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Optimizing International Chinese Education Personalized Teaching Strategies with the Use of Artificial Intelligence Technology

Ya'nan Cheng, Huijie Sun, Guanda Wu, Jiayuan Guo

Northwest Normal University, College of International Cultural Exchanges, Lanzhou, Gansu 730071

Abstract: With the widespread spread of Chinese globally, the field of international Chinese education is experiencing a revolution. The integration of artificial intelligence technology has opened up new possibilities for meeting the personalized learning needs of learners. This study closely follows the trend of artificial intelligence applications in the education industry both domestically and internationally, delving deeply into its immense potential in international Chinese education. The research objective is clear: to implement personalized teaching strategies for international students from various countries, such as Bangladesh, Kyrgyzstan, and others, by utilizing artificial intelligence technology. This includes customized learning curricula, intelligent teaching platforms, and empirical research. Through these measures, the study aims to significantly improve students' learning outcomes, strengthen cultural exchanges, and contribute innovative solutions to the field of international Chinese education.

Keywords: Artificial Intelligence Assisted Teaching; International Chinese Education Personalization; Empirical Research Optimization of Teaching Strategies

Introduction

Amid the wave of globalization, China's rapid economic development and significant rise in international status have brought unprecedented development opportunities to international Chinese education, while also presenting challenges in meeting the personalized needs of learners. Against this backdrop, the rapid advancement of artificial intelligence technology has provided innovative solutions to address this challenge. This study focuses on how to apply artificial intelligence technology to optimize personalized teaching strategies in international Chinese education. It aims to reveal the needs and challenges of personalized teaching through in-depth analysis of the current educational context and the development trends of artificial intelligence technology, and to explore the application potential of artificial intelligence.

Specifically, this project takes the 2023 international language students of the College of International Cultural Exchanges at Northwest Normal University as the research subjects, particularly the student groups from Kyrgyzstan, Pakistan, Belarus, Cameroon, Kenya, and Kazakhstan. By using methods such as questionnaires, data analysis, and empirical research, the project aims to develop a set of personalized teaching strategies based on artificial intelligence. This strategy not only focuses on the learning needs and characteristics of students but also emphasizes empirical research. By developing an intelligent teaching system, the effectiveness of the teaching strategies is verified, aiming to stimulate learning interest, improve teaching effectiveness, and provide theoretical and practical support for the continuous innovation and development of international Chinese education. This, in turn, offers effective educational solutions to the global surge in Chinese language learning.

1. The basic information about the research subjects includes

In this study, we have collected data from international students from various countries, including Pakistan, Belarus, Kazakhstan, Kyrgyzstan, Cameroon, Kenya, and Tajikistan. These students demonstrate diverse levels of Chinese proficiency and language backgrounds. (Table 1)

2. Textbook Evaluation and Optimization Suggestions

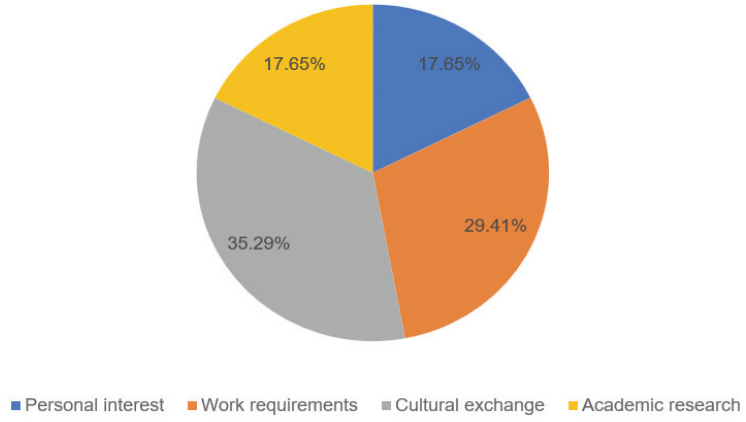
2.1 Analysis of the Motivation of International Students to Learn Chinese

In this survey conducted on the 2023 intake of international language students at the College of International Cultural Exchange of

Table 1

nationality	number of students	Chinese language entrance level	languages mastered
Pakistan	9	Hsk2-hsk3	Urdu, English
Belarus	1	Hsk1	Russian, English
Kazakhstan	3	Hsk2	Russian, Kazakh
Kyrgyzstan	1	zero foundation	Russian, Kyrgyz
Cameroon	1	Hsk3	English
Kenya	1	zero foundation	English
Tajikistan	2	Hsk3	Russian

Northwest Normal University, we found that the motivations for learning Chinese among the international students show a trend of diversification. Cultural exchange and personal interest are the main drivers, accounting for 35.29% and 17.65% respectively, indicating the desire of the international students to gain a deep understanding of Chinese culture and enrich their personal life experiences through learning Chinese. Work-related needs also constitute an important motivation, accounting for 29.41%, reflecting the role of Chinese as a practical skill in enhancing job competitiveness. Academic research accounts for 17.65%, but is relatively low, which may suggest that the international student group in this class has other focuses in terms of academic pursuits. It is noteworthy that the interest in tourism is not a primary motivation, which may imply that the international students in this class view Chinese learning as a tool for academic and professional development rather than just for tourism activities. These findings provide important references for educational institutions and the optimization of Chinese teaching strategies.



2.2 Evaluation and Improvement Strategies for the Textbook "Developing Chinese 1"

In the practice of teaching Chinese as a foreign language, the textbook "Developing Chinese 1" has been widely recognized by both teachers and students for its practicality. The survey results show that the textbook has received very high ratings for its practicality, with 52.94% of teachers and students considering it "very practical," and another 41.18% finding it "quite practical," indicating that the textbook has significant practical value in foreign language Chinese teaching. The content of the textbook is closely linked to real-life situations, with over 82% of respondents expressing satisfaction with this aspect, showing that the textbook has successfully integrated with students' learning and living experiences. In terms of the difficulty level of Chinese characters, 82.35% of respondents believed the difficulty level was "just right," indicating that the textbook's setting of character difficulty has been widely recognized by learners. The difficulty level of vocabulary settings also received recognition from over two-thirds (70.59%) of respondents who found it "just right," but still 29.41% of respondents thought the vocabulary difficulty was "too difficult," suggesting that the developers of the textbook may need to consider fine-tuning the vocabulary difficulty or providing additional resources. The difficulty level of grammar and example sentences received recognition from 76.47% of respondents who found it "just right," but still about 20% of respondents were dissatisfied with the difficulty, suggesting the need for more difficulty content and a richer variety of auxiliary exercises and examples. The exercises and homework designs in the textbook received positive evaluations from over 70% of respondents who found them "quite effective," indicating that these exercises and homework play a significant role in promoting learning outcomes. Overall, the textbook has been widely recognized by learners for its contribution to improving learning outcomes, but there is still room for improvement, such as further optimizing the vocabulary difficulty, adding difficulty content, and continuously refining the textbook content to meet the needs of different learners.

2.3 Customization and Optimization of Teaching Content

To make the textbook "Developing Chinese 1" more closely aligned with the actual needs of learners, we have conducted comprehensive customization and optimization of the teaching content. Firstly, we have strengthened the connection between the textbook and real-life situations by selecting dialogues and cases that are close to daily life, introducing authentic real-life images and video materials, and integrating interdisciplinary content such as introducing Chinese traditional festivals and customs to enhance learners' language application skills and cultural understanding. In teaching activities, we have organized field trips and community service projects, as well as group discussions and debates to improve students' language practice abilities and critical thinking skills. At the same time, we have developed online platforms and compiled cultural handbooks to enrich learning resources and broaden the horizons of learners.

2.4 Innovation in the Teaching of Characters, Vocabulary, Grammar, and Exercises

In the teaching of Chinese characters, we have implemented a strategy of difficulty grading and introduced character writing software and applications, as well as held character writing competitions to optimize character teaching. Vocabulary teaching has been enhanced through vocabulary fine-tuning, vocabulary games and competitions, and personalized tutoring services to improve students' vocabulary learning efficiency. Grammar and example sentence teaching has adopted strategies of difficulty grading and example sentence diversity, deepening students' understanding and application of grammatical knowledge through examples in different contexts and multimedia resources. In addition, we have strengthened the design of exercises and homework, designed comprehensive exercises covering all language skills, introduced project-based learning, and provided a range of homework options at different difficulty levels to comprehensively enhance students' language abilities.

3. Teaching Practice Case and Analysis

3.1 Case 1: Cultural Teaching Integrated with Innovative Methods Spikes Russian Students' Interest in Chinese Culture

For international students from Belarus, Kazakhstan, and Kyrgyzstan who are native Russian speakers, a teacher designed a personalized cultural teaching plan that combined traditional and modern teaching methods, aiming to help students gain a deeper understanding of Chinese culture. Considering that the students' Chinese proficiency is approximately HSK level 1 and they are interested in the culture of western China, the content focused on local culture in Gansu province and connected it with modern cultural symbols. In the teaching activities, the teacher introduced the cultural component by showing the Luckin Coffee logo, using the animation "The Nine-Colored Deer" to explain the symbolic meanings in Chinese beliefs, and combining it with the Chinese character " 麗 " to explain the beauty and auspiciousness of the deer. Additionally, the teacher used artificial intelligence technology to generate a story about the Nine-Colored Deer and to edit and replace the text to suit the students' Chinese level. Digital Dunhuang interactive games and AI-assisted homework further ignited the students' interest in learning and exercised their Chinese search and self-learning abilities. Through these innovative methods, the teacher not only expanded the content of teaching but also optimized the students' Chinese language proficiency, significantly improving their learning efficiency and interest, bringing significant learning outcomes for both teachers and students.

The "One-Sample Test" table indicates that both pretest and post-test scores significantly differ from zero, with the post-test showing a larger mean difference of 7.400 (95% CI: 5.52-9.28) compared to the pretest's 4.000 (95% CI: 2.04-5.96), suggesting a more substantial change following the intervention. The t-values of 5.657 and 10.911, along with significance levels below.001, further confirm these significant differences.

Name	A	B	C	D	E
pre-test scores	4	5	3	6	2
post-test scores	7	8	8	9	5

One - Sample Test Test Value = 0						
	Degrees of Freedom	Significance (Two - tailed)	Mean Difference	Lower	Upper	Degrees of Freedom
Pretest Scores	5.657	4	.005	4.000	2.04	5.96
Post - test Scores	10.911	4	<.001	7.400	5.52	9.28

3.2 Case 2: Comprehensive Teaching System Construction Helps English Background Students Improve Chinese Language Skills

For 11 students from Pakistan, Cameroon, and Kenya with an English language background, a teacher constructed a comprehensive

teaching system using the "Developing Chinese" textbook, artificial intelligence-assisted learning platforms, multimedia resources, and vocabulary cards, aiming to help them transition from basic vocabulary to in-depth grammar understanding. Interactive and task-based learning strategies, such as group discussions, role-playing, and simulated real-life scenarios, were employed to allow students to use Chinese in actual contexts. The introduction of artificial intelligence tools provided personalized learning and immediate feedback, effectively enhancing learning efficiency. At the same time, through character learning, cultural games, and regular oral practice, the teacher not only strengthened students' grammatical knowledge but also enhanced their cultural understanding and learning interest. This comprehensive teaching program not only improved students' Chinese language skills but also created an engaging and efficient learning environment for them.

Using SPSS, the analysis revealed that both pre-test and post-test scores significantly differ from 0 at a 99% confidence level, with the post-test showing a more substantial improvement of 7.545 points over the pre-test's 3.818-point increase.

Name	A	B	C	D	E	F	G	H	I	J	K
pre-test scores	3	4	3	5	2	6	3	3	4	5	4
post-test scores	8	8	7	9	5	9	7	5	8	8	9

One - Sample Test Test Value = 0						
	Degrees of Freedom	Significance (Two - tailed)	Mean Difference	Lower	Upper	Degrees of Freedom
Pretest Score	10.844	10	<.001	3.818	3.03	4.60
Post - test Score	17.382	10	<.001	7.545	6.58	8.51

In the above cases, through a combination of literature review and empirical research methods, we have deeply analyzed the latest developments in international Chinese education and the academic achievements of students. We have found that the use of textbooks such as “Developing Chinese,” artificial intelligence-assisted learning platforms, multimedia resources, and personalized teaching strategies has not only significantly improved students’ exam scores but has also led to positive progress in their engagement, learning habits, knowledge understanding, cultural interest, learning motivation, and self-confidence.

Especially, personalized teaching strategies, through customized learning plans and the assistance of artificial intelligence technology, have allowed students to learn flexibly according to their own needs, effectively enhancing learning efficiency, and achieving excellent results in the HSK Level 4 exam. The integration of artificial intelligence technology has not only provided immediate feedback and intelligent recommendations but has also promoted the innovation of teaching methods and enriched the learning experience.

4. Challenges and Issues

In the fast-evolving educational technology landscape, challenges like limited personalization, diminished critical thinking, and cultural adaptation affect international students' Chinese language learning. Data privacy concerns and the need for teacher transformation to facilitators also arise. To address these, we must refine teaching strategies: train teachers in technology, prioritize student-centered learning, enhance teaching design, provide ongoing professional development, and foster innovation. This will create a flexible, innovative, and effective educational system that benefits teachers and students, promoting equity and catering to diverse learning needs, enabling students to overcome challenges and achieve comprehensive Chinese language proficiency while integrating into Chinese culture.

5. Conclusion

This article, through in-depth analysis of Chinese language teaching cases across different cultural backgrounds, reveals the necessity of integrating traditional teaching with modern technology and its significant effectiveness in improving students' pronunciation, learning efficiency, cultural identity, and practical language abilities. The summary of the project's results shows that combining traditional teaching with modern technology, implementing personalized teaching, incorporating cultural experiences, and utilizing technological assistance is the trend in Chinese language teaching. The future requires exploring the development of learning tools based on artificial intelligence, the integration of interdisciplinary teaching, the enhancement of cultural exchanges, and the continuous assessment of teaching effectiveness.

The future prospects of artificial intelligence technology in international Chinese education are full of potential, and it is expected to play a key role in personalized learning, intelligent teaching resources, and intelligent assessment, driving the transformation of educational models, improving teaching efficiency and quality, and providing global learners with personalized and efficient learning experiences. Despite facing challenges such as equity and inclusivity, the rational use of artificial intelligence technology will help to make the teaching of Chinese to foreign learners more prosperous and diverse, bringing rich, efficient, and interesting learning experiences to global Chinese language learners.

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