SYNERGY PUBLISHING PTE. LTD.

Review of Educational Theory

https://ojs.bilpublishing.com/index.php/ret

ARTICLE

Fun Chinese App: Platform Development and Application Based on Generative Artificial Intelligence Technology

CHEN Jiajing DONG Tingting SONG Zhanmei*

College of International Education,Wenzhou University,Wenzhou Zhejiang,325035

ARTICLE INFO

Article history
Received: 15 July 2025
Accepted: 10 December 2025
Published Online: 30 December 2025

Keywords:
Mobile learning software
APP
"Chinese + Professional Skills"

ABSTRACT

With the continued advancement of the Belt and Road Initiative, overseas Chinese-funded enterprises commonly face challenges such as insufficient Chinese communication skills, lack of intercultural competence, and inadequate knowledge of Chinese professional terminology. To address this predicament, there is an urgent need to establish a digital platform through the "Internet Plus" model and build a remote education system integrating "Chinese language + professional skills." However, existing Chinese learning applications often suffer from content homogenization, weak cultural dissemination, and insufficient relevance to professional fields. In response to this, the present study aims to design a Chinese language learning app that focuses on enhancing language proficiency, promoting Chinese culture, and targeting professional knowledge. Based on mobile learning theory, constructivist learning theory, and autonomous learning theory, and guided by principles of practicality and personalization, the app integrates gamified incentive mechanisms and AI-driven interactive features. It constructs a three-dimensional model of "level-based learning + cultural immersion + real-time PK (competition)," achieving a deep integration of linguistic knowledge, intercultural communication skills, and industry-specific expertise.

1. Introduction

At the 2024 National Education Conference, General Secretary Xi Jinping noted that building a strong nation in education has long been a cherished aspiration of the Chinese people. On January 19, 2025, the Central Committee of the Communist Party of China and the State Council issued the Outline of the Plan for Building a Strong Education Country (2024–2035), which calls for comprehensively constructing an international cooperation system characterized by openness and mutual learning. As globalization deepens, Chinese enterprises have achieved notable success in internationalization; nevertheless, language and cultural differences and the shortage of bilingual and bicultural human resources have become major obstacles to their overseas expansion. Consequently, providing language services to support Chinese enterprises abroad and maximizing the economic value of Chinese language education have become important directions in international Chinese language education.At the 2025 National People's Congress and Chinese People's Political Consultative Conference (the Two Sessions), Representative Yang Xianjin argued for coordinated promotion of the integrated development of international Chinese education and the globalization needs of Chinese enterprises, jointly constructing a Chinese-education system

**Corresponding Author:*
Song Zhanmei, female, from Dongying, Shandong Province, director of the Teacher Teaching Development Center of Wenzhou University, Doctor of Education, doctoral postgraduate supervisor, main research direction: teacher education.
Email: songzhanmei@126.com

DOI: http://doi.org/10.12345/ret.v8i2.33857

oriented toward serving international capacity cooperation to accelerate enterprise globalization. To date, more than two thousand Chinese-learning applications exist; however, mobile Chinese apps that combine "Chinese + profession" remain relatively scarce. Most existing apps (e.g., HelloChinese, ChineseSkill, trainchinese) exhibit content homogenization, weak cultural dissemination, and insufficient vocational relevance. Survey data indicate that most respondents strongly desire a profession-related Chinese-learning application, underscoring the urgency of developing a "Chinese + profession" mobile learning app. Accordingly, this study analyzes the shortcomings of current Chinese-learning apps and, drawing on multiple theoretical perspectives including mobile learning, autonomous learning, and constructivist theories, and adhering to principles such as practicality, personalization, and entertainment, proposes an internal mechanism for constructing multimodal resources within a "Chinese + profession" app. The goal is to design a learner-centered app that renders vocational Chinese learning widespread, convenient, and efficient.A prototype developed in this research has been piloted with employees of a Fortune Global 500 company and received unanimous approval. Based on that feedback, full-version development will be accelerated to provide tailored learning resources and practical tools for Chinese learners across industries, enabling more efficient and engaging acquisition of Chinese and paving a sustainable path of "learning for application and application to promote learning."

2. Literature Review

A review of the literature shows that while a variety of apps for teaching Chinese as a foreign language have emerged, their quality varies and content is often homogenized. Language-skill–oriented apps emphasize comprehensive training, whereas specialized-content apps are mainly HSK-oriented; overall, many apps tend to be general-purpose and lack cultural dissemination. Thus, "Chinese + profession" mobile learning apps remain a market gap, with only a few platforms making breakthroughs in this domain (e.g., Chinese Union). In the era of rapid digital and AI development, "Chinese + profession" mobile learning apps possess substantial growth potential.

2.1 Predominance of Language-Focused Apps and Lack of Cultural Dissemination

Advances in educational technology have given rise to numerous learning apps, including many for Chinese learning. Wu Yinghui et al. (2021)[1] reported that, as of September 2021, 272 Chinese-teaching apps were available on the market. Guo Jing et al. (2021)[2] analyzed global digital resources for international Chinese education and classified the aforementioned 272 apps by content into five categories: language elements, language skills, specialized content, specialized functions, and others. Their analysis indicated that resources are mainly language-oriented, with cultural resources notably lacking. Cheng Juan and Lu Yuan (2020) [3]categorized extant apps into examination-oriented, tool-type, interactive, and entertainment categories; based on a survey of 500 international students they recommended strengthening development of culture-oriented apps and reinforcing the link between language and culture, giving equal attention to teaching Chinese and disseminating outstanding traditional Chinese culture.

2.2 Content homogenization and lack of vocationally oriented apps

With the continued development of the Belt and Road Initiative, overseas Chinese-funded enterprises require many local managers and employees who are both proficient in Chinese and professionally competent. Guo Jing et al. (2021)found that current digital-resource construction tends toward generic, general-purpose formats: most language-skill apps are comprehensive in scope, and the majority of specialized apps are HSK-related (accounting for 98.45% of specialized apps). "Chinese + profession" apps are virtually absent. Sheng Sai (2017) [4]sampled and analyzed Chinese-learning apps and surveyed their use among international students, finding that many apps focus on elementary Chinese and particular language-skill training; content suitable for advanced learners is limited and app quality is uneven with a high degree of homogenization.

2.3 Research on Artificial Intelligence Technologies in International Education

Artificial intelligence (AI), as technology that simulates human intelligent behavior, encompasses domains such as machine learning[5], natural language processing[6], and computer vision[7]. In recent years, AI's application in education has become increasingly extensive. Through Text-to-Speech (TTS)[8] technologies, AI can convert text into high-quality speech, assisting learners in improving listening comprehension and pronunciation[9]. Image-generation techniques based on latent diffusion or Stable Diffusion Models[10] can produce visual images from text descriptions, enhancing learners' intuitive understanding of vocabulary and sentences[11]. In workplace Chinese instruction, virtual simulation technologies create realistic

 DOI: http://doi.org/10.12345/ret.v8i2.33857

occupational scenarios that enable interactive learning and simulate workplace dialogues and behaviors, thereby improving applied language abilities[12]. Moreover, personalized learning recommendation systems[13] analyze learner behavior data to tailor content, effectively improving learning efficiency. Recently, large language models (LLMs) [14]built on Transformer[15] architectures have further expanded AI's potential in education: given keywords, LLMs can automatically generate example sentences and images to help learners grasp vocabulary usage in context.

3. Theoretical Foundations and Design Principles of FunChinese App

The app developed in this study is named "FunChinese" and targets overseas learners and international students who already possess a certain foundation in Chinese (minimum recommended: HSK level 3).

3.1 Theoretical Foundations

3.1.1 Mobile Learning Theory

Mobile learning (M-learning), also termed ubiquitous learning, is an outcome of integrating internet technologies with digital education. Early mobile-learning research traces back to Carnegie Mellon University's Wireless Andrew project in 1994. Desmond Keegan famously articulated the progression "from d-learning to e-learning to m-learning," a view widely endorsed by scholars. Mobile learning is characterized by learning convenience, instructional personalization, rich interactivity, and contextual relevance; it represents an important new learning modality in the context of lifelong learning and a knowledge-economy society. This app, as a practical implementation of mobile learning, leverages internet, mobile network, and mobile terminal technologies to allow learners to engage in profession-related Chinese learning anytime and anywhere.

3.1.2 Constructivism Learning Theory

Constructivism posits that learners actively ascribe meaning to information and construct their own knowledge through interaction between new experiences and prior knowledge. It emphasizes active construction, social interaction, and contextuality in learning: learners build their knowledge systems through interactions with people and environments. The constructivist emphasis aligns naturally with the "Internet + education" environment. Accordingly, the app incorporates interaction design elements—such as friend leaderboards and ranking lists—to enable learner interaction and discussion. A "wrong-answer collection" function encourages learners to actively collect and reflect on errors, assess weaknesses, and make targeted improvements.

3.1.3 Autonomous Learning Theory

Autonomous learning, contrasting with passive reception-based approaches, refers to a modern learning mode in which the learner acts as the learning subject and achieves learning goals through independent analysis, exploration, practice, and creation. Henri Holec (1981) defined autonomous learning as "the ability to take charge of one's own learning." This ability manifests in learners' setting goals, organizing content, planning, regulating learning processes, and self-assessing outcomes.

The app provides features for goal setting and learning planning to support individualized study; system reminders help learners monitor progress, and practice tests support self-evaluation. Moreover, the entertaining nature of learning materials can substane learners' autonomy.

3.2 Design Principle

3.2.1 Practicality Principle

Practicality is central to developing a "Chinese + profession" app: the software must provide content and functions that meet learners' real needs and offer an efficient, user-friendly experience to achieve desired learning outcomes.

The app's learning content should closely match learners' actual vocational needs so that knowledge and skills learned can be applied in work and life. This requires developers to conduct field research and consult industry experts to identify professional needs, employ AIGC technologies to generate content, and build a professional knowledge base through iterative quality assurance and feedback.

3.2.2 Personalization Principle

Personalization is crucial because learners differ in cultural background, ability, level, and needs. The app must therefore allow individualized content design.

First, personalized learning paths: because professional roles demand different Chinese proficiency levels, developers should enable learners to customize learning trajectories rather than forcing a single, official path. Many existing apps require learners to progress sequentially from the first level onward, causing unnecessary time expenditure on already-mastered materials. In contrast, FunChinese permits learners to bypass levels (e.g., a "skip"

DOI: http://doi.org/10.12345/ret.v8i2.33857

button that can be used multiple times to jump ahead).

Second, personalized modules: each vocational module should offer content at different difficulty tiers (beginner/intermediate/advanced) so learners may choose according to their foundation.

Prior to entering the main interface, the system administers a Chinese proficiency test and recommends appropriately leveled learning plans. These personalization mechanisms enhance user experience and retention.

3.2.3 Gradual Progression Principle

Learners' cognitive processes follow an inherent regularity; instruction must progress from known to unknown and shallow to deep. Content organization should observe sequencing from easy to difficult and simple to complex, with repetitive exposure to vocabulary and sentence patterns to strengthen memory[16].

Therefore, content design should conform to professional Chinese proficiency frameworks such as the Occupational Chinese Competency Standards and the Standards of Chinese Language Proficiency for International Chinese Education. The app's development references existing "Chinese + vocational skills" textbooks (e.g., New Silk Road "Chinese + Vocational Skills" series, Industrial Chinese) and strictly follows these standards to provide learners with a sense of achievement and sustained motivation.

3.2.4 Interest-driven Principle

Einstein once said, "Interest is the best teacher." The primary challenge for mobile learning software is sustaining user engagement. Second-language acquisition is demanding and learners face cultural differences and negative transfer; cultivating interest is therefore essential.

The app uses diverse content and functions to stimulate interest, including: (1) a "Daily News" section aimed at cultural dissemination, offering industry developments, Chinese corporate culture, and related content—areas that typically attract learners; (2) a "PK game" module with real-time ranking and virtual rewards to convert external incentives into intrinsic motivation; (3) targeted incentive schemes—e.g., for high-speed rail attendants learners' progress (number of levels cleared, consistent learning days, difficulty levels) maps to simulated promotions (intern → junior attendant → train captain → station supervisor → service director); for automotive engineers learners can collect parts to assemble a preferred car; (4) dedicated AI avatars and contextual learning backgrounds corresponding to different professions; learners can name avatars, and interfaces replicate workplace scenes to create immersive learning environments.

4. Content and Structure of FunChinese App

The app is guided by Content-Based Instruction (CBI) and integrates AIGC technologies (text synthesis, translation, image generation) using human–AI collaboration to generate multimodal resources and to construct an internal mechanism for multimodal resource formation.

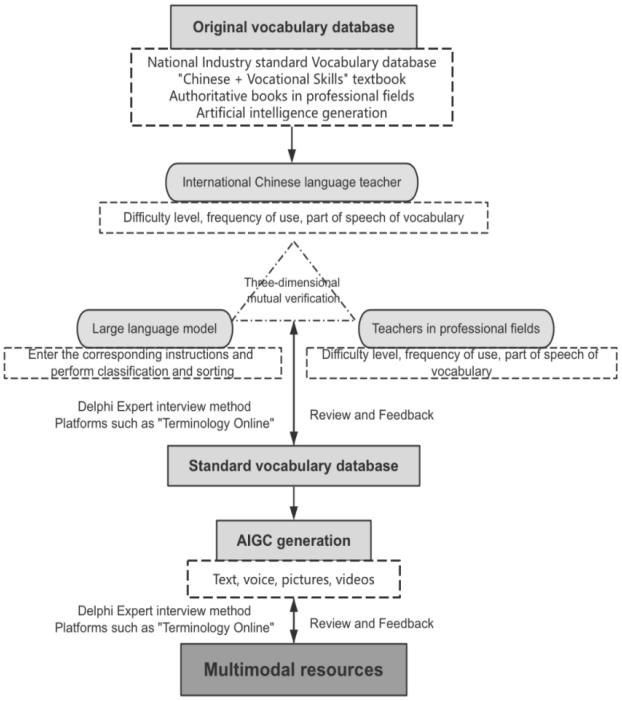

Figure 1

4.1 Original vocabulary bank

The original vocabulary bank is generated through multiple approaches: (1) extracting standardized terminology lists from authoritative national industry standards (e.g., railway authority glossaries such as "EMU Vocabulary Part 1: Basic Vocabulary," "Diesel Locomotive Vocabulary Part 1: Basic Vocabulary"); (2) consolidating lexical items from existing "Chinese + profession" instructional materials (e.g., Vocational Chinese, New Silk Road "Chinese + Vocational Skills" series, Industrial Chinese); (3) compiling terms from authoritative textbooks in relevant domains; (4) using AI tools (e.g., ChatGPT, deepseek) to generate candidate vocabulary.

4.2 Standard vocabulary bank

After forming the raw vocabulary bank, a "three-dimensional cross-validation" process is applied to curate and audit entries, resulting in a standardized vocabulary

 DOI: http://doi.org/10.12345/ret.v8i2.33857

bank. Dimension 1: international Chinese instructors screen and categorize vocabulary by difficulty level, frequency, and part of speech, ordering entries from easy to difficult and by frequency. Dimension 2: LLM-based processing (e.g., instructing ChatGPT) is used to classify and rank the raw entries. Dimension 3: subject-matter experts in respective professional fields categorize and rank vocabulary by difficulty, frequency, and POS. The three categories of results (instructors, LLM, domain experts) are compared and further validated through Delphi-method expert interviews and platforms such as "Terminology Online," producing the finalized standard vocabulary bank.

4.3 AIGC generation

With the standard vocabulary bank established, appropriate AIGC tools are employed to generate corresponding text, audio, images, and video. Textual resources may be generated via text AIGC tools (e.g., ChatGPT) to produce instructional materials; image resources can be created with AI-art tools (e.g., Stable Diffusion) to produce illustrations; video resources can be generated using AI-assisted video tools (e.g., Runway ML) to produce animations or vocational-skill tutorials. Generated content is reviewed and refined via Delphi expert consultation to ensure quality, ultimately producing multimodal instructional resources.

5. App Operational Logic, Interaction, and Interface Design

5.1 Operational Logic

The operational logic diagram of this APP (Figure 2) is as follows:

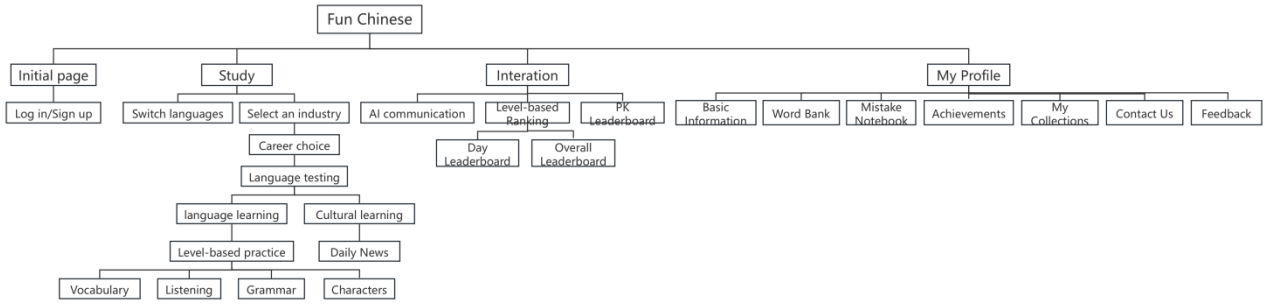

Figure 2: Operational Logic Diagram of the "Fun Insight Chinese" APP

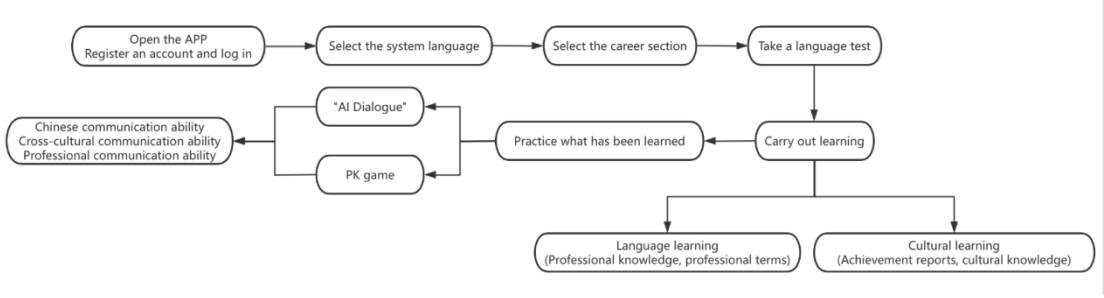

Figure 3: Operation Flowchart of the "Fun Insight Chinese" APP

The app's operational logic consists of four primary modules: initial page, learning page, interaction page, and "My Profile" page, each containing various submodules.

On first use, users register and then enter the learning interface, select language settings, and choose a vocational module. Before beginning formal learning, users complete a Chinese proficiency assessment (to gauge occupational Chinese ability) enabling the app to provide level-appropriate content. The learning module comprises two parts: language learning (professional terminology) and cultural learning (industry-related Chinese news, cultural knowledge, and traditional Chinese culture). After completing daily tasks, learners practice and consolidate learned items. Learners may also access interactive modules to converse with AI or participate in PK games.

5.2 Interaction Design

Interaction design addresses both visual and operational dimensions. Visually, consistency of visual elements (colors, typography, icons, spacing) is a primary principle; moreover, different vocational pages are assigned

DOI: http://doi.org/10.12345/ret.v8i2.33857

distinct color schemes to deepen visual interest and highlight thematic content. Operationally, the design adheres to convenience and economy: nonessential features are pruned and navigation is simplified to minimize clicks and streamline user operation.

5.3 Functional Page Designs

5.3.1 Splash / Login Screen

The splash screen facilitates login and registration and comprises an app icon, login fields, new user registration button, and "forgot password" function.

Figure 4

Figure 5

5.3.2 Learning Module Interface

The learning module includes language switching and industry selection (Fig. 6), occupational position selection (Fig. 7), language test pages (Figs. 8–9), and the primary learning interface (Fig. 10). After selecting language and industry, learners choose a specific occupational role and complete a language test to enable personalized services. The main learning interface is highly personalized, featuring distinct avatars, backgrounds, and level buttons tailored to industry characteristics; the AI avatar's dialogue text is profession-specific.

The learning interface comprises language learning and cultural learning. In language learning, each level presents characters, pinyin, audio, images, and bilingual example sentences (Fig. 11). Upon completion, learners enter challenge modes covering listening, speaking, reading, and writing, including a keyboard-entry-of-characters mode (Figs. 12–15). The "Daily News" button at the top leads to cultural learning, providing industry-related Chinese news and national hotspots; this section supports video or text-image study, with translation and analysis features (Figs. 16–18). Learners can take a "Daily News Challenge" (Fig. 19), a dubbing-style exercise that evaluates pronunciation accuracy, precision, and fluency.

Figure 6

Figure 7

Figure 8

Figure 9

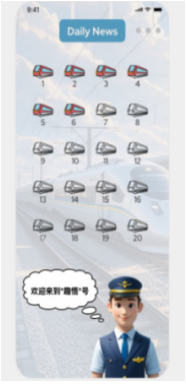

Figure 10

Figure 11

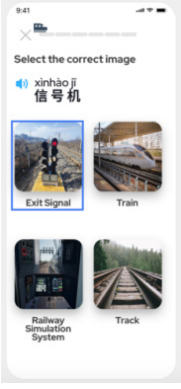

Figure 12

Figure 13

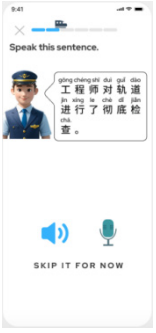

Figure 14

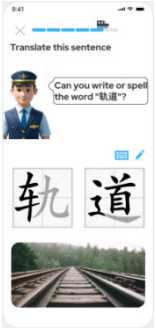

Figure 15

DOI: http://doi.org/10.12345/ret.v8i2.33857

Figure 16

Figure 17

Figure 18

Figure 19

5.3.3 Interaction Module Interface

The interaction module comprises AI dialogue, level-ranking, and PK leaderboards. Clicking the AI avatar opens an interactive chat where learners can exchange via images, text, or voice; AI can answer language questions and simulate occupational scenarios for dialogic practice (Fig. 20). The level-ranking and PK leaderboards are presented together (Fig. 21): the level-ranking shows daily and overall rankings within a learner's industry and across the network. PK interaction enables learners to create rooms to compete with friends or matched opponents (Fig. 22); winners receive PK points. Daily and total rankings update in real time based on user activity.

Figure 20

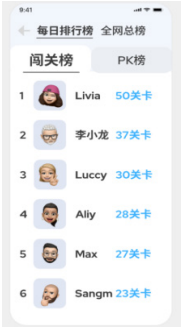

Figure 21

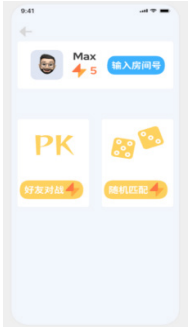

Figure 22

5.3.4 "My Profile" Interface

"My Profile" consolidates personal information and system settings, accessible by clicking the user icon at the top-right of the main page. Users can edit personal details, nickname, avatar, etc. Functions include "My Favorites" (saved exercises and cultural reading materials), "Wordbook" (all vocabulary the user is studying), "Wrong-Answer Book" (collection of user errors for reflection and review), and "Achievement Feed" (professional-themed badges or titles earned during progression to stimulate self-efficacy). "Contact Us" allows users to email developers for feedback; "Feedback" supports emailing suggestions for desired features or improvements.

Figure 23

6. Conclusions

This paper reviewed the status of mobile learning software and AI applications in international Chinese education and conducted an in-depth discussion of development ideas for a "Chinese + profession" mobile Chinese-learning app. Drawing on mobile learning, constructivist, and autonomous learning theories and guided by content-based instruction, the study employed a "three-dimensional cross-validation" approach to design a novel, practical "Chinese + profession" mobile learning app—FunChinese. The principal contribution of this research lies in offering a new mobile learning model aimed at improving overseas learners' Chinese communicative competence, enhancing intercultural communicative ability, and boosting professional literacy. Additionally, the app presents constructive and feasible ideas for helping overseas Chinese enterprises accelerate internationalization and for China's broader engagement with global cultural initiatives.

DOI: http://doi.org/10.12345/ret.v8i2.33857

Project Funding

This article is a stage research result of the Wenzhou University Key Project in International Chinese Education, titled "A Study on Multimodal Technology-Supported European Low-Age International Chinese Education Courses," with project number 23WZUICT01.

Lead author

Chen Jiajing, female, from Wenzhou, Zhejiang Province, is a graduate student at the School of International Education of Wenzhou University. Her main research direction is international Chinese education.

References

[1] Wu Y, Liang Y, Guo J,et al.,2021. The status and prospects of global Chinese-teaching resources. Journal of Yunnan Normal University (Teaching Chinese as a Foreign Language & Research Edition), 19(5):1–6.

[2] Guo J, Wu Y, Gu L,et al.,2021. On the construction status and prospects of digital resources for international Chinese education. International Chinese Teaching Research, (4):86–96.

[3] Cheng J, & Lu Y.,2020. An inquiry into the current status of apps for learning Chinese as a foreign language. Journal of East China University of Technology (Social Sciences Edition), 39(4):384–389.

[4] Sheng S,2017. Investigation and application analysis of Chinese-learning apps (Master thesis). Shandong: Shandong University.

[5] Jordan M I, Mitchell T M.,2015. Machine learning: Trends, perspectives, and prospects. Science, 349(6245):255–260.

[6] urafsky D, Martin J H.,2008. Speech and language processing: An introduction to natural language processing, computational linguistics, and speech recognition. Prentice Hall.

[7] LeCun Y, Bengio Y, Hinton G.,2025. Deep learning. Nature, 521(7553):436–444.

[8] Shen J, et al.,2017. Natural TTS synthesis by conditioning WaveNet on mel spectrogram predictions. arXiv preprint arXiv:1712.05884.

[9] Li T.,2021. Application of TTS technology in online teaching of Chinese as a foreign language. In Proceedings of the 2021 3rd International Conference on Internet Technology and Educational Informatization (ITEI) (pp. 38–41).

[10] Rombach R, et al.,2021. High-resolution image synthesis with latent diffusion models. arXiv preprint arXiv:2112.10752.

[11] Liu R, et al.,2024. The application of scaffolding instruction and AI-driven diffusion models in children's aesthetic education: A case study on teaching traditional Chinese painting of the twenty-four solar terms. Education and Information Technologies.

[12] Radianti J, et al.,2020. A systematic review of immersive virtual reality applications for higher education: Design elements, lessons learned, and research agenda. Computers & Education, 147, 103778.

[13] Klašnja-Milićević A, et al.,2011. E-learning personalization based on hybrid recommendation strategy and learning style identification. Computers & Education, 56(3):885–899.

[14] Brown T B, et al.,2020. Language models are few-shot learners. arXiv preprint arXiv:2005.14165.

[15] Vaswani A, et al.,2017. Attention is all you need. In Advances in Neural Information Processing Systems (Vol. 30, pp. 6000–6010).

 DOI: http://doi.org/10.12345/ret.v8i2.33857