instructors. Additionally, it holds potential to elevate the learning aptitude of the students. Given the existence of exemplary works that serve as benchmarks, teaching Chinese as a foreign language, though a niche within the broader domain of education and instruction, offers numerous avenues.

### **3.1 The Present State and Direction of Artificial Intelligence Technology in Global Chinese Language Education**

Artificial intelligence chat software, like ChatGPT, understands user intentions and provides text or voice responses based on context. ChatGPT, developed by OpenAI, excels in AI chat with NLP and extensive training data. It supports various applications, adjusts tone, handles different scenarios, and uses external knowledge.

ChatGPT advantages: advanced text generation, large-scale pre-training, flexible architecture. UBS reported over 100 million users within two months of launch in January 2023. Relies on internet-trained data, may contain inaccuracies.

In education, ChatGPT is used globally, including in classroom teaching. Companies like Netease Youdao and Baidu invest in education-related ChatGPT technologies. AI enhances language teaching efficiency, personalizes learning, but cannot replace it entirely. AI's impact on international Chinese education requires ongoing examination.

### **4. Fusion of Artificial Intelligence and Application Strategy in Foreign Language Instruction for Chinese**

In 1960, Licklider introduced the concept of Human-Computer Symbiosis, envisioning an anticipated advancement in the collaborative engagement between individuals and electronic computing systems. This entails an intimately intertwined relationship between humans and electronic devices. Artificial intelligence further propels the notion of Human-Computer Symbiosis: a unique intelligent package is furnished to augment human intellect and construct a "replacement to compensate.

#### **4.1. Artificial Intelligence Teacher Mode**

Instructors tasked with teaching Chinese as a foreign language necessitate a substantial reservoir of knowledge. Artificial intelligence can assume the role of knowledge outsourcing for human educators, wherein the focus is on the research of knowledge. This is achieved through the utilization of computer software, hardware, computer science, artificial intelligence systems, and expert technologies as instruments to construct an expansive and comprehensive knowledge base, characterized by efficiency, rapidity, and broad coverage. In this context, artificial intelligence operates as an auxiliary complement to human Chinese educators, shaping the 'AI assistant + teacher' paradigm.

Within teaching endeavors, the process of communication can be dissected into the configuration of 'subject-object-subject'. As educators instructing Chinese as a foreign language, they utilize linguistic and textual means, among other mediums, to facilitate students' cognitive and emotional development. Here, artificial intelligence can provide assistance to educators in fulfilling this role. In the realm of teaching

Chinese as a foreign language, instructors grapple with various 'diversities': diversity in culture, language, and knowledge. Often, the learners of Chinese stem from varied cultural spheres and employ disparate languages. A single class might comprise students hailing from different corners of the globe, introducing distinct experiences and cultural contexts that impact instructional outcomes. The challenge of tailoring teaching methods to individual aptitudes is salient. Artificial intelligence has the capacity to discern personalized learning needs through the aggregation of student-specific data, subsequently presenting this information to educators in the form of textual data or structured content. As an auxiliary entity, artificial intelligence functions as a multifaceted tool within the teaching process, aiding educators of Chinese as a foreign language in executing an array of pedagogical tasks. Nonetheless, within this framework, despite the conveniences it affords, artificial intelligence remains in the capacity of an 'assistant'. Its role is to mitigate certain limitations intrinsic to teaching mediums and instructors, yet it remains neither omniscient nor omnipotent. The ultimate determinant of teaching quality continues to rest primarily with educators specializing in teaching Chinese as a foreign language. Artificial intelligence predominantly collects and consolidates dispersed information, delivering it in precise and comprehensible formats to teachers. The crux of decision-making authority, however, firmly rests with these educators. Teaching interaction extends beyond the mere dissemination of knowledge; it encompasses the exchange and transmittal of emotions and educational philosophies. This amalgamation draws upon various pedagogical disciplines such as pedagogy itself, Chinese linguistics, psychology, and sociology, amalgamating to present a comprehensive and rationalized interpretation of instructional content. Mastering Chinese mirrors the pursuit of other languages. Mere recognition and auditory comprehension fall short. Proficiency in reading and speaking is paramount, encapsulating the specific challenge posed by the Chinese language. The endeavor to achieve proficient spoken communication Attaining fluency and proficiency in standard Chinese poses a challenge for most learners. This struggle resonates with the majority of students embarking on Chinese language acquisition. Chinese features certain phonetic nuances that are often absent in the native languages of foreign learners, for instance, the aspirated sounds zh, ch, and sh. These distinctions are compounded by the fact that the same sound can yield different meanings in varying tonal contexts. Catering to students' individual capacities encompasses not only accommodating their cultural backgrounds and pre-existing knowledge but also addressing pronunciation hurdles.

In the current market, numerous applications facilitate the enhancement of spoken English skills; correspondingly, Chinese language learners also benefit from analogous applications tailored to Chinese practice. This manifests as an instance of artificial intelligence assistants complementing Chinese language instruction. Distinct oral configurations, vocal positions, airflow nuances, and tonal variations yield distinct auditory outputs. Thus, leveraging audio analysis technology, artificial

intelligence can personalize foreign students' spoken Chinese training. The establishment of a comprehensive phonetic database encompassing sentences, pronunciations, and words serves as the foundation. At the phonemic level, this technology can meticulously and systematically diagnose various elements such as pitch, tone, fluency, and more, thereby offering precise corrective recommendations.

In summation, the 'AI assistant' undertakes the identification and analysis of student information within the framework of teaching Chinese as a foreign language. Meanwhile, the educator's role predominantly revolves around emotional rapport, semantic interpretation, and decision-making execution. This collaborative approach enhances the efficiency of Chinese language instruction and enhances the presentation of pedagogical outcomes. The application of artificial intelligence also manifests considerable efficacy within computational learning. The manual labor of foreign language educators has been alleviated, concurrently heightening the teaching experience and fortifying pedagogical capabilities – a truly advantageous outcome

#### **4.2. Mode of AI Tutor + Educator**

In the phase of Artificial Superintelligence, there is potential for a collaborative synergy between artificial intelligence and educators specializing in teaching Chinese as a foreign language, forming the pedagogical approach of 'AI tutor + teacher.' Both human instructors and artificial intelligence play authoritative roles, collectively shaping instructional methodologies. Artificial intelligence can evaluate students' native language cultural understanding, learning behaviors, and teaching scenarios, providing personalized guidance akin to a psychological mentor. 'AI' tutors, equipped with extensive knowledge and analysis abilities, become intelligent collaborators.

Educators specializing in teaching Chinese as a foreign language become strategists, creating teaching plans and maintaining instructional consistency. 'AI' tutors gain insights into human educators' approaches, developing cognitive capabilities and creative prowess. They tailor teaching methods to individual circumstances and attributes, such as motivation and cognitive style. By analyzing behavioral data, they adapt methodologies for independent learners, optimizing the Chinese language learning experience. This integration of artificial intelligence empowers educators to focus on teaching, returning it to traditional standards.

However, practical constraints have prevented the full realization of this concept in teaching Chinese as a foreign language, making it an aspirational concept requiring further exploration.

#### **6. SUMMARY**

Fundamentally, artificial intelligence serves as an augmentation of human cognition and physique. In today's age dominated by artificial intelligence, its reach extends across every facet of societal existence. Within the domain of education and instruction, artificial intelligence has emerged as a catalyst for executing pedagogical activities. This extends to the teaching of Chinese as a foreign language, aligning seamlessly with the prevailing trajectory of the artificial intelligence era. By

integrating artificial intelligence into the realm of teaching Chinese as a foreign language, the endeavor embodies the contemporary developmental trajectory, thereby actualizing proficient instruction and individualized education within the foreign language pedagogy.

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