Educational Technology Competence of International Chinese Language Teachers in Confucius Institutes in Central Asia

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| ABSTRACT:  **Aims:** The study aims to investigate the educational technology competence of international Chinese language teachers in Confucius Institutes in Central Asia.  **Study design:** This research utilized a questionnaire survey, complemented by individual interviews, to examine the proficiency in the application of educational technology among educators at Confucius Institutes in Central Asia.  **Methodology:** A total of 46 participants involved in the study. A self-designed questionnaire, complemented by interviews, was used to collect data. The software SPSS 27.0 was used to analyze the data.  **Results:** Analysis of 46 valid responses yielded the following conclusions: inadequate teaching resources and a lack of proactive learning engagement in participants’ Awareness and Attitude, a notable gap between participants’ theoretical understanding and their practical competencies in their Knowledge and Skill, and a strong legal awareness and a sense of social responsibility in their Social Responsibility. International Chinese language instructors at these institutes exhibit a high level of appreciation for educational technology. Nevertheless, their comprehension of the application of such technology within the context of international Chinese language education is inadequate, and their understanding of localized resource development is somewhat limited. The teachers surveyed have acquired fundamental information-based teaching methodologies; however, the range of teaching technologies they employ remains relatively narrow.  **Conclusion:** To enhance the educational technology competencies of international Chinese language teachers at Confucius Institutes in Central Asia, several strategies are recommended, including the enhancement of educational technology training programs, the refinement of assessment and evaluation frameworks, the expansion of learning opportunities, and the promotion of self-improvement initiatives. |

*Keywords: Central Asia, Confucius Institute, Educational Technology, International Chinese Language Teacher*

1. INTRODUCTION

The advancement of science and technology has led to the widespread integration of modern information technologies, such as 5G, the Internet of Things, and big data, into various aspects of social life. There is a growing consensus regarding the importance of leveraging information technology to facilitate educational development and enhance learning experiences. In this context, China has introduced several guiding documents, including the *13th Five-Year Plan for Educational Informatization*, *Educational Informatization 2.0 Action Plan*, *Implementation Plan for Accelerating the Modernization of Education (2018-2022)*, *China’s Education Modernization 2035*, and T*eachers’ Digital Literacy*.

On October 16, 2022, the 20th National Congress of the Communist Party of China convened, during which the Congress report emphasized the need to “advance the digitalization of education and build a learning society and a learning nation for lifelong learning for all”. This report integrates the concepts of “education”, “science and technology”, and “talent” into a cohesive framework for coordinated planning and implementation. Notably, this marks the first instance of “advancing the digitalization of education” being included in an official report, thereby establishing a clear action plan for the future of educational digitalization. Educational technology serves as a critical instrument for educational informatization, influencing not only the macro-development of education aimed at the rejuvenation of the Chinese nation but also supporting the comprehensive advancement of international Chinese language education both domestically and abroad.

In response to the evolving demands of international Chinese language education, the International Society for Chinese Language Teaching (ISCLT) introduced the Professional Competence Standards for International Chinese Language Teachers (hereafter referred to as the “New Standards”) on August 26, 2022. These standards aim to standardize the principles governing the cultivation, training, competence evaluation, and professional development of international Chinese language educators. The New Standards represent a significant update from the 2012 version of the Standards for Teachers of Chinese to Speakers of Other Languages (hereafter referred to as the “Old Standards”). In contrast to the Old Standards, which emphasized a basic understanding and application of modern educational technology, the New Standards provide a more systematic and comprehensive framework. They encompass various aspects of educational technology, including information-based teaching methodologies, the production of teaching resources, localized resource development, and online classroom management, while also prioritizing the cultivation of Chinese language teachers with innovative capabilities, professional competence, and ethical literacy.

Central Asia, positioned as a pivotal region within the “Belt and Road” initiative, is a key area for the development of international Chinese language education. Enhancing the educational information technology competence of international Chinese language teachers in Central Asia is essential not only for elevating the quality of Chinese language instruction in the region but also for advancing the objectives of the “Belt and Road” initiative. Therefore, it is imperative to investigate the educational information technology competence of teachers in Confucius Institutes located in Central Asia, assess whether their competencies align with job requirements, and identify strategies for further enhancement of their information technology skills. These issues warrant increased attention from educational authorities and researchers.

2. Literature Review

Educational technology has its origins in fundamental methods facilitated by traditional tools such as blackboards, chalk, books, and oral communication. A significant turning point in the evolution of educational technology occurred with the emergence of the “Visual Instruction” movement in the United States. By the early 1960s, influenced by advancements in communication theory, behavioral science, and systems theory, a distinct field of “Educational Technology” began to take shape within American education. The Association for Educational Communications and Technology (AECT) articulated educational technology as the theoretical and practical framework for the design, development, utilization, management, and evaluation of processes and resources aimed at enhancing learning [1]. This definition encapsulates the comprehensive application of scientific and technological principles in educational contexts. The focus of educational technology has shifted from the educator as the primary authority in the classroom to the active learner, who engages with and integrates external resources and information. Subsequent definitions provided by the AECT [2] have included ethical considerations, emphasizing that contemporary technology must not exist in isolation from the human experience. As a social practice that pertains to human development, modern technology should be oriented towards serving and enhancing human social characteristics and ideologies.

The existing literature on the integration of information technology in educational practices can be broadly classified into four categories. The first category investigates the demands that new learning models, informed by information technology, impose on teaching methodologies and learners [3-4]. The second category focuses on the implementation of innovative teaching models within specific disciplines, including language education [5], mathematics education [6], and STEM education [7]. The third category assesses the effectiveness of these new teaching models, with findings dispersed across various academic journals dedicated to educational technology. The fourth category addresses the development of teacher competencies in the context of information technology [8-10].

Research on educational technology in China commenced relatively late in comparison to other fields. From the early 1920s until the late 1940s, the influence of foreign audiovisual education led to the emergence of electrified education, a precursor to educational technology, which was implemented in various educational experiments across select Chinese cities and regions. The mid-to-late 1980s marked a significant transformation in the integration of science and technology within the education sector, spurred by rapid advancements in network and communication technologies and the emergence of the “Revitalizing the Nation through Science and Education” ideology. During this period, electrified education was rebranded as educational technology, and in 1993, it was officially incorporated into the undergraduate major catalog of higher education institutions by the State Education Commission.

Research pertaining to educational technology within the realm of international Chinese language education began even later. Existing authoritative studies can be categorized into three primary areas: the first investigates the definition of teachers’ information technology competence [11-12]; the second examines the demands that information technology imposes on teaching practices and teacher development [13-14]; and the third focuses on strategies to enhance teachers’ information technology competence [15-16].

Scholars have engaged in comprehensive research on education and pedagogy in the context of modern information technology, yielding substantial findings that provide a foundation for a deeper understanding and further advancement of teachers’ information technology competence. However, it is noteworthy that the majority of existing research has concentrated on teachers with high levels of information technology competence, with insufficient attention given to the information technology skills of average teachers. In particular, there is a dearth of research addressing the educational information technology competence of teachers at Confucius Institutes.

In recent years, the global phenomenon known as “Chinese Language Fever” has led to a significant increase in the demand for international Chinese language educators. The ability to deliver high-quality Chinese language instruction to learners across various countries through the use of information technology has emerged as a critical factor influencing the international dissemination of Chinese language education. The evolving social landscape necessitates that international Chinese language teachers possess a high level of information technology competence. Consequently, the assessment of educational information technology competence among Confucius Institute teachers, their adaptability to contemporary societal demands, and strategies for enhancing their information technology skills have become pressing concerns for educational authorities and organizations involved in the promotion of international Chinese language education..

3. Methodology

The research utilized a questionnaire survey, complemented by interviews, to gather data regarding the proficiency in educational technology among international Chinese language educators at Confucius Institutes in Central Asia. The study investigates both the utilization and challenges associated with educational technology, and, in conjunction with the most recent Professional Competence Standards for International Chinese Language Teachers published by the ISCLT, it seeks to identify strategies for improving educators’ competencies in this area.

**3.1 Instrument**

The study developed the Questionnaire on Educational Technology Competence of International Chinese Language Education Teachers (hereinafter referred to as the “Questionnaire”) by referencing the New Standards and other nationally issued documents pertaining to teacher professional competence standards. The Questionnaire encompasses three dimensions. The first dimension evaluates participants’ attitudes and awareness, including their recognition of the significance of educational technology, the necessity of resource development, and their innovative mindset regarding resource creation. The second dimension focuses on the participants’ knowledge and skills, particularly in selecting information-based teaching methodologies and utilizing online teaching resources. The third dimension assesses the legal awareness and social responsibility that participants should possess concerning information technology. Each dimension of the Questionnaire comprises multiple-choice questions, with response options formatted on a Likert five-point scale: A (Strongly Agree/Complies), B (Agree/Complies), C (Neutral), D (Disagree/Does Not Comply), and E (Strongly Disagree/Does Not Comply at all). Following the initial design of the questionnaire by the research team, a pilot survey was conducted on a limited scale. The analysis of the pilot survey data yielded an Alpha coefficient of 0.864, indicating a satisfactory level of reliability for the questionnaire. Validation by experts further confirmed the questionnaire’s appropriateness for assessing the educational technology competence of teachers.

**3.2 Research Participant**

International Chinese language educators were randomly selected from Confucius Institutes in Central Asia to participate in the survey. The inclusion criteria were as follows: 1) individuals currently or previously employed at a Confucius Institute in Central Asia; 2) individuals engaged in international Chinese language teaching or management; and 3) individuals willing to participate in the survey. The exclusion criteria included: 1) individuals whose work experience was not directly related to Confucius Institutes in Central Asia; 2) individuals who are not professional educators in international Chinese language education; and 3) individuals unwilling to participate in the survey. Ultimately, 46 qualified participants completed the survey, comprising 12 males and 34 females. Approximately 36 participants held a master’s degree or higher, while 10 possessed other qualifications. Additionally, 14 participants held senior professional titles, whereas 32 held intermediate or lower titles.

**3.3 Research Process**

Subsequent to the design of the questionnaire, the research team distributed it on a small scale for preliminary testing. Revisions were made based on the results and feedback obtained before the final distribution. Upon completion of the final data collection, the research team evaluated the results from the valid questionnaires, assigning numerical values from 5 to 1 for options A to E, respectively. Following this value assignment, SPSS 27.0 was employed for statistical analysis to assess the educational technology competence of international Chinese language educators.

To gain insights into the application of educational technology among these educators and to mitigate potential information bias during quantitative data analysis, individual interviews were conducted. Participants were selected based on preliminary data statistics to ensure representativeness. The interview questions addressed topics such as the perceived relationship between educational technology and international Chinese language education, the frequency of participation in educational technology training, experiences in employing educational technology for Chinese language instruction, technical challenges encountered in teaching practice, and perspectives on the development of teachers’ educational technology competence. These interviews were conducted via telephone and were recorded, with detailed written notes taken concurrently.

4. results

This study, drawing upon the indicator system for educational technology competence outlined in the Professional Competence Standards for International Chinese Language Teachers, categorizes the educational technology competence of international Chinese language educators into three distinct dimensions: Awareness and Attitude, Knowledge and Skills, and Social Responsibility.

**4.1 Awareness and Attitude**

Awareness and attitudes are indicative of an individual’s internal sentiments and fundamental intentions, serving as critical dimensions for evaluating teaching efficacy and potential for professional growth. Survey data reveal that 56.4% of respondents either strongly agreed or agreed with the statement, “I understand the application and developments of cutting-edge technologies in international Chinese language education”, while 30.6% reported a general awareness of this topic. Furthermore, approximately 91.9% of participants expressed strong agreement or agreement with the assertion that “I understand and recognize the fundamental role of educational technology in Chinese language teaching”. A significant 95.2% of respondents also affirmed the importance of educational technology in this context. Additionally, 67.7% of participants indicated that they possess the awareness necessary to integrate information technology into Chinese language instruction.

In terms of recognizing the significance of resource development, 75.8% of participants strongly agreed or agreed that “I can recognize the importance of compiling localized teaching materials”. Similarly, 66.1% acknowledged the importance of establishing a localized test bank, while 70.9% recognized the necessity of creating a localized case database. Furthermore, 69.3% of respondents affirmed the importance of developing localized teaching methods, and 77.4% recognized the value of building a professional teaching team.

Regarding innovative awareness in resource development, 46.7% of participants strongly agreed or agreed that “I have innovative awareness in compiling localized teaching materials”. Additionally, 51.6% expressed similar sentiments about establishing a localized test bank, while 54.8% indicated innovative awareness in creating a localized case database. Approximately 53.2% of respondents affirmed their innovative awareness in developing localized teaching methods, and 48.4% reported having innovative ideas for enhancing the professional capabilities of educators. An analysis of the average values and standard deviations concerning participants’ innovative awareness across the five domains of localized resource development (teaching materials, test banks, case databases, teaching methods, and teacher team building) suggests that the innovative awareness of international Chinese language teachers in localized resource development is relatively low.

The data presented indicate that a significant majority of international Chinese language educators acknowledge the critical role of educational technology in the instruction of the Chinese language. A consensus exists among these educators regarding the necessity of developing localized resources, which they identify as fundamental to the practice of international Chinese language teaching. However, it is noteworthy that nearly half of the respondents exhibit a lack of innovative awareness concerning the development of localized resources.

In conjunction with the findings from interviews, the study reveals that the institutions employing these international Chinese language teachers have not facilitated training in educational technology. Furthermore, relevant international Chinese language journals and publications seldom address this topic, and the educators themselves have not actively pursued information or advancements related to localized resource development within the context of international Chinese language education. Several participants reported that since the commencement of their employment, they have not engaged in any training aimed at enhancing their cognitive or professional competencies. Their current understanding of resource development appears to be confined to teaching materials, instructional aids, and multimedia tools.

Overall, the combination of inadequate teaching resources and a lack of proactive learning engagement has resulted in participants receiving limited information and knowledge regarding localized resource development. Consequently, their insufficient cognitive frameworks hinder their ability to generate innovative ideas for resource development.

**4.2 Knowledge and Skill**

The acquisition of knowledge and skills is essential, serving as critical benchmarks for evaluating a teacher’s professional competence. A disregard for foundational theoretical knowledge in educational technology impedes the ability to trace its origins and elucidate its principles. Similarly, neglecting the practical application of educational technology obstructs the translation of theoretical knowledge into practice, thereby hindering the enhancement of a teacher’s overall professional competence.

In terms of selecting information-based teaching methods, 77.5% of participants either strongly agreed or agreed with the statement, “I can select appropriate information-based teaching methods based on teaching objectives”. Approximately 80.7% of participants expressed strong agreement or agreement with the assertion, “I can select appropriate information-based teaching methods based on teaching content”. Furthermore, around 74.2% of participants indicated strong agreement or agreement with the statement, “I can select appropriate information-based teaching methods based on learners’ demographic information, such as gender, age, and nationality”.

Regarding the application of information-based teaching methods, 64.6% of participants strongly agreed or agreed that “I understand and master the usage of information-based teaching equipment”. About 62.9% of participants affirmed that “I possess the information technology required for international Chinese language education”. Additionally, approximately 80.7% of participants strongly agreed or agreed that “I possess the ability to design and produce teaching courseware”. Similarly, 80.6% of participants indicated strong agreement or agreement with the statement, “I can independently search for materials, collect data, and select online teaching resources”. Furthermore, 80.6% of participants affirmed that “I possess the ability to apply online teaching resources to actual teaching”. However, only 56.5% of participants strongly agreed or agreed that “I have systematically learned relevant skills for using online platforms to conduct online and blended Chinese language teaching”, while 67.7% expressed strong agreement or agreement with the statement, “I possess the ability to independently use online platforms to conduct online and blended Chinese language teaching”.

Interview findings indicate that a majority of participants believe they have acquired the skills necessary for designing and producing teaching courseware, as well as integrating various teaching materials, including images, videos, and audio. The teaching materials utilized are predominantly sourced directly from search engines. Participants reported that the absence of professional, standardized teaching resources, coupled with the complexity of online resources, results in a considerable amount of time being consumed in the processes of searching for, collecting, and selecting online resources during courseware production. Typically, the time allocated for courseware creation exceeds twice that of lesson plan preparation. Although there are numerous visually appealing animation and video software options available, such as Laihua and Wan Cai Animation, the production time required for these tools significantly surpasses that of PowerPoint. Consequently, all participants indicated a preference for PowerPoint as their primary choice for teaching courseware. Nearly half of the participants reported having engaged in training related to the use of online platforms for blended teaching, with Tencent Meeting and DingTalk being the most frequently utilized platforms. All participants acknowledged the convenience and applicability of these platforms, noting that their functionalities adequately meet the demands of online teaching.

This study identified a notable gap between participants’ theoretical understanding and their practical competencies. Specifically, the proportion of participants who had received systematic training in the use of online teaching platforms was 11.2% lower than those who demonstrated the ability to utilize these platforms effectively. Several participants indicated that their respective universities did not provide professional development in educational technology, and the technical skills they currently possess were acquired gradually through experiential learning. When queried about their expectations for professional training, participants expressed the view that educational technology, as a product of societal advancement, holds an indispensable role in various domains, including politics, economics, and particularly education. While traditional offline teaching methods are unlikely to be entirely supplanted, the integration of online and offline teaching modalities is an undeniable trend. Participants expressed a desire for universities to promptly integrate educational technology into their teacher training development plans, advocating for training modules that are more closely aligned with the specific needs of the international Chinese language education major, building upon traditional computer courses to effectively enhance their pedagogical competencies.

**4.3 Social Responsibility**

Science and technology serve as a dual-edged sword in contemporary education. While educators benefit from advancements in technological innovations characteristic of the information age, such as internet technology and artificial intelligence, they concurrently encounter challenges including privacy breaches, unauthorized surveillance, and conflicts of interest. The Chinese adage, “High learning makes a teacher, while upright character sets a model”, encapsulates not only the essential knowledge and competencies of educators but also serves as a guiding principle that all teachers should strive to embody.

Data collected from the study revealed that 79.1% of participants either strongly agreed or agreed with the statement, “I am aware of the importance of protecting intellectual property rights and can strictly comply with intellectual property laws”. Furthermore, approximately 91.9% of participants expressed strong agreement or agreement with the assertion, “I am aware of the importance of respecting others’ informational rights and can establish a good sense of responsibility.” Additionally, around 96.7% of participants affirmed their awareness of the significance of information security and demonstrated a commendable understanding of information protection. These findings suggest that a substantial majority of participants exhibit a strong legal awareness and a sense of social responsibility.

**4.4 International Chinese Language Teachers’ Educational Technology Competence**

This study aimed to investigate and analyze the educational technology competencies of international Chinese language teachers at Confucius Institutes in Central Asia, focusing on three dimensions: Awareness and Attitude, Knowledge and Skills, and Social Responsibility. The analysis yielded several key findings.

Firstly, participants demonstrated a high level of recognition regarding the fundamental role and importance of educational technology in the instruction of the Chinese language, acknowledging that information technology can significantly enhance the development of Chinese language education and facilitate effective teaching practices.

Secondly, participants exhibited notable deficiencies in their understanding of the application of educational technology within international Chinese language education and the development of localized teaching resources, attributed to factors such as inadequate teaching resources and a lack of proactive learning engagement. This cognitive bias restricts the advancement of their innovative thinking.

Thirdly, while most participants were capable of selecting appropriate information-based teaching methods tailored to specific teaching contexts and possessed the necessary technical competencies for practical instruction, their overall technical proficiency was found to be limited. The range of educational technologies employed was minimal, primarily confined to basic courseware creation and online resource retrieval. This limitation can be traced back to insufficient emphasis on these competencies within university training programs and a lack of awareness among teachers regarding the importance of self-directed learning.

Lastly, the majority of participants exhibited a commendable level of legal awareness and social responsibility, particularly demonstrating heightened vigilance concerning information security. This awareness can be attributed to the increasing dissemination of information security knowledge and a growing emphasis on personal safety.

5. Discussion: Strategies for Enhancing International Chinese Language Teachers’ Educational Technology Competence

The findings of the survey indicate the level of educational informatization technology competence among international Chinese language instructors at Confucius Institutes in Central Asia is at the medium level, which are similar to some previous studies [17-18]. The responsibilities of international Chinese language teachers at Confucius Institutes are to transfer Chinese language internationally, which requires them to have high levels of educational informatization technology competence. Thus, it is an urgent task to improve their educational informatization technology competence. In light of these results, the study provides several recommendations and strategies for improvement based on the theory of Communities of Practice [19], addressing both institutional and individual dimensions, aimed at enhancing the educational technology competence of these educators.

**5.1 Transforming Educational Concepts, Optimize Talent Cultivation Programs**

The inadequacies present in university teacher training programs have resulted in a subset of educators lacking essential professional training, possessing a limited understanding of advancements in educational technology, and requiring further development of their competencies in this area. Many universities’ training initiatives for instructors of international Chinese language education fail to adequately highlight the beneficial role of information technology in the teaching of the Chinese language. This shortcoming is evidenced by insufficient training duration, a narrow scope of training content, a lack of supporting technical resources, and, in some cases, the complete absence of relevant training programs. The absence of a comprehensive training framework inevitably results in educators overlooking the importance of educational technology. Consequently, it is imperative for universities to promptly reevaluate their teacher training philosophies and enhance their training programs.

To facilitate the advancement of these programs, several recommendations are proposed. First, institutions should prioritize the enhancement of their educational technology training initiatives by incorporating dedicated courses, extending the duration of training, and refining the content offered. Educational technology should be understood not merely as a mechanical amalgamation of technology and pedagogy, but rather as a systematic integration of diverse methods and tools utilized in educational contexts. The training duration should encompass a minimum of 32 class hours, and the content should address the comprehensive process of Chinese language instruction, including the utilization of information-based teaching tools, the retrieval and curation of online educational resources, the design and development of instructional materials, and the implementation of blended learning approaches. Additionally, it is crucial to foster innovative thinking among educators, acknowledge individual differences, encourage the integration of creativity with practical application, and guide teachers in enhancing their self-directed learning capabilities.

Second, institutions must adapt to evolving policy frameworks and enhance their assessment and evaluation systems. The New Standards delineate the certification criteria for educational technology competence into two distinct categories: information-based teaching proficiency and the ability to utilize online resources effectively in teaching. It is imperative for universities to utilize the New Standards as a framework for developing assessment and evaluation methodologies that align with their resource capabilities, faculty expertise, and strategic objectives. Establishing phased assessment plans is essential for gauging the educational technology proficiency of international Chinese language educators. Moreover, institutions should identify existing gaps and offer customized support based on the outcomes of these assessments at various stages, thereby providing technical and resource assistance to educators. Additionally, it is crucial to evaluate whether teachers have internalized fundamental theoretical knowledge and possess the capacity to independently implement educational technology in their pedagogical practices. Lastly, institutions should implement a peer evaluation system whereby educators assess one another in accordance with the New Standards, facilitating objective evaluations of strengths and weaknesses and promoting collaborative learning and collective advancement among faculty members.

Furthermore, institutions are urged to enhance financial and technical investments while expanding training opportunities for educators. In the contemporary landscape, information is a fundamental requirement for progress in any discipline, and the ability to leverage information necessitates the collection and mastery of extensive data. It is advisable for universities to increase their financial and technical resources to provide educators with a variety of training avenues. For instance, institutions could organize sessions for teachers to engage with the latest official documents pertaining to educational informatization and the New Standards issued by the ISCLT, invite expert educators to deliver lectures on the application of educational technology in international Chinese language instruction, and establish information exchange platforms to foster resource and information sharing among teachers. By bolstering information and knowledge reserves, institutions can broaden perspectives, transform cognitive approaches, stimulate innovative thinking, and ultimately contribute to the development of a high-quality Chinese language teaching workforce.

**5.2 Reevaluating the Concept of Educational Technology and Fostering Self-Improvement Awareness**

Educators serve as conduits of knowledge while simultaneously engaging in lifelong learning. In the context of the information age, it is imperative for teachers to remain cognizant of contemporary developments, actively investigate the vast potential of emerging technologies in educational settings, and enhance their theoretical understanding, practical skills, and innovative application capabilities. They should leverage fragmented time for continuous learning and reinforce their professional competencies. Beyond acquiring specialized knowledge in areas such as linguistics, language acquisition, classroom management, and cultural awareness, educators must also prioritize the timely enhancement of their information technology skills. Active participation in teaching practices and competitive activities is essential, as is the concurrent development of theoretical knowledge and practical abilities.

6. Conclusion

With the rapid advancement of multimedia smart devices and online communication platforms, the integration of educational technology with language instruction has deepened, leading to the emergence of diverse and multifaceted classroom models, including live streaming teaching, MOOCs, micro-courses, and flipped classrooms. The new generation of educators must adapt to these evolving pedagogical philosophies and learning paradigms, learning to effectively integrate online and offline instructional support. Moreover, it is crucial for teachers to acknowledge the significance of self-improvement and to enhance their competencies in educational technology. Higher education institutions should promptly initiate reforms in talent cultivation programs for international Chinese language education, enhance the development of information platform resources, and support the professional growth of international Chinese language educators.

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Authors’ Contributions

Chunlin Yao designed the study, performed the statistical analysis, wrote the protocol, and wrote the first draft of the manuscript. Beibei Wang collected the data. All authors read and approved the final manuscript.

Consent (where ever applicable)

The authors declared that ‘written informed consent was obtained from participants for publication of this article and accompanying images. A copy of the written consent is available for review by the Editorial office/Chief Editor/Editorial Board members of this journal.

Ethical approval (where ever applicable)

The studies involving humans were approved by Ethics Committee of Siyue Educational and Technological Institute (SETI 2024008). The studies were conducted in accordance with the local legislation and institutional requirements.

**Disclaimer (Artificial intelligence)**

The authors hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

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