

Research on the Pathway to Enhancing College English Teachers' Digital Literacy in the Context of Digital Intelligence in Education

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ABSTRACT

With the rapid development of artificial intelligence technology and the popularization of digital education, the field of education is undergoing profound changes. The digitalization of education has not only changed teaching content and methods, but also altered students' learning habits and needs. As core practitioners of educational digitalization, the digital literacy of college English teachers urgently needs to be improved. This study explores how to enhance the digital literacy of college English teachers from three aspects: constructing a multidimensional support system, strengthening teachers' autonomous development momentum, and empowering personalized teaching innovation with digital intelligence technology, thus effectively improving students' critical thinking ability and cross-cultural communication ability.

KEYWORDS

Digital Intelligence; College English Teachers; Digital Literacy

1 Introduction

Amid the global wave of digital transformation in education, the deep integration of technologies such as artificial intelligence, big data, and cloud computing has propelled the educational ecosystem from "digitalization" to "intelligent digitalization". Intelligent digital education is not merely about the iterative upgrade of technological tools but emphasizes data-driven teaching decisions, personalized learning support, and the ethical application of intelligent technologies. Digital intelligence technology is gradually reshaping the entire process of education and teaching, and digital literacy has become an essential key competency for teachers^[1]. Against this backdrop, college English teaching faces multidimensional challenges: the traditional "teacher-centered" model struggles to adapt to intelligent teaching scenarios, language skill development must integrate with intercultural digital literacy, and the evaluation system urgently needs to shift from single-mode testing to multimodal data analysis. However, as core practitioners of educational intelligent digitalization, the digital literacy of college English teachers has not kept pace with technological advancements. This contradiction directly hinders the transformation of English teaching from "knowledge transmission" to "competency empowerment."

The enhancement of digital literacy among college English teachers serves as both a pivotal driver for implementing the intelligent digitalization strategy in education and a core pathway to achieving the goals of the "New Liberal Arts" initiative. From a practical standpoint, teachers need to leverage digital technologies to optimize instructional design (e.g., constructing virtual simulation language environments) and innovate assessment methods (e.g., applying AI-powered speech evaluation systems), thereby improving students' language application skills and digital citizenship literacy. Theoretically, existing research predominantly focuses on technical operational skills while neglecting the balance between "technological rationality" and "educational humanistic values" in the context of intelligent digitalization. China's Ministry of Education issued Digital Literacy for Educators in 2022, which defines digital literacy from the following five dimensions: digital awareness, digital technology knowledge and skills, digital applications, digital social responsibility, professional development. This study adopts a holistic "awareness-competency-ethics" development perspective to address the following core dilemma: How can systematic pathway design help teachers master intelligent technological tools while mitigating the risks of technological alienation, ultimately achieving the deep integration of language teaching and digital literacy cultivation?

Current research on digital literacy reflects dual perspectives of "technology empowerment" and "humanistic critique". Domestic scholars, based on empirical surveys, highlight issues among university English teachers such as "superficial technological cognition" (e.g., merely using PowerPoint as a substitute for blackboard writing) and "a gap in data application capabilities" (e.g., fewer teachers utilize intelligent learning analytical tools). They call for improved training mechanisms. Meanwhile, international studies emphasize the "humanistic revival" in intelligent digital education. For instance, the EU's Digital Education Action Plan (2023) advocates the principle of "technology serving holistic human development," requiring teachers to possess both "intelligent tool utilization skills" and "digital ethical

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judgment.” However, existing research has yet to adequately address two critical questions: 1. How can “multi-stakeholder collaboration mechanisms” resolve the “fragmentation” of teacher training? 2. How can “instrumental rationality” be balanced with “the humanistic nature of language teaching” in technological applications? Adopting a “problem-solution” approach, this study constructs a “university-industry-teacher” collaborative development model, aiming to provide a “practical yet theoretically grounded” solution for enhancing the digital literacy of college English teachers.

2 The Current Status of College English Teachers’ Digital Literacy

The current development of digital literacy among college English teachers presents a multidimensional imbalance, manifested as structural contradictions between consciousness, skills, and ethics. Firstly, the digitization of education requires teachers to become both practitioners of technology application and reflectors on the value of technology. However, some teachers’ understanding of the value of digitization still remains at the level of “tool substitution theory”, equating intelligent technology with an upgraded version of multimedia devices. For example, many foreign language teachers in universities believe that “digitalization is only a supplement to teaching methods”, and this cognitive bias leads to technology applications remaining at the shallow stage of “PPT replacing blackboard”, making it difficult to achieve the reconstruction of teaching modes. Secondly, in the face of emerging technologies such as DeepSeek and virtual simulation, teachers generally lack forward-looking exploratory awareness. Secondly, most teachers have already mastered basic digital skills such as courseware production and online homework grading, but significant skill gaps have been exposed in the context of digital teaching. Finally, the deep application of digital technology has increasingly highlighted ethical risks in teaching. Some teachers use online open source resources (such as academic papers, film and television clips) to construct teaching materials without authorization, and even use commercial platform question banks directly for exam questions; when using intelligent learning systems, many teachers fail to anonymize students’ personal data, such as voice recordings and learning behavior logs; and few ethical issues related to artificial intelligence are analyzed in class discussion, resulting in a lack of cultivation of students’ digital citizenship awareness.

The above problems exist not only due to the fragmentation of the external support system, but also closely related to the insufficient development momentum of teachers. Firstly, there is a disconnect in the cultivation of teachers’ digital literacy in current universities, mainly manifested in pre-service training focusing on basic skills, while post-service training often falls into technical lectures; the construction of interdisciplinary teaching and research communities lags behind, and the deep integration of technology application and language teaching is difficult. Secondly, there is insufficient motivation for teachers to develop independently, and the evaluation of professional titles in universities still relies on papers and research projects as core indicators. Technological application innovation has not been included in the evaluation system, and teachers lack enthusiasm for digital reform; faced with rapidly iterating intelligent tools such as Generative AI and adaptive learning platforms, many teachers find it difficult to keep up with the pace of technological updates; some teachers are concerned about the risks of technological substitution and are caught in a cognitive conflict between “instrumental rationality” and “humanistic values”, forming an active avoidance mentality towards improving digital literacy.

3 The Pathway to Enhancing College English Teachers’ Digital Literacy

Digital literacy has far exceeded the basic skills of handling computers, including the use and production of digital media, information processing and retrieval, participation in creating and sharing knowledge in social networks, and a wide range of professional computing skills^[2]. Under the background of educational digitalization, the improvement of digital literacy of college English teachers needs to break through the single dimensional technical training mode and construct a systematic framework to enhance digital literacy. This study proposes the following practical paths from three levels: multidimensional support system, autonomous development momentum, and teaching innovation aided by digital intelligence.

3.1 Building a Multidimensional Support System to Solve the Dilemma of Resource Fragmentation

To address the issue of skill gaps among teachers, it is necessary to establish a hybrid training model that integrates theory, practice, and reflection. Universities can collaborate with educational technology companies such as iFLYTEK and Foreign Research Online to design advanced courses that combine online theoretical learning with offline workshop practice. Online courses focus on the principles of machine learning and the fundamentals of natural language processing technology, helping teachers understand the algorithmic logic of intelligent grading systems; Offline workshops

strengthen teachers' ability to operate intelligent teaching platforms (such as iWrite and iTEST systems) by simulating real teaching scenarios (such as virtual simulated oral training).

To alleviate the problems of resource dispersion and platform fragmentation, it is necessary to build a "one-stop" intelligent teaching support platform that integrates functions and shares resources. Connect the data interfaces of intelligent grading system, adaptive learning platform, corpus and other modules to automatically generating learning analytical reports and recommending intelligent teaching resources. For example, the "Rain Classroom" platform developed by Tsinghua University has integrated functions such as voice evaluation and writing error correction. Teachers can obtain real-time heat maps of students' voice error distribution and adjust teaching strategies accordingly. In addition, universities can establish a hierarchical resource access mechanism to ensure the traceability of teaching data and copyright confirmation through blockchain technology, and prevent privacy leakage risks.

3.2 Strengthening Teachers' Autonomous Development Momentum in Teaching Practice

In the era of digitalization, college English teachers need to shift from "passive participation in training" to "active construction of ability". Teachers need to establish a problem-oriented and sustainable professional development model. The administrative departments of universities can encourage teachers to join international MOOC platforms (such as Coursera) to study courses such as "Educational Data Mining" and "AI Ethics", and deepen their technical understanding in practice. In addition, the "Teacher Digital Literacy Certification" system can be included in teacher's performance evaluation to effectively improve teachers' participation rates. Teacher Development Centers in universities can also establish digital literacy growth profiles for teachers and recommend differentiated learning resources based on big data analysis.

English teachers are expected to actively transform from "technology users" to "instructional designers". This transformation is not only an upgrade in technology application, but also a reshaping of teaching philosophy and roles. Teachers need to go beyond the simple operation of tools, guided by learning scientific theories such as Constructivism, systematically design teaching objectives, activities, and evaluations, and organically integrate technologies such as AI, big data, and multimodal resources into the teaching process. For example, teachers can use open-source software such as "Audacity" and "OpenShot" to create multimodal micro-lessons, or build virtual simulation teaching scenarios based on the "Unity Platform". Teachers can also use tools such as "Tableau" to analyze learning data, such as using word frequency statistics to identify logical coherence issues in students' writing and optimize teaching design.

3.3 Digital Intelligence Technology Empowering Personalized Teaching Innovation

College English teachers can use digital technology to construct a new paradigm of personalized teaching that is data-driven and dynamically optimized. Based on learning analytical technologies, the development trajectory of students' language abilities can be dynamically tracked^[3]. For example, based on the intelligent writing system's error clustering analysis, targeted training materials (such as writing corpus for College English Test Band 4) are automatically pushed to students to achieve personalized tutoring. Build a collaborative mechanism between teachers and AI assistants, where the latter is responsible for mechanical tasks such as grammar correction and pronunciation assessment, while teachers focus on cultivating higher-level abilities such as critical thinking and cross-cultural communication, unleashing the humanistic value of the course. In addition, teachers can incorporate ethical discussions into language teaching, such as guiding students to analyze cultural biases in machine translation and the information cocoon effect of social media algorithms. In short, integrating digital technology into college English teaching will effectively enhance students' critical thinking and cross-cultural communication skills.

4 Conclusion

Under the background of educational intelligent digitalization, the enhancement of digital literacy of college English teachers is not simply a combination of technical abilities, but a systematic project of consciousness awakening, skill iteration, and ethical reconstruction. This study concludes that the structural contradiction of digital literacy stems from the cognitive limitations of the "technological tool theory". If teachers only regard intelligent technology as a teaching aid and ignore its deep value in reshaping educational relationships and empowering students, they will inevitably fall into the dilemma of "superficial application of technology". Secondly, the path of improving teachers' digital literacy needs to follow the collaborative logic of "external force promotion combined with internal force activation". The mixed training model jointly built by schools and enterprises can effectively bridge the skill gap, while the competition mechanism and reflective evaluation stimulate teachers to shift from "passive adaptation" to "active creation". Finally, the construction of technological ethics is the bottom line guarantee for digital education. If there is a lack of copyright

awareness and privacy protection mechanisms in teaching, even with innovative technological applications, it may lead to the risk of “educational alienation”.

To further improve college English teachers’ digital literacy, the future studies can be conducted in the following directions: firstly, exploring the role reconstruction of tools such as ChatGPT and DeepSeek in curriculum design. For example, based on the big language model, a cross-cultural communication corpus is automatically generated, and teachers focus on critical screening and value guidance of cases, achieving a synergistic effect of “AI productivity+teacher judgment”. Secondly, teachers should transform their roles from “knowledge transmitters” to “digital guides”. Teachers need to master the “five dimensional abilities” empowered by intelligent technology: data diagnosis, human-machine collaboration, ethical judgment, innovative design, and lifelong learning. The core of these abilities lies in deepening humanistic values through technology. Finally, in response to the potential risks of digital identity crisis and immersive technology dependence in virtual reality teaching, it is necessary to construct protective teaching guidelines in advance. This study not only provides action guidelines for the professional development of college English teachers, but also provides theoretical responses to the symbiotic relationship between “technology and people” in the process of educational digitization, contributing intelligent solutions to the construction of a digital education ecosystem with Chinese characteristics.

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