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Research on the Diversification and Adaptability of College English Teachers' Roles under the Trend of Human-Computer Collaborative Education

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Abstract:

This paper explores the diversification and adaptability of the roles of college English teachers under the trend of human-computer collaborative education. This paper analyzes the transformation of teachers' roles in traditional and emerging education models through literature and interdisciplinary research. It reveals the importance of their diverse roles in the human-computer collaborative education model. The study also proffers strategies for teachers to augment their digital proficiency, evolve their educational perspectives, and pioneer novel instructional approaches. This paper aims to offer theoretical guidance and practical recommendations for college English teachers in the context of human-computer collaborative education, thereby fostering educational innovation and professional development of teachers.

Keywords:

College English
Human-computer collaborative education
Teachers' roles

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1. Introduction

In April 2018, the Ministry of Education issued the "Education Informatization 2.0 Action Plan" which also clearly pointed out that it was necessary to create a smart learning environment, actively promote the innovation and development of smart education, and lead and promote the modernization of education characterized by intelligence, integration, and leadership [1]. As scientific and technological advancements accelerate, the integration of artificial intelligence (AI) is becoming pervasive throughout the educational field, and the rise of the human-computer collaborative education model is particularly eye-catching. This model provides learners with a more personalized and real-time feedback learning environment by integrating AI technologies, such as intelligent recommendation systems, speech recognition and interaction, and online learning platforms. For example, in an English writing class, the intelligent

writing assistant can instantly check for grammatical errors and provide suggestions for improvement, which greatly reduces the burden of correction on teachers, while also allowing students to get instant feedback and adjust their learning strategies.

Serving as an essential arena for cultivating students' cross-cultural communication competencies, college English education has also been significantly impacted by human-computer collaborative education. In the traditional teaching model, teachers typically serve as the imparters of knowledge, but in the human-computer collaborative education model, their function progressively evolves to that of learning designers, technical facilitators, emotional supporters, and so forth. Not only do they need to instruct students on how to effectively use smart tools for self-directed learning, but they also need to focus on students' emotional and mental health to ensure that students are holistically developed with the help of technology.

This research aims to delve into the profound impact of the human-computer collaborative education model on the functions of college English teachers. It seeks to examine the transformations in the educators' roles within this framework and investigate the strategies they can employ to adeptly adjust to these shifts, ensuring they fulfill a variety of roles in response to the evolving demands of educational progression in contemporary times.

2. Literature review

The research on human-computer collaborative education and the evolving roles and flexibility of college English educators has progressively intensified, yielding a suite of significant findings. As for how teachers should deal with artificial intelligence, some researchers have proposed that teachers need to have such skills as Artificial Intelligence–Technological Pedagogical Content Knowledge (AI-TPACK) and digital intelligence literacy, intelligent education literacy, and other concepts [2–4]. Feng and Chen (2021) pointed out in their research that the role of teachers in the era of intelligent education has changed from the traditional knowledge transmitter to the stimulator of students' internal motivation for learning, emphasizing how teachers should guide and inspire students to stimulate their interest in learning and curiosity [5]. Chen (2024) also pointed out that under the background of artificial intelligence, college English teachers should become facilitators of human-computer collaborative education, clarify the complementary role of themselves and artificial intelligence in teaching, and make full use of the technology to innovate teaching models [6]. This transition in roles demands that educators exhibit robust expertise in their field and also acquire proficiency in contemporary educational tools to fulfill emerging instructional demands.

The research results of international research on human-computer collaborative education and the role of teachers are also very abundant. Felix (2020) discussed the rise of AI technology in higher education and its impact on the role of teachers. She argues that while AI can provide personalized guidance and support, it cannot replace the uniquely human traits that teachers possess, such as emotional intelligence, creativity, and moral judgment. Felix emphasizes that the role of teachers in education is not only to impart knowledge, but also to develop students' values, social skills, and self-identity, which are not currently possible with AI [7]. Brusilovsky (2024) explored artificial intelligence in education, learner control, and human-AI collaboration [8]. Teachers need to be involved in designing and adapting human-computer collaborative learning environments to ensure that learners have the best learning experience in their interactions with AI. As artificial intelligence technology advances, the human-computer collaborative education model will become more intelligent and personalized, bringing new opportunities and challenges to college English teaching.

3. Research methodology

This paper adopts both literature research and interdisciplinary research methods to guarantee the comprehensiveness and depth of the research.

In the stage of literature analysis, the author employs different strategies like content analysis and comparative analysis to analyze all the gathered texts. Through a structured review and evaluation of the key concepts, research structures, theoretical frameworks, and practical cases from the literature, the author gradually constructs

the theoretical framework and hypothesis system of this study. This process not only enhances the author's insight into the diversity and adaptability of the roles held by college English instructors within the framework of human-computer collaborative learning but also lays a substantial theoretical groundwork for future empirical studies.

Given this investigation spans a range of academic fields, including education, computer science, psychology, and sociology, the author adopts an interdisciplinary research approach for comprehensive analysis. In the specific operation process, the author first conducted an in-depth study and understanding of the relevant theories of each discipline and clarified their respective research perspectives, methods, and application fields. Subsequently, combined with the actual needs of this research, the author organically integrates the theories and methods of various disciplines to form an interdisciplinary research framework. Through this interdisciplinary analysis, the author more comprehensively reveals the complex relationship between the diversity and adaptability of college English teachers' roles in the context of human-computer collaborative education and provides strong support for proposing effective solutions.

4. The diversified roles of college English teachers under the trend of human-computer collaborative education

4.1. Review of traditional roles

Within the conventional educational framework, college English teachers assume a variety of pivotal roles, collectively constituting the bedrock of the conventional instructional milieu. Initially, in their capacity as conveyers of expertise, college English teachers hold the duty to methodically disseminate linguistic competencies such as grammar, vocabulary, reading, and writing to students to ensure that students have a solid foundation in the language. In this process, teachers typically employ traditional teaching methods such as lecture and practice methods, emphasizing the accuracy and systematization of knowledge [9]. Furthermore, teachers act as supervisors and evaluators of learning, overseeing students' progress and efficacy through the assignment of homework and the organization of exams, subsequently adjusting teaching strategies accordingly. Additionally, in the conventional classroom setting, teachers undertake the role of class managers, ensuring discipline is maintained and fostering a conducive learning environment.

As information technology swiftly advances and educational concepts evolve, the role of teachers in the traditional education model has gradually shown limitations. This requires teachers to combine basic teaching skills with special teaching skills and undertake more complicated tasks [10]. Under the new trend of human-computer collaborative education, the part that university English educators play has started to experience significant shifts, evolving towards greater diversification and complexity.

4.2. Diversified role analysis

4.2.1. Learning designers

In a human-computer collaborative education environment, college English teachers are the first to transform into learning designers. Teachers have changed from monopolists of knowledge learning to managers of learning resources [11]. They are no longer just imparting knowledge, but designing personalized learning paths and resources based on students' needs, interests, and learning styles. This requires teachers to possess profound subject knowledge, instructional design skills, and information technology literacy, and to be adept at using various teaching software and platforms, such as intelligent tutoring systems (ITS) and online learning platforms, to create an immersive and interactive learning experience for students. For example, teachers can use big data to analyze students' learning data, identify students' weak points, and design targeted reinforcement exercises and extended reading accordingly to achieve accurate teaching.

4.2.2. Technology facilitators

After the development of AI technology, teachers' teaching ability is mainly defined according to their ability to process information, and the cross-teaching of teaching knowledge and information knowledge has become the mainstream of teachers' ability improvement [12]. Within the ever-changing education field, where human and artificial intelligence work in tandem, college English teachers have assumed a new role that is both

innovative and vital: they act as technology facilitators. In this role, these teachers are engaged not solely in imparting knowledge but also in orchestrating the fusion of technology with traditional teaching methods, thereby amplifying educational engagement.

They integrate cutting-edge tools and platforms into their curriculum to make learning more interactive and immersive. This could involve using language learning applications, virtual reality for cultural immersion, or AI-powered writing assistants. Meanwhile, they guide students through the vast digital resources available, helping them discern reliable educational content from the noise, and teaching them how to use these resources effectively. In short, they act as a bridge between the traditional and the digital, ensuring the richness of human interaction is not lost in the digital age, while simultaneously exploiting the benefits of technology to enrich the learning experience.

4.2.3. Learning evaluators

In the context of human-computer collaborative education, the way learning is assessed has also changed. College English teachers are not only test organizers in the traditional sense, but also evaluators and feedback on the learning process. They utilize an intelligent assessment system to gather students' learning data, including online assignments, classroom interactions, discussion forum speeches, etc. and comprehensively and objectively evaluate students' learning effectiveness and progress through data analysis technology. Teachers provide students with pertinent and well-timed feedback, aiding them in defining their educational aims and pathways, and refining their study tactics and techniques. Such developmental evaluation fosters learners' enthusiasm and drive, encouraging autonomous study and ongoing personal growth.

4.2.4. Emotional supporters

Teachers play an irreplaceable role in promoting the growth of students and realizing their all-round physical and mental development [13]. Although human-computer collaborative education emphasizes the application of technology and the analysis of data, humanistic care and emotional communication in education are still indispensable. College English teachers play the role of emotional supporters in this process. They pay close attention to students' emotional fluctuations and mental health, actively fostering a trusting and respectful teacher-student relationship, and offering them the necessary emotional support and psychological counseling. In the context of human-computer collaborative education, teachers can maintain continuous communication with students via diverse online and offline platforms, ensuring they hear their voices, address their doubts, and provide assistance in overcoming academic challenges and setbacks. Additionally, to prevent the dilemma of suppressed values caused by excessive respect for instrumental rationality, teachers are required to pay attention to the edification of students' humanistic spirit, play the role of persuaders, guides, and coordinators, strengthen emotional communication with students, and avoid excessive worship of technology and neglect of traditional morality and ethics [14]. This emotional support and nurturing play a pivotal role in fostering students' motivation and safeguarding their mental well-being.

5. Adaptive strategies for college English teachers

As human-computer collaborative education emerges as the new paradigm in higher education, college English teachers are confronted with unprecedented challenges and opportunities. To effectively navigate this shift, teachers must start from multiple dimensions and continuously enhance their adaptability to ensure that the quality of teaching and the learning effect of students are improved simultaneously. The following will elaborate on the adaptive strategies of college English teachers from three aspects: technological literacy and ability improvement, educational philosophy and role cognitive transformation, teaching strategy and method innovation, and integration of specific AI software or platform examples.

5.1. Technical literacy and ability improvement

5.1.1. Discussion of teachers' key competencies

In a human-computer collaborative education environment, college English teachers first need to have solid information technology application skills and excellent instructional design skills. This includes

but is not limited to, proficiency in educational software, online learning platforms, and tools that use artificial intelligence to assist in teaching. Teachers may use intelligent English study platforms, exemplified by "smartstudy.com" to furnish learners with personalized learning paths and curated resource suggestions. Simultaneously, mastering multimedia production tools such as "Camtasia Studio" can produce high-quality teaching videos and courseware to enhance the interactivity and interest of the class.

5.1.2. Ways and means to improve capabilities

To improve these key qualities, teachers may adopt the subsequent approaches and methods. Initially, they might engage in specialized training programs conducted by esteemed organizations like the "Chinese Association of Higher Education," thereby acquiring cutting-edge information technology and pedagogical design principles. Subsequently, they are encouraged to immerse themselves in practical teaching experiences, such as using smart teaching tools like "Rain Classroom" to carry out blended teaching practice, and constantly summarize the experience. The third is to join the educational technology community, such as the "Educational Technology" WeChat official account or related forums, to exchange ideas and share successful cases with peers, pay attention to the release of educational products of artificial intelligence companies like "iFLYTEK" and introduce new technologies and tools into teaching promptly.

5.2. Educational concepts and role cognitive transformation

5.2.1. Updating educational concepts and role cognition

Confronted with the demands of the new era of human-computer collaborative education, college English teachers ought to decisively discard obsolete teaching concepts, embrace and update the educational concepts, and at the same time deeply adjust their role cognition. Teachers should transform from the role of mere knowledge imparters to guides and facilitators of learning, focusing on the full display of students' subjectivity and their urgent needs for individualized development. In this transformational journey, teachers can incorporate and apply the "deep learning loop" as a technological approach or the concept of an "active learning ecosystem" which not only reaffirms the critical role of active learning for knowledge internalization and skill improvement but also advocates for a student-centered, multi-interactive learning ecosystem.

Under such a framework, teachers can capitalize on the power of AI, for instance, by integrating intelligent software like "AI teaching assistants" to deeply analyze students' learning behavior data and accurately identify each student's learning preferences, difficulties, and progress trajectory. Based on these rich data insights, teachers can tailor personalized learning paths and strategic recommendations for students, to more effectively stimulate students' intrinsic learning motivation and promote their all-round development and growth in a human-computer collaborative educational environment.

5.2.2. Emphasizing the importance of modern educational concepts

Modern educational concepts such as student-centered and individualized teaching are particularly important in human-computer collaborative education. Teachers can use online learning platforms such as "Xuexitong" to collect data on students' learning behaviors, analyze their learning preferences and difficulties, and customize personalized learning plans and resources for them. This student-centered teaching model not only helps to stimulate students' interest and motivation in learning but also fosters their personalized development and the enhancement of their comprehensive quality.

5.3. Teaching strategy and method innovation

5.3.1. Innovative teaching strategies and methods

In the context of human-computer collaborative education, college English teachers are tasked with the ongoing evolution of instructional strategies and methods to boost the efficacy of teaching and the learning experience. They might experiment with incorporating video editing applications like "Edpuzzle" into educational settings, tailoring existing instructional footage, embedding interactive questions, and directing learners to engage in contemplation and dialogue throughout their viewing. Additionally, teachers can utilize online course platforms

such as “Coursera” or “Chinese University Massive Open Online Course (MOOC)” to bring in premium open educational content as ancillary study assets, aiming to broaden students’ knowledge horizons.

5.3.2. Several teaching strategies or methods suitable for human-computer collaborative education

5.3.2.1. Blended learning model

This approach seamlessly integrates online and offline learning environments. Teachers can use platforms like “DingTalk” or “Tencent Meeting” to upload teaching videos, PowerPoint presentations, and reading materials for students to access asynchronously. Synchronous in-class sessions can then focus on discussions, practical applications, and collaborative projects.

Teachers prepare and upload content ahead of time, ensuring it is engaging and accessible. In class, they facilitate discussions and activities that build on the pre-learned material, making the learning experience more interactive and comprehensive.

5.3.2.2. Flipped classroom

This method inverts the traditional classroom setup, where students review material outside of class and engage in interactive activities during class time. Teachers can post videos on “Bilibili” covering vocabulary, grammar, and cultural insights, allowing students to prepare before class.

Teachers design pre-class tasks that guide students through the video content. In class, they use tools like “Kahoot!” for quick quizzes and organize group discussions and debates to deepen their understanding and application of the material.

5.3.2.3. Project-based learning

Project-based learning (PBL) involves students in completing and presenting projects that are directly related to the course material. This approach fosters practical language use and develops teamwork and problem-solving skills.

Teachers design project themes aligned with learning objectives, such as creating English posters or writing research reports. Students collaborate using tools like “Google Docs” to plan and execute their projects, culminating in presentations and evaluations.

5.3.2.4. Personalized learning paths

Utilizing AI and data analytics, personalized learning paths are created for each student based on their individual learning data and needs. Platforms like “Zhixue.com” can analyze student performance and recommend customized learning resources.

Teachers collect and analyze student data to identify strengths and weaknesses. Drawing from this analysis, they proffer customized responses and materials, tailoring the educational path as needed to ensure each student is challenged and supported appropriately.

5.3.2.5. Collaborative online international learning

Collaborative online international learning (COIL) involves partnering with institutions in other countries to facilitate collaborative projects and discussions. This strategy enhances language skills and provides a platform for cultural exchange.

Teachers establish partnerships with international institutions and design collaborative projects. Students engage in cross-cultural dialogues and projects, facilitated by platforms that support real-time communication and collaboration.

5.3.2.6. Gamification

Incorporating game elements into learning can make the process more engaging and competitive. Platforms like “Classcraft” turn classroom activities into a role-playing game.

Teachers design classroom activities that have game-like elements, such as points, levels, and challenges. They use gamification platforms to manage these elements, encouraging student participation and competition in a fun and interactive way.

5.3.2.7. Virtual reality and augmented reality

Virtual reality (VR) and augmented reality (AR) technologies can be used to create immersive language learning experiences. VR can simulate real-life scenarios for language practice, while AR overlays interactive content onto physical materials.

Teachers integrate VR and AR experiences into their curriculum, providing students with opportunities to practice language skills in simulated environments. They use VR headsets and AR applications to enhance

the learning experience, making it more dynamic and engaging.

Computers and various software programs were incorporated into education to aid the administration and measurement of solo and collaborative learning activities [15]. College English teachers should be at the forefront of adopting such inventive instructional tools, strategies, and methodologies within the human-computer collaborative educational sphere, persistently enhancing their proficiency in technology and pedagogical concepts. They should utilize artificial intelligence applications or platforms to support their teaching endeavors, thereby crafting an enriched, more productive, and tailored learning environment for their students.

6. Conclusion

6.1. Main findings

This research delves into the adaptive strategies of college English teachers within the context of human-computer collaborative education, emphasizing the enhancement of digital acumen and competencies, alongside the transformation of educational concepts and professional self-perception, and the innovation of teaching strategies and methods. Through comprehensive analysis, it is found that it is necessary and feasible for teachers to embrace the diverse and adaptable facets of their roles in the human-computer collaborative education model. Such an adaptation will not merely elevate the teachers' professional quality and holistic capabilities, but also foster enhancements in educational quality and the well-rounded development of students.

6.2. Prospects and recommendations for future research

Anticipating what lies ahead, there are still many areas worth exploring in the research of human-computer collaborative education. The nuanced development of its specific application scenarios holds great potential, where a more layered approach can be applied, including tailored investigations catering to the instructional requirements of assorted academic fields and varying educational levels. Teachers may intensify investigations into their own adaptability strategies and seek ways to proficiently augment their adaptability and innovation ability across varying instructional settings. Teachers can also strengthen interdisciplinary cooperation and exchanges, drawing insights from the triumphant successful strategies and practical cases of human-computer collaborative education observed in other fields. This can offer a wealth of beneficial ideas and benchmarks for the advancement of college English education.

Human-computer collaborative education presents unparalleled prospects and challenges for college English education. As one of the main forces in education, college English teachers are tasked with the ongoing enhancement of their capacity to adapt and innovate, proactively addressing shifts and adversities within the academic milieu. Concurrently, collaborative endeavors and support from diverse societal sectors are imperative for cultivating an enhanced atmosphere and prerequisites that nurture the evolution of college English education.

Disclosure statement

The author declares no conflict of interest.

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