Research on the Path of Digital Empowerment for College English Teaching in Higher Institutions of Chinese Medicine

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Abstract: The global dissemination of Chinese medicine culture is inevitably confronted with the challenge of overcoming language barriers. As the cradle for nurturing Chinese medicine talents, higher Chinese medicine colleges bear a significant responsibility to adapt to contemporary demands and seize digital opportunities to innovate English teaching models. This paper proposes an approach to exploring teaching reform and conducts a teaching experiment using freshman students at Chongqing University of Chinese Medicine as research subjects. Through English proficiency tests, questionnaire surveys, and interviews, the effectiveness of the teaching method is evaluated. The results indicate that college English teaching in Chinese medicine colleges enhanced by digital capabilities has a significant impact; however, the outcomes among students in the experimental group are markedly differentiated. The paper further suggests strategies for optimizing the college English teaching pathway in digitally enabled Chinese medicine colleges to support the cultivation of Chinese medicine composite talents.

***Keywords*:** digital empowerment; college English teaching; colleges of Chinese medicine

1. Introduction

As a repository of historical and cultural heritage, Chinese Medicine plays an indispensable role in the development of medical science that cannot be fully substituted by Western medicine. In the context of accelerating globalization, Chinese Medicine is experiencing a trend towards internationalization. It is a challenging yet crucial task for Chinese medicine institutions of higher education to cultivate professionals who possess not only a solid foundation in English but also proficient oral communication skills and specialized knowledge of Chinese medicine terminology. Reforming the Chinese medicine English teaching model can significantly enhance teaching quality while equipping students with a robust understanding of medical English terminology, thereby meeting China's growing demand for Chinese medicine professionals with strong English proficiency.

In the traditional English teaching model, students rely on rote memorization to learn medical English terminology, which significantly impairs learning quality and efficiency. After the implementation of the reformed teaching approach, students are able to acquire vocabulary more rapidly and achieve better results with less effort. A survey of international students revealed that while they face no significant challenges in daily English communication, they encounter considerable difficulty in comprehending professional courses, with the primary obstacle being the specialized terminology in English for Chinese Medicine. The reform of Chinese Medicine English teaching methods is not only an essential means to meet the demands of Chinese medicine English education but also a critical measure to enhance the overall quality of Chinese Medicine English instruction.

Digital Empowerment refers to the application of exponential technologies, such as big data, cloud computing, and artificial intelligence, in the realm of education. It signifies the profound integration of information technology with educational practices [3]. Digital Empowerment in teaching involves the redesign, transformation, and innovation of traditional educational methods through modern information technology, thereby meeting the demands of talent cultivation in the contemporary era. Consequently, this paper proposes exploring strategies and measures for enhancing college English instruction at higher Chinese medicine institutions via digital empowerment. This approach aims to provide students with a wealth of diverse learning resources through information platforms and online tools, leverage artificial intelligence and big data analytics to collect, process, and analyze student learning data, and ultimately offer personalized learning services.

2. Path Exploration

2.1 The preparation phase before class

The pre-class preparation stage comprises four key components: developing learning materials, distributing learning

resources, monitoring online learning progress, and collecting student feedback. 1) Developing learning materials involves creating PowerPoint presentations tailored to the textbook content and students' learning needs prior to formal instruction. 2) Distributing learning resources entails providing relevant materials and assigning tasks one week in advance through announcements. 3) Monitoring online learning progress allows teachers to track students' advancement using digital platforms, ensuring timely completion of preparatory work and issuing reminders for upcoming previews. 4) Collecting student feedback through assessments helps both students gauge their understanding and teachers evaluate the effectiveness of the preview, thereby refining classroom instruction and enhancing educational quality.

2.2 Classroom Stage

In the classroom stage, digital technology can facilitate several key functions: attendance verification, common question answering, interactive communication via bullet-screen, in-class testing, and lesson summarization. Compared to traditional teaching methods for English in Chinese Medicine, digitally-enhanced English instruction significantly improves teaching quality. 1)Attendance Verification Function: At the start of class, teachers can display a unique class code and QR code. Students must enter the code or scan the QR code to gain access to the learning environment. 2) Common Question Answering Function: In conventional teaching models, instructors focus on delivering Chinese Medicine English content based on objectives and syllabi, which may not adequately enhance students' professional competence. With the common question answering function, students can communicate their uncertainties about specific knowledge points to the teacher. For instance, when translating "Twelve classics all have arteries, take an inch to determine the five viscera, life and fortune," many students initially believe that "artery" is appropriate for arteries. However, upon understanding the broader context, they realize that "pulse" is the correct term in Chinese medicine terminology.3) Interactive Communication via Bullet-Screen: Traditionally, teachers dominate classroom interactions, leaving students as passive recipients of information. Under the digitally-enhanced teaching model, students can actively engage by sending real-time comments or questions to the teacher, fostering a more dynamic and participatory learning environment.4) In-Class Testing Function: Teachers can assign relevant questions within a specified time frame, aiding students in reinforcing their knowledge and improving their problem-solving efficiency.5) Lesson Summarization Function: This feature systematically records student performance, enabling teachers to thoroughly assess the learning outcomes of each session. Based on this data, teachers can scientifically design subsequent lessons and assign appropriate homework to further support student learning.

2.3 Post-Class Stage

In the traditional teaching model, teachers are limited to assigning a substantial amount of homework based on the curriculum guidelines to reinforce students' theoretical knowledge foundation. This approach often imposes significant academic pressure on students and hinders their ability to manage their time effectively. However, digital-enhanced English classes can significantly alleviate this issue. 1)Homework Distribution: By leveraging digital technology for homework distribution, teachers can monitor students' progress in real-time, ensuring timely completion of assignments. Additionally, teachers can gain insights into students' learning status through their homework performance, enabling targeted educational support and psychological guidance, which promotes students' overall development.2) Feedback after class: Teachers can identify challenging areas for students through their homework completion, allowing for timely adjustments to teaching content and plans. This helps students consolidate key and difficult knowledge points. For instance, in post-class assignments, some students directly translated the word "QI" as "angry" in Chinese Medicine English. In reality, this term should be translated in conjunction with the Chinese Medicine concept " alleviate internal heat." Recognizing this misconception, the teacher can emphasize this point in subsequent lessons.

3. Effect Analysis

3.1 Teaching Experiment Design

Two groups, matched for overall language proficiency, were selected to form the experimental group (n=60) and the control group (n=60). Participants had an average age of 19.03 years and similar educational backgrounds and cognitive abilities. The teaching experiment spanned 16 weeks. Both groups used the same Chinese medicine English textbook. To compare learning outcomes, the control group continued with the traditional teaching method (4 class hours per week), while the experimental group adopted a digital empowerment classroom model (2 class hours per week for face-to-face instruction and 2 class hours for online self-directed learning). The experimental teaching was divided into four phases: offline instruction, online instruction, offline learning, and online learning. Throughout the experiment, the effectiveness of the digital empowerment class was evaluated both qualitatively and quantitatively. Pre-test and post-test scores were

compared between the experimental and control groups to assess changes in English proficiency. The test format mirrored the CET-4 exam, with a full score of 100 points. To ensure reliability and validity and minimize human bias, three college English teachers processed and analyzed the collected data using SPSS 17.0 software. Additionally, a learning effect survey instrument was developed. To further validate the survey results, semi-structured interviews were conducted with 30 students from the experimental group, and the interviews were recorded and analyzed to gain deeper insights into the effectiveness of digital empowerment in Chinese medicine English classes.

Table 1. Online learning task list

item	Details
Reading	Request each group in the class to collaborate in identifying pertinent facts and ideas from the text by reviewing the explanatory section of the topic. Thereafter, proceed to complete the online exercises and tests for this unit
Writing	Rewrite a paragraph, replace the corresponding verbs, adjectives and adverbs, and use the digital teaching resource platform for automatic feedback
Cultural comparison	Each group is tasked with overseeing the translation of one paragraph, pinpointing the challenges in translating Chinese medicine terminology from Chinese to English. Groups should engage in discussions via the curriculum exchange area and digital teaching resource platform to uncover the underlying cultural nuances.
Vocabulary collection	The digital teaching resource platform was utilized to compile a comprehensive collection of vocabulary pertaining to Chinese medicine culture.

3.2 English Test Results

By integrating quantitative and qualitative research methods, we divided participants into an experimental group and a control group to conduct pre-test and post-test data collection. The results indicate that students in the experimental group demonstrated improvements in listening, speaking, reading, writing, and translation skills (see Table 2). Using SPSS 17.0 software, we analyzed the comprehensive English proficiency of both the experimental and control groups as follows (see Table 3). Prior to the experiment, there was no significant difference in comprehensive English proficiency between the experimental and control groups ($t=0.17$, $p=0.86>0.05$). Post-experiment, the average comprehensive English score for the experimental group was 83.41, compared to 79.58 for the control group, with a statistically significant difference observed between the two groups ($t=3.10$, $p=0.04<0.05$). These findings suggest that the digital empowerment teaching approach can effectively achieve its intended objectives.

Table 2. Comparative analysis of student achievement

Dimension	Before teaching	after teaching	Percentage increase
Listening	75	85	13.3%
speaking	70	80	14.3%
reading	80	90	12.5%
writing	65	75	15.4%
translating	70	82	17.1%

Table 3. Comprehensive English level analysis

Indicators	before		after	
group	Experimental group (N=60)	Control group (N=60)	Experimental group (N=60)	Control group (N=60)
Average score	78.21	77.88	83.41	79.58
T value	0.17		3.10	
P value	0.86		0.04	

Following the completion of the teaching experiment, we categorized the test scores of both the experimental and control groups into three performance levels: "excellent" (above 85 points), "average" (70 to 85 points), and "below average" (below 70 points). Statistical analysis revealed that in the experimental group, 42.50% of students achieved an "excellent" rating, compared to 30% in the control group. Conversely, the proportion of students scoring "below average" was 20.83% in the experimental group, higher than the 13.33% observed in the control group. These findings indicate that while the new teaching method has generally improved overall English proficiency, it has also led to a more pronounced polarization in

student performance outcomes.

3.3 Results of Questionnaire Survey and Interviews

The learning effect is a critical metric for evaluating the efficacy of a teaching model [4]. To assess the impact of the experimental teaching mode on students' learning outcomes, a questionnaire survey was conducted among the experimental group. The findings revealed that 81% of students believed that the new mode fostered a positive learning attitude and stimulated their motivation, leading to an increasing interest in English learning. Additionally, 90% of students reported that it facilitated rapid comprehension of key knowledge points, effectively addressing issues such as difficulty grasping learning essentials, time and energy consumption, and low learning efficiency. Furthermore, 74% of students found that converting knowledge points into micro-lessons for after-class study aided in completing homework, while 84% considered it beneficial for reviewing and consolidating learned material. Moreover, 79% of students felt that the experimental teaching mode improved classroom listening effectiveness, and 75% believed it helped them reflect on their studies. Therefore, it can be concluded that the digital classroom model positively impacts students' learning outcomes.

However, the survey also indicated that 87% of students perceived higher demands on independent learning ability under the new model. Students with poor self-regulation and attention struggled to complete required independent learning tasks after class, affecting their learning progress and outcomes. Consequently, 86% of students expressed a desire for teachers to provide reasonable guidance and supervision for independent learning. Another 5% found it challenging to adapt to the new model due to limited technological proficiency and low information literacy. Despite these challenges, the experimental group outperformed the control group, demonstrating the superiority of the new teaching mode over traditional methods.

Interviews with two instructor teachers revealed that the new teaching mode reduced repetitive explanations and feedback, minimizing redundant labor. This allowed teachers to allocate more time and effort to creative tasks such as teaching design, classroom activity organization, individual student guidance, and humanistic care, thereby enhancing teaching effectiveness and enthusiasm. However, they noted uneven network resources and difficulties in obtaining standard teaching materials for Chinese medicine.

4. Strategies for digital empowerment in college English Teaching at traditional Chinese Medicine institutions

Overall, the teaching objectives of college English in Chinese Medicine institutions encompass two dimensions: instrumental and humanistic education goals [5]. These primary objectives can be further refined into multiple sub-goals, including leveraging digital technology to enhance students' English listening, speaking, reading, writing, and translation skills, ensuring they meet the communication needs within the field of traditional Chinese medicine [6]. Additionally, the humanistic value and ideological-political education elements should be fully integrated into college English teaching to improve students' literary appreciation, aesthetic quality, deepen their moral concepts, spiritual pursuits, emotional development, and cultivate their cross-cultural communication abilities [7].

4.1 Transforming Teacher-Student Roles and Establishing a New Relationship

In traditional college English teaching, teachers act as knowledge dispensers and classroom leaders, while students are passive recipients. However, under the influence of digital technology, this relationship has evolved. Teachers should actively transform their roles, placing students at the center, fully respecting their subject status and initiative in the learning process. By creating engaging scenarios and platforms, teachers can guide students towards independent exploration and collaborative learning, fostering innovation and practical skills.

4.2 Utilizing Multimedia Technology to Build Comprehensive Teaching Resources

Under the digital backdrop, multimedia technology can create realistic, natural, vivid, and engaging classroom environments [8]. Teachers should continuously innovate and reform traditional teaching methods. Leveraging internet resources, teachers can interact with students, enhance classroom quality, and integrate macro goals into each teaching unit. Online video functions can be used to develop micro-class resources, providing rich course materials that stimulate student interest and improve learning efficiency. Teachers can also utilize extensive online resources and databases to enrich their knowledge and update teaching philosophies.

4.3 Implementing Blended Learning for Personalized Instruction

Chinese Medicine institutions should actively adopt blended learning models, combining online autonomous learning with traditional classroom instruction. Under the digital framework, teachers should adapt and redesign traditional college

English teaching materials [9]. For instance, live online classes and micro-classes can introduce course content, followed by specific lectures in offline sessions. Review classes can use webcast formats, reading classes can highlight key content through live streaming, and listening classes can incorporate news programs via webcasts.

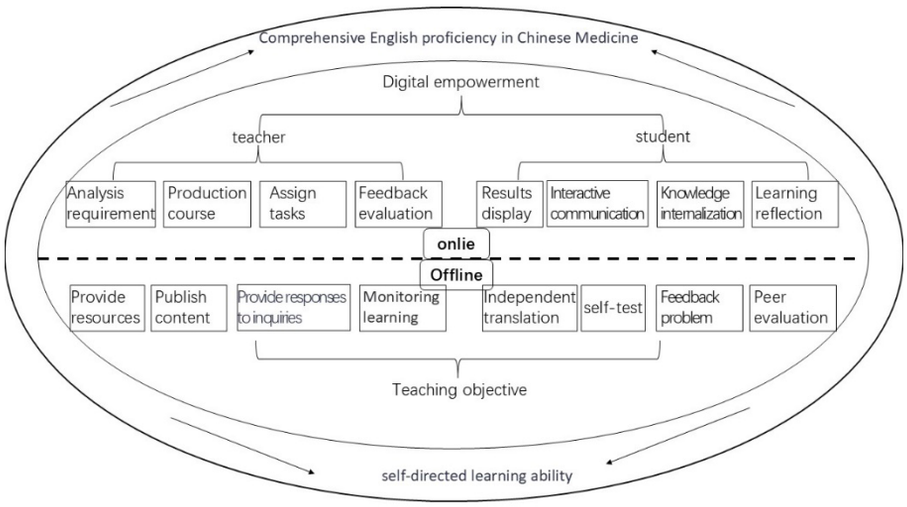

Figure 1. A Roadmap for Digitally Empowering the English Classroom in Chinese Medicine

5. Conclusion

The digital transformation of college English teaching in CHINESE MEDICINE institutions is an inevitable path for educational advancement. To promote and realize this transformation, college English teachers must continuously improve their digital literacy, update teaching concepts, refine teaching processes, and enhance the utilization of digital tools. Only through these efforts can we deeply integrate college English teaching with digital technology, comprehensively improving teaching quality and establishing a new English teaching model.

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