

Research on the Current Situation, Challenges, and Improvement Strategies for the Digital Teaching Competence of English Teachers in Higher Vocational Colleges Amidst the Background of Artificial Intelligence

Linyan Qu

Department of Foreign Languages and Foreign Trade, Chongqing Vocational Institute of Tourism, Chongqing 409000, China

Abstract

In the context of the increasingly prevalent digital teaching and learning, this study selected ChatGPT as a typical case and conducted an in-depth questionnaire survey on 59 English teachers. The survey covered a number of key dimensions such as teachers' attitudes towards digital teaching tools such as ChatGPT, their actual use status, and the current status of their teaching competence. The results of the study revealed that English teachers encountered a series of challenges in their digital teaching practices, including: limitations in integrating diverse digital teaching resources, relatively low frequency of digital teaching tools, lack of sufficient self-confidence in adopting digital teaching tools, concerns about students' ability to learn on their own, and an urgent need to receive professional training on digital tools. In response to the above problems, this study further proposes a series of targeted strategies and suggestions, aiming to provide English teachers with reference for better adapting to the digital teaching environment and improving the quality of teaching.

Keywords

Digital teaching, ChatGPT, English teacher, Higher Vocational Colleges.

1. Introduction

With the rapid development of artificial intelligence technology, its wave has swept across all industries around the world, triggering a series of profound changes. In the field of English education, the intervention of artificial intelligence not only reshaped the traditional teaching model but also became an indispensable teaching aid for modern teachers, greatly enriching teaching methods and resources. [1] While ELT has a long history of pedagogical practices, incorporating emergent technologies such as conversational Artificial Intelligence (AI) presents unprecedented opportunities and inherent difficulties. [2]

In the face of rapid technological advancements and the integration of artificial intelligence, English teachers in higher vocational colleges are encountering unprecedented opportunities and challenges. The digital age has introduced modern technological means, such as intelligent teaching platforms and online collaborative tools, which have the potential to revolutionize traditional teaching methodologies. However, effectively mastering and flexibly applying these technologies presents a significant hurdle for educators.

To enhance teaching quality and optimize students' learning experiences, English teachers must integrate these digital tools into their teaching practices. This necessitates a thorough understanding of their current digital teaching abilities. Identifying areas of strength and weaknesses in utilizing digital tools is crucial for devising targeted improvement strategies.

Teachers face various challenges in adopting digital teaching practices. Technical barriers, such as limited access to high-quality digital resources or insufficient training, can hinder their

efforts. Pedagogical hurdles, like reimagining traditional lesson plans to accommodate digital elements, also pose significant challenges. To address these issues, professional development programs and collaborative peer-learning initiatives can empower teachers with the knowledge and skills necessary to harness the full potential of digital tools.

This study aims to explore the current situation regarding the digital teaching ability of English teachers in higher vocational colleges within the framework of artificial intelligence. It seeks to identify the specific challenges they confront and propose corresponding improvement strategies. By providing valuable references and inspirations for teachers' professional growth, the study aims to contribute to the innovative development of education within higher vocational colleges. Ultimately, the insights gained from this study can help create dynamic and interactive learning environments that are responsive to the demands of the digital age.

2. Methodology

This study adopted a rigorous questionnaire survey method as the main research tool, aiming to gain a comprehensive and in-depth understanding of the actual situation of higher vocational English teachers' digital teaching ability in the context of artificial intelligence. To ensure the representativeness and validity of the study, we adopted a convenience sampling method and carefully selected foreign language teachers in higher vocational colleges and universities located in two regions, Chongqing and Sichuan, as the research subjects. These regions are not only geographically representative in terms of economic and educational levels, but also their groups of English teachers in higher vocational colleges and universities face similar teaching environments and challenges, which is conducive to revealing common problems and refining universal patterns.

In the data collection stage, we made full use of "Questionnaire Star", a professional online questionnaire platform, to ensure the standardization and normalization of the data collection process by virtue of its convenient and efficient data collection and analysis functions. The whole data collection process lasted one week, during which we actively communicated with the surveyed teachers to ensure the completeness and accuracy of the questionnaires. In the end, we successfully recovered 59 valid questionnaires, which formed the data base of this study.

In order to clearly present the characteristics of the sample of survey respondents, we carefully designed Table 1, which provides detailed statistics and descriptions of the key information of the participating teachers, such as gender, age, years of teaching experience, title, and the type of school they work in. This step not only helps us to understand the composition of the sample more comprehensively, but also provides an important reference basis for the subsequent data analysis and conclusion refinement. Through the presentation of Table 1, we can more intuitively grasp the overall characteristics and distribution of the survey respondents, laying a solid foundation for the in-depth development of the subsequent study.

3. Findings and Discussion

3.1. The limitations of digital teaching resource integration capabilities

The majority of teachers, specifically 83.05% who either agreed or strongly agreed, concurred that AI tools, exemplified by ChatGPT, play a beneficial role in facilitating language learning within the context of English language teaching. Furthermore, a substantial proportion of educators, amounting to 71.19% who either agreed or strongly agreed, acknowledged the potential of these AI tools to augment students' English writing competencies. While educators generally recognized the merits and value of incorporating advanced technologies, such as ChatGPT, into their instructional repertoire, there was a discernible gap at the practical level.

Despite their endorsement of these innovative aids, teachers faced challenges in seamlessly integrating these technologies into their everyday teaching and learning activities, thereby highlighting the need for enhanced capabilities and resources to fully harness the potential of AI in education.

Table 1. Three Scheme comparing

Category		Number	Percentage
Gender	Male	13	22.03%
	Female	46	77.97%
Age	20-35	26	44.07%
	36-45	20	33.9%
	46-55	10	16.95%
	More than 55	3	5.08%
Teaching Experience	0-5 years	22	37.29%
	6-10 years	8	13.56%
	11-15 years	5	8.47%
	More than 15 years	24	40.68%
Qualifications	Bachelor's degree	15	25.42%
	Master's Degree	44	74.58%
	Ph.D. Degree	0	0%
Academic Rank	Assistant	14	23.73%
	Lecturer Teacher	28	47.46%
	Associate Professor	12	20.34%
	Full Professor	5	8.47%
College Type	The high-level vocational college and major construction plan with Chinese characteristics - vocational colleges	17	28.81%
	General higher vocational colleges	42	71.19%

3.2. The insufficiency of the application frequency of digital teaching tools

The incorporation of tools such as ChatGPT into English teaching practices by teachers remains limited, with a significant portion, specifically 40.68%, reporting occasional use, and only 33.9% indicating frequent utilization. This pattern of infrequent use extends across various facets of educational endeavors, including curriculum design, instruction in English writing, oral English practice, and the sourcing or creation of instructional materials. Indeed, across multiple dimensions—teaching implementation, curriculum design, academic writing instruction, and language teaching more broadly—teachers exhibited a generally low frequency of digital tool utilization. This prevalent status quo, characterized by underutilization, significantly hampers the potential efficacy of these digital tools in enhancing both the quality and efficiency of teaching and learning processes. The identified gap underscores the need for targeted interventions aimed at fostering greater adoption and proficiency in leveraging such advanced technologies to optimize educational outcomes.

3.3. The lack of confidence in digital teaching

A substantial number of teachers demonstrate a notable lack of confidence in their ability to adopt digital tools for instructional practice, which encompasses the utilization of these tools

within the classroom setting to enhance teaching methodologies. This lack of confidence also extends to their assessment of student learning outcomes using digital means, indicating a hesitancy to rely on such tools for evaluating student progress and achievement. Furthermore, teachers express reservations about engaging in related professional development training, which is crucial for acquiring the necessary skills and knowledge to effectively integrate digital tools into their teaching. This psychological state of uncertainty and 不自信 serves as a significant impediment to actively embracing and effectively utilizing emerging technologies for pedagogical innovation. The resulting reluctance to adopt and master these tools hinders the potential for transforming traditional teaching practices and harnessing the full benefits of digital education. Addressing this issue requires targeted interventions aimed at building teachers' confidence and competence in utilizing digital tools, thereby fostering a more receptive and innovative educational environment.

3.4. Concerns about students' autonomous learning abilities

A significant proportion of teachers expressed concerns regarding the potential impact of utilizing tools such as ChatGPT on students' independent learning abilities, with 57.63% agreeing or strongly agreeing that such use could diminish these abilities. Additionally, a substantial majority, comprising 72.88%, either held a neutral stance or agreed that there was a risk that the content provided by these tools might not fully meet the requirements outlined in the syllabus. These findings underscore the apprehension among some educators that the introduction of tools like ChatGPT could undermine students' capacity for independent learning. This highlights an urgent necessity for teachers to prioritize the enhancement of students' independent learning abilities amidst the ongoing digital transformation. Ensuring that technological advancements serve to bolster, rather than detract from, students' comprehensive literacy is paramount. These educators' concerns align with those expressed by Baskara, who also emphasizes the importance of addressing potential drawbacks associated with the integration of digital tools in educational settings. [3]

3.5. Analysis of teachers' training needs for digital tools

At present, the training needs of teachers in the process of adopting advanced digital tools such as ChatGPT are rich and diversified, which signifies that the education sector is gradually moving towards a new stage of digital transformation. Specifically, these training needs focus on several key areas: optimization strategies for teaching design and subject declaration, efficient integration of digital tools in teaching practice, detailed guidance on technical operation, standardization of curriculum design and lesson plan writing, and all-round enhancement of teachers' digital competence.

Teachers are looking forward to professional and systematic training to enable them to utilize digital tools flexibly in their teaching design and project reporting, so as to obtain strategic guidance, which will not only help to enhance the innovation and effectiveness of their teaching activities, but also stimulate the interest and participation of their students. At the same time, they urgently need to master a series of key skills to seamlessly integrate digital tools into daily teaching and learning processes, including but not limited to the optimization of questioning techniques, the careful planning and efficient execution of teaching plans, as well as the accurate retrieval and effective use of resources. The mastery of these skills will greatly enhance the flexibility and interactivity of teaching.

At the level of technical operation, teachers showed an urgent need to learn specific skills such as how to skillfully operate cutting-edge digital tools such as ChatGPT, and produce high-quality teaching videos and PPTs. They recognize that the mastery of these skills is the key to enhancing their personal teaching effectiveness and realizing digital teaching transformation. In addition, teachers also expected to receive comprehensive and systematic guidance on course design,

syllabus and lesson plan writing to enhance the logic and scientificity of the curriculum and ensure systematic and coherent teaching content.

In the end, teachers generally recognized the importance of improving their digital competencies, especially in applying digital tools to their classroom practice. They are well aware that only by continuously improving their digital teaching competence can they better adapt to the development trend of education informatization, maximize the effectiveness of teaching and lay a solid foundation for the all-round development of students.

4. Challenges

Under the background of the rapid penetration of artificial intelligence into the field of education, higher vocational English teachers are faced with multidimensional challenges, which are not only related to technology, but also have a profound impact on the innovation of educational concepts and teaching practices.

First of all, when teachers face such cutting-edge technologies as AI-assisted teaching and big data analysis, their learning speed and technical mastery become the primary obstacles. Some teachers may resist or feel overwhelmed by new technologies due to factors such as age, technical background or inherent habits, such as unfamiliarity with the new software interface that may lead to a decline in teaching efficiency and the formation of psychological barriers. For example, some teachers may be less motivated to interact in the classroom due to unskilled operation when they first come into contact with intelligent speech recognition software.

Second, despite the increasing abundance of digital resources, effective access to resources, platform compatibility issues, and data safety and security remain challenges that cannot be ignored. Uneven distribution of resources may make it difficult for some teachers to access high-quality teaching materials, while data barriers between platforms limit the flexible application of resources. In addition, the risk of data leakage is a common concern for teachers, especially when handling students' personal information.

Furthermore, the transformation of educational philosophy and teaching mode: there is a significant conflict between the traditional teacher-centered and lecture-led teaching mode and the demand for personalization and interactivity emphasized by digital teaching. Teachers need to change from knowledge transmitters to learning guides, and this role change is undoubtedly a big challenge for teachers who have been used to traditional teaching for a long time. For example, the shift from single textbook explanations to the use of virtual reality technology to simulate real language situations requires teachers to have new teaching design and implementation capabilities.

Finally, the differences in digital literacy among student groups, the diversity of learning styles, and the ability to adapt to digital learning environments constitute another major challenge that teachers must face when implementing digital teaching. While more digitally literate students may be able to quickly adapt to and utilize digital tools to facilitate learning, less digitally literate students may feel confused or rejected, which may affect their motivation and engagement. In addition, students have different learning styles, with some preferring visual learning while others are more suited to auditory or hands-on learning, which requires teachers to fully consider and meet the learning needs of different students when designing digital teaching and learning activities. At the same time, students' ability to adapt to the digital learning environment varies, and some students may have difficulty in participating in digital learning activities effectively due to a lack of necessary digital skills or self-regulation.

5. Strategies

Based on the above analysis, in today's fast-changing artificial intelligence and digital technology, in order to effectively improve the digital teaching ability of higher vocational English teachers and provide better teaching for students, a set of comprehensive and systematic enhancement strategies need to be constructed from the three levels of the government, schools and teachers.

5.1. Government level

The government holds a pivotal position as both a leader and a supporter in fostering the digital teaching capabilities of higher vocational English teachers. To this end, it must offer robust policy and resource backing, which entails reinforcing policy guidance and support, augmenting funding and resource allocation for digital initiatives, and refining the evaluation and incentive mechanisms. The strategic formulation and enforcement of an array of policies and regulations aimed at accelerating the digital transformation of education are pivotal in delineating the objectives, mandates, and pathways for educational informatization. This, in turn, provides higher vocational English teachers with a precise and directive policy orientation, guiding them towards embracing digital innovations in their teaching practices.

To underpin these policies, the government can establish a dedicated fund specifically tailored to bolster the development of digital teaching resources, facilitate the upgrading of teaching platforms, and enhance teachers' digital teaching proficiency. Such initiatives ensure the judicious allocation and effective utilization of educational resources, fostering an environment conducive to digital teaching excellence. Furthermore, the government should undertake the construction of a scientific evaluation system for digital teaching ability, one that integrates teachers' digital teaching accomplishments into crucial aspects such as title evaluations and performance appraisals. This system should also encompass the establishment of digital teaching innovation awards, aimed at spurring teachers' enthusiasm and commitment to engaging actively in digital teaching endeavors. By recognizing and rewarding innovative digital teaching practices, the government can further incentivize teachers to continuously refine and elevate their digital teaching skills, ultimately contributing to the holistic advancement of educational informatization in higher vocational English education.

5.2. School level

Schools, as the core implementers and promoters of education and teaching, bear the great responsibility of creating an excellent digital teaching environment and are committed to building a comprehensive and powerful support system for teachers. The construction of this environment cannot be separated from the introduction and application of a series of advanced digital teaching facilities, such as intelligent classroom systems, virtual laboratory platforms, etc., which not only provide teachers with novel and efficient teaching means and tools, but also constitute the indispensable cornerstone of intelligent teaching practice. By integrating modern technology and educational concepts, these facilities greatly enrich the form and content of teaching and promote the efficient integration of knowledge transfer and skill development.

Further, in order to ensure that teachers can make full use of these advanced resources, schools should establish a systematic teacher training system. The system should follow the principle of hierarchical categorization, and carefully design the training content to cover all aspects of teachers' professional growth needs, from the mastery of basic technical and operational skills, to the comprehension of advanced instructional design strategies, and even the continuous updating of modern educational concepts. Through this series of carefully planned training activities, teachers are not only able to keep up with the rapid development of educational technology, but also continue to improve their own digital teaching capabilities, laying a solid talent base for the in-depth implementation of intelligent teaching.

At the same time, schools should actively advocate and set up special research projects aimed at stimulating teachers to explore the enthusiasm and innovative spirit of the new mode of digital teaching. By encouraging teachers to conduct in-depth research, practice and summarize the effective strategies and methods of digital teaching, and apply these valuable research results directly to daily teaching practice, thus promoting the steady improvement of teaching quality and continuous innovation. In this process, schools should attach great importance to the close integration of theory and practice to ensure the practicality and operability of research results.

In addition, strengthening school-enterprise cooperation and introducing cutting-edge technological resources such as artificial intelligence are crucial to improving the intelligent level of higher vocational English teaching. To this end, schools should actively establish long-term and stable cooperative relationships with science and technology enterprises to jointly develop intelligent teaching tools and platforms adapted to the characteristics of higher vocational English teaching. This mode of cooperation can not only provide teachers with richer, more diverse and high-quality teaching resources, but also promote the in-depth integration of educational technology and educational content, and provide strong support for the cultivation of high-quality talents with international vision and innovation ability.

5.3. Teacher level

Teachers, as the core participants and guides of educational activities, need to show a high degree of proactive adaptability and willingness to self-improvement in the face of the impact of the wave of digital teaching. They should deeply realize that digital teaching is not only a technological innovation, but also a profound transformation of teaching concept and mode. Therefore, the primary task of teachers is to establish a student-centered teaching philosophy, which is not only the return of the essence of education, but also the inevitable requirements of education in the digital era. Under the guidance of this concept, teachers should be committed to cultivating students' digital literacy, which includes information retrieval, critical thinking, and the ability to solve problems using digital tools, and at the same time, stimulate students' sense of innovation and encourage them to explore the unknown and be creative in the digital environment.

In order to effectively respond to the challenges posed by digital teaching, teachers need to actively participate in various professional training and learning activities to continuously improve their information literacy and digital teaching skills. This requires teachers not only to master basic IT applications, but also to deeply understand the core concepts of digital teaching and learning how to flexibly use various digital tools and resources in teaching. As an important support platform for teachers' professional growth, schools should provide a rich variety of training resources, including but not limited to online courses, workshops, seminars, etc. Teachers should make full use of these resources and actively participate in training and exchange activities on digital teaching skills in order to broaden their horizons and update their knowledge structure.

In addition, teachers' professional growth should also be reflected in the continuous reflection and improvement of their teaching practice. Teachers should regularly conduct in-depth reflection on their own digital teaching practice, and identify and correct problems and deficiencies in a timely manner through a variety of ways, such as journal entries, peer review, and student feedback. This process of self-examination helps teachers to continuously optimize their teaching methods and means and improve their teaching effectiveness. At the same time, teachers should also have the courage to try to integrate cutting-edge technology, especially artificial intelligence technology, into actual teaching. For example, AI algorithms are used to analyze students' learning data and provide teachers with accurate teaching suggestions, while personalized learning resources and instant feedback are provided according to students'

learning characteristics and needs, so as to meet the diverse learning needs of students and promote the comprehensive development of each student. The utility and pedagogical soundness of ChatGPT in language teaching is as important as access to the technology itself [4], and its effective integration not only aids language assignments, but also highlights the educational value of the technology's use. [5]

6. Conclusion

This study undertakes a comprehensive and rigorous examination of the digital pedagogical challenges confronted by educators and their professional anticipations within the sphere of artificial intelligence, specifically targeting English instructors from higher vocational institutions situated in the Sichuan-Chongqing region. Utilizing a well-structured questionnaire as the primary investigative tool, the research engages with 59 English instructors, ensuring a diverse and representative sample that can offer valuable insights into the current landscape of digital teaching in vocational higher education.

The questionnaire-based investigation is meticulously designed to capture a wide range of perspectives and experiences, allowing for a deep dive into the specific challenges faced by educators as they navigate the complexities of integrating digital technology into their teaching practices. These challenges may encompass technical difficulties, resource limitations, curricular alignment issues, and the need for continuous professional development, among others.

Through a meticulous and rigorous analysis of the empirical data collected from the questionnaire responses, this research endeavors to provide a nuanced understanding of the obstacles faced by English faculty in vocational higher education. Furthermore, it proposes evidence-based recommendations that are tailored to address these challenges and optimize digital teaching competencies among the educators. These recommendations may include strategies for enhancing technological proficiency, fostering a culture of innovation, and establishing supportive infrastructures that facilitate the effective integration of digital tools into teaching and learning.

The findings of this study are intended to offer both theoretical and practical implications for advancing the digital transformation of foreign language instruction in technical academic contexts. By shedding light on the challenges faced by educators and presenting actionable recommendations, this research contributes to the ongoing discourse on the future of education in the age of artificial intelligence, particularly in the realm of vocational higher education. Ultimately, it aims to pave the way for more effective and innovative teaching practices that harness the power of digital technology to enhance student learning outcomes.

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