

Research on the Transformation of Teaching Competencies of University English Teachers from the Perspective of Human-Machine Collaboration

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Abstract: Rapid advances in artificial intelligence are fundamentally transforming the educational landscape, making human-machine collaborative teaching an inevitable trend in university English education reform. This paper examines the development of teaching skills among university English instructors within the human-machine collaboration framework, identifying current shortcomings in their pedagogical capabilities, including inadequate information technology application skills, insufficient personalized instructional design, and monolithic assessment methods. It highlights the new demands that collaborative approaches place on teachers' teaching philosophies, technological integration, resource allocation, and instructional process monitoring. Recommended measures include implementing a tiered training system, establishing teaching practice platforms, refining evaluation mechanisms, and fostering a supportive culture. These findings provide theoretical guidance and practical insights for the professional development of university English educators in the modern era, contributing to the overall enhancement of teaching quality.

Keywords: Human-machine collaboration; College English teachers; Teaching competence; Professional transformation; Educational digitalization

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1. Introduction

With groundbreaking advancements in generative AI technology, the education sector is undergoing a transformative shift from digitalization to intelligentization. As a cornerstone course in higher education, college English instruction now faces unprecedented challenges and opportunities in its teaching models and methodologies. The human-machine collaborative teaching model overcomes traditional classroom limitations of time and space, enabling optimized allocation of teaching resources and personalized instructional design. This approach offers a novel solution to long-standing issues in college English teaching, including large class sizes, significant individual differences among students, and low instructional efficiency. As the central agents of teaching activities, whether instructors' pedagogical competencies align with the requirements of human-machine collaboration directly determines the success of college English teaching reforms. Investigating the transformation of college English teachers' instructional capabilities within this collaborative framework

holds substantial theoretical and practical significance.

2. Deficiencies in the teaching competencies of university English teachers

2.1. Insufficient proficiency in using digital teaching tools

While most college English instructors today are proficient in operating basic multimedia teaching equipment and utilizing online platforms, few have experience with artificial intelligence-powered educational devices. Many educators view these smart tools merely as supplements to traditional classroom instruction, used primarily for creating course materials, playing videos, or assigning homework, while overlooking AI's critical role in language learning^[1]. Some teachers harbor resistance or misconceptions toward generative AI teaching tools, fearing they might displace human instructors or that improper technical operation could compromise instructional quality. Others who do experiment with such technologies lack systematic training and guidance, failing to effectively integrate the technology with teaching content. As a result, these intelligent teaching tools remain ineffective in enhancing classroom efficiency and quality. This insufficient mastery of digital teaching technologies hinders the advancement of human-machine collaborative instruction.

2.2. Insufficient ability in personalized instructional design

Traditional college English instruction predominantly adheres to uniform standards, content, and pacing requirements, failing to address the diverse needs and individualized learning aspirations of students. In large-class settings, instructors can only cater to average-level learners, unable to effectively support both underperforming and high-achieving students. Many teachers rely on their own teaching frameworks, lacking the flexibility to adapt instructional content and methods based on students' actual needs. In human-machine collaborative learning environments, students utilize digital platforms for self-directed learning, while instructors develop personalized learning plans tailored to each student's progress and feedback. However, most college English educators currently lack data analytics capabilities and the ability to design customized teaching strategies for individual learners. They struggle to effectively leverage data collected through intelligent platforms or design differentiated instructional activities that reflect students' unique characteristics, thereby limiting the full realization of collaborative teaching advantages^[2].

2.3. The teaching evaluation methods are monotonous and rigid

Teaching evaluation serves as a crucial component of classroom instruction, providing effective guidance for both students' learning outcomes and teachers' instructional practices. Currently, university English classroom assessments remain predominantly summative, primarily relying on final exams to evaluate students while neglecting the assessment of their learning processes. This singular evaluation approach fails to accurately reflect students' genuine language proficiency and competencies, nor does it foster their learning interest or motivation. Under the human-computer collaborative teaching model, students' learning methods have become more diverse and personalized, necessitating corresponding formative assessment systems^[3]. However, most university English instructors still adhere to traditional evaluation methods, lacking the ability to utilize intelligent tools for formative assessment, failing to promptly collect and analyze student learning data, and being unable to effectively evaluate the learning process. The outdated nature of these evaluation approaches hinders the improvement of teaching quality and students' holistic development.

2.4. Weak interdisciplinary integrated teaching capabilities

With the deepening of economic globalization and social informatization, there is a growing demand for versatile foreign language professionals. University English education must not only cultivate students' linguistic competence but also enhance their intercultural communication skills, critical thinking abilities, and innovative capabilities. This requires college English instructors to possess interdisciplinary teaching expertise, enabling them to seamlessly integrate English instruction with knowledge from other disciplines. However, most current university English teachers have relatively

narrow knowledge bases, primarily focused on English language and literature, lacking specialized expertise and teaching experience in other fields. Many educators still adhere to traditional language teaching methodologies, emphasizing vocabulary, grammar, and sentence pattern instruction while neglecting the development of students' comprehensive skills^[4]. Under the human-computer collaborative teaching model, intelligent tools can provide abundant resources and technical support for interdisciplinary integration. Yet without the necessary awareness and capabilities in interdisciplinary teaching, instructors cannot effectively leverage these resources or achieve the goal of cultivating versatile foreign language talents.

3. Requirements for university English teachers in the context of human-machine collaboration

3.1. Embracing a human-machine collaborative teaching philosophy

The core of the human-machine collaborative teaching model lies in organically integrating the technical advantages of artificial intelligence with educators' pedagogical expertise to achieve a "1 + 1 > 2" teaching synergy. This demands that college English instructors transform their traditional teaching philosophies and redefine their roles within the instructional process. Teachers are no longer sole transmitters of knowledge but rather guides, facilitators, and companions on students' learning journeys. Educators must recognize that AI technology serves as a powerful tool for instruction rather than a substitute, and learn to collaborate effectively with intelligent systems to maximize their respective strengths. Teachers should adopt a student-centered approach, address individual differences and personalized needs, and leverage smart technologies to deliver more tailored and precise educational services^[5]. Additionally, educators must cultivate a commitment to lifelong learning, continuously acquiring new educational theories and technical knowledge to enhance their professional competence and adapt to the demands of educational digital transformation.

3.2. Master the application capabilities of intelligent education technologies

In the human-machine collaborative teaching model, intelligent educational technologies serve as essential tools for educators. College English instructors must master fundamental skills in applying these technologies and be proficient in utilizing various smart teaching platforms and tools. Teachers should learn to employ generative AI tools for instructional design, resource development, and assessment, enabling them to automatically generate exercises, grade assignments, and analyze student learning data. They must also acquire expertise in emerging technologies like virtual reality and augmented reality to create more authentic and engaging language learning environments that enhance student engagement and interest. Additionally, educators need strong information literacy and data literacy to evaluate the authenticity of online information and analyze student learning patterns to inform evidence-based teaching decisions.

3.3. Enhancing teaching design and resource integration skills

The human-machine collaborative teaching model imposes higher demands on teachers' instructional design capabilities. Educators must redesign teaching processes and activities according to the characteristics of this approach, seamlessly integrating online self-directed learning with offline classroom instruction. Teachers should allocate collaborative tasks appropriately based on teaching objectives and students' learning needs, delegating fundamental tasks such as knowledge delivery and skill training to intelligent tools, while focusing themselves on guiding students in deep thinking, collaborative learning, and cross-cultural communication^[6-8]. Additionally, teachers must possess strong resource integration skills: they need to select high-quality teaching materials from vast online resources and those generated by intelligent tools, then integrate them organically with textbook content to create personalized teaching resource libraries. Furthermore, educators should promptly update and adjust these resources based on students' learning progress and feedback, ensuring their relevance and effectiveness.

4. Methods for transforming the teaching competencies of university English teachers under a human-machine collaborative framework

4.1. Establishing a hierarchical and categorized teacher training system

Establishing a tiered and categorized teacher training system is a crucial approach to enhancing university English instructors' human-machine collaborative teaching capabilities. Universities can classify teachers into different levels and categories based on factors such as age, teaching experience, technical proficiency, and instructional needs, then develop corresponding training programs. For teachers with limited technical expertise, foundational training in intelligent educational technologies should be provided to equip them with the use of common smart teaching tools and platforms. Those with stronger technical backgrounds should receive training on integrating AI technologies into teaching practices, enabling them to utilize artificial intelligence for classroom design, resource preparation, and instructional assessment. Key faculty members and academic leaders require training on cutting-edge educational theories and emerging technologies, positioning them as pioneers in university English teaching reform. Additionally, universities should adopt blended online-offline training methods that combine theory with practice, inviting educational technology experts and outstanding frontline educators to conduct lectures while facilitating peer observation, case studies, and hands-on exercises among instructors to maximize training effectiveness.

4.2. Establish a human-machine collaborative teaching practice platform

Establishing a human-machine collaborative teaching platform is crucial for accelerating the transformation of university English teachers' instructional capabilities. Universities should accelerate their digital transformation efforts to develop comprehensive, resource-rich smart teaching platforms that provide technical support for human-machine collaborative teaching. These platforms should incorporate functions such as online learning, assignment grading, data analysis, and teaching management, offering holistic educational services for both teachers and students. Universities should also encourage teachers to engage deeply in human-machine collaborative teaching practices by establishing dedicated teaching reform funds to support research and practical exploration in this field ^[9,10]. Additionally, universities should foster teaching communities by organizing collective lesson planning sessions, teaching discussions, and experience-sharing activities where successful human-machine collaborative teaching approaches are exchanged, enabling mutual learning and collective improvement among faculty members. Furthermore, universities should strengthen collaborations with enterprises and research institutions to introduce advanced smart education technologies and curriculum resources, providing teachers with broader opportunities to implement human-machine collaborative teaching methodologies.

4.3. Improving the evaluation mechanism for teachers' teaching competencies

Refining the evaluation system for teaching competencies serves as a pivotal force in driving the transformation of university English instructors' instructional capabilities. Higher education institutions should establish assessment criteria aligned with human-computer collaborative teaching models, incorporating skills such as intelligent teaching techniques, differentiated instruction design, formative assessment practices, and interdisciplinary integration into evaluation standards. Assessment methods should be diversified, combining student feedback, peer evaluations, expert reviews, and self-assessments to ensure fair, equitable, and authentic evaluations of teaching proficiency. Additionally, universities must implement robust feedback mechanisms to promptly communicate assessment results to faculty members, enabling them to identify challenges and areas for improvement while clarifying their professional development priorities. Furthermore, linking assessment outcomes with faculty promotions, performance evaluations, and recognition programs will significantly enhance educators' motivation to engage in teaching reforms and elevate their instructional standards.

4.4. Foster a supportive campus cultural atmosphere

Fostering a positive campus cultural atmosphere serves as the fundamental guarantee for enhancing the teaching

proficiency of university English instructors. Higher education institutions should embrace the concept of educational informatization transformation, incorporating IT-driven educational initiatives into their development plans and providing robust support in terms of funding and equipment. Institutional leaders must prioritize reforms in college English instruction, actively participating in the promotion of human-computer integrated teaching models while offering institutional safeguards and resource support for faculty innovation. Universities should encourage educators to embrace creativity and experimentation, demonstrating tolerance for failures and setbacks during pedagogical reforms to cultivate a supportive environment conducive to innovation. Additionally, institutions should intensify publicity efforts regarding educational informatization reforms, ensuring that all faculty and students understand the benefits of human-computer interactive teaching methods, thereby fostering a culture of collective participation in advancing educational digitalization. Furthermore, universities should establish comprehensive incentive mechanisms that recognize outstanding achievements in human-computer interactive teaching reforms, effectively motivating educators to maintain high teaching engagement and innovative drive.

5. Conclusion

The human-computer collaborative teaching model presents both new opportunities and challenges for the reform of college English education, while also imposing higher demands on the teaching proficiency of college English instructors. Currently, there remain significant shortcomings in college English teachers' use of digital teaching tools, personalized instructional design, diversified assessment methods, and interdisciplinary integrated teaching approaches, making it difficult to fully meet the requirements of this collaborative model. To enhance the teaching capabilities of college English instructors, universities should establish tiered teacher training programs, create practical bases for human-computer collaborative teaching, improve methods for evaluating teaching competencies, and foster a supportive campus cultural environment. Meanwhile, college English teachers themselves must update their teaching philosophies, acquire new educational concepts and technological knowledge, continuously improve their expertise and teaching skills, and strive to become qualified English educators for the modern era. Only through these efforts can the advantages of human-computer collaboration be fully leveraged, teaching quality in college English be elevated, and more competent foreign language professionals be cultivated for society.

Disclosure statement

The author declares no conflict of interest.

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