

Strategies for Enhancing College English Teachers' Digital Competence in the Era of Digital Intelligence

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How to cite this paper: Guan, W. (2026). Strategies for Enhancing College English Teachers' Digital Competence in the Era of Digital Intelligence. Educational and Humanities, 4(3), 12–20. ISSN Print: 3104-4352, ISSN Online: 3104-4360. <https://doi.org/10.63313/EH.9112>

Published: 2026-09-10

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Abstract

This study examines the conceptual connotations and core components of digital competence from the perspective of college English teachers, analyzes the relationship between teachers' digital competence and instructional effectiveness within the context of discipline-specific teaching practice, and explores actionable pathways for further enhancing digital competence in pedagogical settings.

Keywords

Digital Competence; College English Teachers; Digital Intelligence Era

1. Introduction

Teachers' digital competence has undergone a conceptual evolution from digital skills to digital literacy and, subsequently, to digital competence. In the context of advancing the national strategy for educational digitalization, the imperative to cultivate digital competence among university faculty has become increasingly pronounced. As a pivotal determinant in the digital transformation of higher education, teachers' digital competence carries significant contemporary value in aligning with educational reform trends, fulfilling professional development requirements, fostering students' holistic growth, and driving sociocultural progress. Nevertheless, practical implementation encounters multifaceted challenges, including policy and regulatory lag, cognitive biases among educators, inadequacies in training systems, and constraints on technological application. Addressing these obstacles necessitates coordinated efforts in institutional safeguard construction, training system refinement, faculty capacity building, and teaching environment optimization, thereby facilitating the comprehensive digital transformation of

university faculty and advancing high-quality development in higher education.

2. Defining Digital Competence

Teachers' digital competence denotes the foundational capacity to effectively deploy digital technologies, integrate digital resources, optimize instructional processes, and cultivate students' digital literacy within educational contexts. Its architecture can be systematically delineated across multiple dimensions—including technological application, pedagogical integration, data-driven practices, ethical safeguards, and innovative development—encompassing the following core elements.

2.1. Fundamental Operational Capabilities

Teachers must attain proficiency in operating and maintaining commonly used digital tools within educational settings, serving as the prerequisite for digital-enabled instruction. This encompasses operational competence in multimedia equipment, teaching platforms, and discipline-specific software (e.g., virtual simulation tools); the capacity to process and integrate digital resources—such as micro-lecture production, interactive PPT design, and audiovisual editing—while adapting formats or content to pedagogical requirements; and fundamental troubleshooting abilities along with security practices (e.g., data backup).

2.2. Instructional Design and Implementation Capacity

Teachers are expected to embed digital technologies throughout the instructional continuum, achieving a paradigm shift from "tool utilization" to "pedagogical reconstruction." This involves integrating online modalities (e.g., MOOCs) with offline classroom instruction to design closed-loop teaching plans encompassing "preview–inquiry–consolidation–extension" (e.g., flipped classroom models); leveraging digital technologies to construct authentic or virtual contexts (e.g., VR/AR experiments, historical scene simulations) that enhance immersive learning experiences and knowledge transfer; employing diagnostic tools (e.g., intelligent assessment systems) to analyze learner variability and provide customized learning pathways (e.g., differentiated assignments, adaptive resources); and utilizing interactive instruments (e.g., response systems, real-time polling, collaborative platforms) to stimulate engagement and dynamically adjust instructional pacing based on immediate feedback.

2.3. Data-Driven Assessment and Instructional Improvement

Teachers must harness digital technologies to collect and analyze instructional data, enabling precise diagnosis and evidence-based decision-making. This entails employing learning management systems (LMS) and intelligent assessment tools to gather behavioral data (e.g., knowledge-point accuracy) and presenting findings through visualization tools; and engaging in reflective evaluation by triangulating

process-based data (e.g., classroom interaction logs) with outcome-based data (e.g., examination performance) to assess instructional efficacy and iteratively refine teaching objectives and methodologies.

2.4. Digital Ethics and Security Awareness

Teachers are obligated to adhere to ethical norms within digital environments while safeguarding the rights and informational security of both educators and learners. This includes ensuring compliance with copyright regulations in digital resource utilization; rigorously managing students' personal information (e.g., grades, multimedia content) to prevent unnecessary disclosure; employing compliant platforms for data storage to mitigate cyber threats; modeling responsible online conduct and guiding students in critical evaluation of digital information, thereby countering cyberbullying, misinformation, and other harmful phenomena; and identifying potential risks associated with digital tools while promoting balanced online-offline lifestyles.

2.5. Innovation Capacity

Teachers should proactively explore novel integrations of technology and pedagogy to drive transformative educational models. This encompasses experimenting with instructional frameworks supported by emerging technologies (e.g., artificial intelligence, big data analytics); employing digital tools to transcend disciplinary boundaries and cultivate students' interdisciplinary competencies; conducting action research facilitated by digital technologies (e.g., documenting instructional processes through platforms to analyze technological impacts on learning outcomes) and disseminating replicable practices; and maintaining sustained engagement with technological advancements (e.g., generative AI, educational robotics) through professional development and collaborative communities (e.g., digital teacher workshops). Teachers must integrate digital literacy development into discipline-specific instruction, equipping students for the demands of the digital era. This involves guiding students in efficiently retrieving, evaluating, and synthesizing digital information (e.g., academic database utilization, misinformation detection); fostering logical reasoning and problem-decomposition skills through activities such as programming and algorithmic design (e.g., addressing practical challenges via Scratch); and instructing students in utilizing learning tools (e.g., mind-mapping software, collaborative documents) to enhance academic productivity.

2.6. Digital Collaboration and Resource Sharing Capability

Teachers should leverage digital technologies to transcend spatial and temporal constraints, facilitating the co-construction and sharing of educational resources. This includes participating in inter-institutional teaching research and collaborative lesson planning via cloud platforms (e.g., national smart education platforms);

utilizing communication tools (e.g., class messaging groups, parent-facing applications) to synchronize learning progress and engage guardians in digital learning support (e.g., monitoring device usage); and contributing to open educational resources through developing open courses (e.g., MOOCs), digital textbooks, or pedagogical case studies, thereby promoting equitable access to quality education.

2.7. Integration of Professional Development with Digital Technology

The integration of professional development with digital technology constitutes a critical pathway for enhancing college English teachers' digital competence. This integration necessitates embedding digital tools and platforms throughout all stages of teacher training encompassing pre-service preparation and in-service workshops. Through sustained engagement with AI-assisted instruction, online collaborative platforms, and learning analytics, teachers can cultivate digital competence with authentic pedagogical contexts rather than through isolated technical sessions. Such an integrated approach ensures that professional growth and technological fluency advance in tandem, thereby enabling English teachers to design more engaging and pedagogically effective digital learning experiences.

3. Challenges in Cultivating University Teachers' Digital Competence

Amid the rapid evolution of artificial intelligence, national policies have underscored the importance of digital competence; however, many educators continue to struggle with keeping pace with technological advancements. Specifically, in areas such as the judicious selection of AI tools for instruction and the implementation of personalized pedagogy, numerous teachers exhibit deficiencies in technological flexibility and practical application.

College teachers' digital competence transcends individual-level capability representation, functioning instead as a carrier of profound educational value that is intrinsically linked to the broader institutional ecology and student development. Nonetheless, in contemporary practice, the cultivation of digital competence among university faculty confronts multifaceted challenges spanning cognitive, institutional, and technological domains.

3.1. Policy and Regulatory Lag

Policies constitute a critical guiding force in the digital transformation of higher education, yet existing policy frameworks exhibit notable temporal lag. Although some developed nations pioneered educational informatization, their digital education policies for university faculty similarly confront challenges of outdatedness. Specifically, policy formulation concerning digital teaching resources and standards for educators' digital instructional practices has not kept pace with the

rapid iteration of digital technologies. Domestically, as information technology penetrates deeper into higher education, prevailing educational policies and regulations have proven inadequate to meet emerging demands. This is manifest in the absence of explicit provisions within the regulatory framework regarding university teachers' digital literacy and competency requirements, with continued emphasis on traditional teaching qualifications and skills, while lacking systematic norms and guidance on core competencies such as digital technology application, digital curriculum development, and online instruction organization. This policy lag deprives university teachers of clear direction and benchmark standards for enhancing digital competence, thereby seriously constraining the construction of a digital educational ecosystem in higher education.

3.2. Cognitive and Attitudinal Barriers

College English teachers' cognition and attitudes toward digital education directly determine their digital competence development trajectories. Currently, some faculty harbor cognitive biases regarding digital technology application in higher education. As a frontline educator, the author has observed through daily practice that, on one hand, certain teachers express concerns that excessive reliance on digital technologies may diminish the strengths of traditional pedagogy and compromise teaching quality, consequently adopting cautious or even conservative stances toward digital instruction. On the other hand, they conceptualize digital education narrowly, viewing it merely as an auxiliary to conventional teaching—for instance, limiting usage to basic applications like PowerPoint—without recognizing that digital technologies can be deeply integrated throughout curriculum design, assessment, and academic research to catalyze innovation in teaching and scholarship. Some teachers disseminate learning materials and assignments through online platforms but fail to manage online instruction adequately or analyze learning analytics. Furthermore, although high-quality educational platforms offer personalized learning recommendations, real-time assessment, and interactive evaluation functionalities, teachers lacking specialized training remain unfamiliar with these features and cannot fully leverage them in practice. This phenomenon reflects both teachers' weak information application capabilities and deficiencies in universities' information technology training frameworks. Additionally, some educators exhibit apprehension toward emerging digital technologies, lacking motivation to actively learn and apply rapidly evolving tools such as AI teaching assistants and big data analytics platforms, fearing that technological complexity may compromise teaching and research effectiveness. Such negative cognition and attitudes result in passivity and diminished initiative in digital teaching and research practice, severely impeding the effective enhancement of their digital competence.

3.3. Deficiencies in Training and Support Systems

The enhancement of university teachers' digital competence necessitates robust training and support infrastructure; however, current systems exhibit significant deficiencies. First, training opportunities are unevenly distributed. Some universities—particularly local and private institutions—constrained by funding and resource limitations struggle to conduct high-quality digital training regularly, resulting in limited access for faculty to cutting-edge digital education concepts and technologies. Second, training content lacks systematic design and targeted relevance. Existing training programs are often fragmented, failing to be systematically structured around the core elements of university teachers' digital competence, and inadequately accounting for discipline-specific differences and varied teaching experience levels, thereby creating disconnect between training content and authentic higher education contexts. Third, post-training support mechanisms remain weak. Most teachers encounter technical difficulties during practical application following training but lack sustained technical support and professional guidance, making it difficult to effectively transfer and consolidate training outcomes. These systemic inadequacies in training and support seriously impede the efficiency and developmental level of university teachers' digital competence enhancement.

3.4. Constraints in Technology Application

Although digital technologies are extensively utilized in higher education, limitations in technology application persist. On one hand, there exists a relative shortage of high-quality digital resources tailored to higher education instruction. Available digital resources predominantly comprise generic content, lacking personalization for specific disciplines and specializations, and often fall short in depth, breadth, and timeliness, failing to satisfy the diversified needs of CollegeEnglish teaching and research. On the other hand, the prevalence and stability of technological infrastructure require improvement. Some universities contend with slow network speeds and outdated equipment, constraining digital teaching and research activities. Moreover, integrating digital technologies into higher education poses considerable challenges. Organically embedding multiple digital technologies into instructional and research processes demands advanced technology integration capabilities, yet most teachers currently demonstrate weaknesses in this regard, impeding deep fusion of digital technologies with higher education teaching and research.

4. Strategies for Enhancing College English Teachers' Digital Competence

4.1. Establishing a Hierarchical Information Technology Training System

Colleges should develop a tiered, progressive information technology training framework spanning foundational knowledge to practical application. This requires teachers not only to master essential operational techniques but also to apply these

skills flexibly in teaching practice, including online platform operation, instructional video design and editing, and interactive equipment utilization. For instance, at a university in western Guangdong, the institution systematically organized faculty training on the Xuexitong platform during the current academic year, mandating that every teacher achieve proficiency within a designated timeframe. Additionally, Colleges can introduce a teaching community mechanism, grouping faculty by course team or technological difficulty level, and hosting a Digital Teaching Week each semester. Participating teachers are required to produce teaching videos and instructional plans, subject to peer evaluation and feedback. Through peer assessment and reciprocal learning, teachers can iteratively refine instructional design and enhance the practical effectiveness of technology application.

4.2. Cultivating College English Teachers' Digital Skills

Colleges should strengthen teachers' digital skills, particularly providing targeted training for course instructors to enable more effective deployment of digital competencies in actual instruction. Such training should emphasize not only technical proficiency but also methods and strategies for applying digital technologies in classroom settings, enabling teachers to conduct online discussions via internet platforms, master the production and use of multimedia materials, and monitor student learning through educational big data [8]. Concurrently, College English teachers should learn to employ advanced information technology devices to support student self-directed learning and provide data-informed personalized guidance. Teachers can also experiment with online forums for real-time discussions, guiding students to articulate viewpoints through text, audio, or video modalities, followed by further class discussion—thereby enriching classroom interaction and deepening conceptual understanding through diverse dialogue formats. During the current academic year, the author's Comprehensive English and English Reading courses have utilized Yu Classroom platform and Xuexitong for interactive activities. Beyond assigning homework on the Xuexitong platform, discussion prompts are also posted for student responses, enabling the capture of learning trajectories.

To further advance information-based teaching reform, many Colleges have established teaching groups centered on individual course instructors, with each group supported by technical personnel for the relevant learning platform, providing immediate assistance and technical support for equipment use and platform operations. Building on this foundation, numerous teachers have begun implementing the "online + offline" blended flipped classroom model, integrating traditional classroom instruction with digital technologies.

4.3. Amplifying Policy Backing for Digital Education

To enhance college English Teachers' digital competence, policy support must move beyond rhetoric into concrete measures. First, institutions should establish clear

digital competence standards tailored to English language teaching, providing teachers with a roadmap for professional growth. Second, targeted funding should be allocated for continuous professional development, including workshops on AI-assisted instruction, blended learning design, and learning analytics. Third, workload policies must recognize digital course preparation and online interaction as legitimate teaching hours, ensuring that innovation does not come at the cost of burnout. Finally, a supportive infrastructure, encompassing reliable platforms and technical assistance, is essential. Only through such coordinated policy efforts can English teachers transition from passive technology users to confident, critically reflective digital practitioners.

5. Conclusion

This paper has delineated the constituent elements of teachers' digital competence, enumerated the challenges and obstacles confronting the construction of digital competence among university faculty, and proposed specific enhancement strategies. Key recommendations include establishing an information technology training system, strengthening teachers' digital skills, and reinforcing policy support for digital education. By further enhancing teachers' digital competence, we can advance curriculum reform in digital teaching, thereby laying a foundation for cultivating talent characterized by social responsibility, proactive initiative, and innovative thinking.

Acknowledgements

We thank the following projects for the fund support:

Foreign Language Teaching and Research Project: A Study on Strategy for Enhancing University English Teachers' Digital Competence in the Context of Digital Intelligence (2025070302);

Research Project of Zhaoqing University: The Application of Large Language Models in the Research on English Teacher Education and Development in the Greater Bay Area (fw202509)";

2026 Zhaoqing University Development and Planning Project: Reform of English Reading Course Evaluation Mechanism for English Majors Empowered by Digital Intelligence (JYPJ202604);

2026 Zhaoqing Philosophy and Social Sciences Planning Project: Enhancing Digital Literacy of County-Level Secondary School Teachers in Zhaoqing Amidst Digital Transformation: A Strategy Research Study(26GJ-09)

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