Challenges and strategies for university English teachers in the era of artificial intelligence

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Abstract. The domain of artificial intelligence (AI) in education has developed into a significant topic of inquiry. This research concentrates on the influence of AI on the teaching practices of university English teachers. Additionally, it pinpoints deficiencies in existing research. The literature review identified the current state of AI adoption by university English teachers. It identified four main challenges: technology adaptation, training, privacy, and ethical issues. The study proposed solutions to address these challenges. These include improving technology adaptation, addressing training issues, ensuring privacy, and addressing ethical issues. This study aims to provide practical strategies for university English teachers. It encourages innovation and change in English language teaching and learning by promoting a deeper integration of technology and education.

Keywords: artificial intelligence, teaching practices, technology adaptation, training, privacy, ethical issues.

1. Introduction

The accelerated advancement of artificial intelligence is influencing the field of education, particularly in the context of global educational transformation. "Smart education" has emerged as a result of the profound integration of "AI + education" (Zhu, Peng, & Lei, 2018). The pervasive implementation of AI in education, which includes personalized learning, automatic assessments, and facial recognition systems, has significantly improved teaching practices and learning experiences. However, applying these technologies has also brought ethical and social challenges. Over-reliance on AI could weaken teachers' role and affect education quality (Akgun & Greenhow, 2022). China has moved quickly in advancing AI development, significantly improving its education strength index. It has also fully deployed the integration of AI and smart education through a new nationwide system, driving the smart transformation of education (Hu, Lin, & Lin,2024).

Artificial intelligence presents both potential and challenges for teaching university English majors. The integration of information and communication technology into both classroom instruction and self-directed learning is a critical element of China's university English instruction reform (Huang, 2022). Teaching approaches have changed as a result of the integration of AI, and in order to successfully integrate technology and raise educational standards, instructors must become more proficient in AI (Li et al., 2025). In order to address AI's limits in emotional education for holistic development, English teachers must improve their linguistic, pedagogical, and technology application skills (Zou, 2021).

Enhancing digital and intelligent quality is a gradual and deepening process, and teachers need to improve their quality through continuous reflective practice, combining theoretical learning and thematic training, and applying new information to actual teaching to internalize and externalize it. This requires teachers to continuously reflect on their teaching practice and explore more efficient teaching and research methods in the AI environment (Wang & Zhou, 2024).

In university English writing teaching, the application of generative AI enhances teaching efficiency and opens up a new path for personalized teaching and precise feedback (Wang, 2024). For example, the 'AI-assisted + non-AI-assisted alternating teaching mode' adopted in "College Thinking English Tutorial - Intensive Reading" has achieved remarkable results. Through the formulation of effective prompts, including 'role-playing' and 'many rounds of prompts,' educators can leverage AI more efficiently to enhance students' learning and language competency (Kong, 2024). These innovations highlight the importance of digital literacy enhancement in smart

educational environments. This paper will study the current teaching situation, opportunities, and challenges university English teachers face applying AI and propose corresponding optimization countermeasures and suggestions. This research is of enormous practical significance and can provide effective strategies for solving practical problems in current education.

2. The present condition of artificial intelligence utilization in instruction by university english educators

2.1. The Practice of AI in Personalized Teaching for University English Majors

AI refers to machines or computer systems that imitate human thinking to learn, solve problems, and perform cognitive tasks or functions. According to Zhou (2024), personalized English instruction involves teachers adapting their teaching strategies to accommodate the distinctive requirements of each student. Innovation in higher education English is contingent upon personalized instruction (Zhu, 2021). AI technology, incredibly generative large models, can provide customized learning experiences, improving teaching and learning outcomes (Mao, 2024). Due to digital empowerment, the widespread use of AI technology in higher education has driven personalized teaching based on individual student needs. This approach improves teaching quality, leading to profound changes and systematic restructuring in traditional teaching methods (Chen, Liu, & Zuo, 2025).

AI uses adaptive learning platforms to identify student weaknesses and offer targeted resources, helping students improve skills and learn efficiently (Hao & Peng, 2024). The application of AI in personalized teaching is a hot topic in education. As an AI system, Duolingo provides valuable experience and insights for this field. The platform offers precise, individualized learning experiences by automatically analyzing, classifying, and organizing student English learning data using Natural Language Processing (NLP) and Machine Learning. NLP technology enables Duolingo to detect and correct grammatical, pronunciation, and vocabulary errors in students' language input. The platform offers basic vocabulary and listening training for students with lower English levels. For students with stronger speaking skills, it provides opportunities to practice simulated conversations and daily dialogues. Duolingo also creates personalized learning plans based on students' goals and schedules, recommending suitable learning content and progress to make learning more focused and effective.

2.2. Artificial Intelligence's Implementation in the Assessment and Feedback of English Instruction in Universities

Education evaluation is key to the development of education. It supports decision-making for governance and provides feedback on the behavior of teachers and students (Wu, Cao & Cao, 2021). The introduction of AI technology will push education evaluation toward digitization, comprehensiveness, process-based focus, and feedback (Zheng, Wang &Yang, 2024).

First, the assessment will shift from 'empirical assessment,' which relies on experience, to 'digital assessment,' which uses data analysis to provide more objective and accurate assessments. Secondly, the evaluation will shift from 'single evaluation' to 'comprehensive evaluation,' which will no longer be based on test scores alone but will incorporate multi-dimensional data, such as classroom performance, homework, and discussion participation. Then, the educational evaluation will shift from 'outcome-based evaluation' to 'process-based evaluation,' focusing more on students' learning processes, assessing their progress, and adjusting teaching programs through dynamic analysis. Finally, the evaluation will change from 'diagnostic evaluation' to 'feedback evaluation,' AI real-time analysis of student errors, and provide personalized advice to promote learning adjustments. The application of AI technology brings real-time, dynamic, and accurate evaluation tools to ensure the effectiveness of teaching evaluation (Zheng et al., 2024). By deploying electronic devices, such as cameras, to monitor and collect classroom information in real time, AI technology subverts the traditional way of classroom teaching evaluation (Wu et al., 2021). It enriches the evidence base of educational evaluation by analyzing teachers' teaching behaviors and students' learning processes

temporally and dynamically. It enables timely identification and feedback on key issues (Zheng et al., 2024). Big data technology collects and analyzes teacher and student performance in real time for objective evaluation. Real-time feedback systems in higher education enable teachers to instantly grasp the learning situation and adjust their strategies to improve teaching effectiveness.

AI technology provides real-time, dynamic, and precise evaluation tools for teaching. It ensures the effectiveness of teaching evaluation (Zheng et al., 2024). AI technology uses devices like cameras to monitor and collect classroom information in real time. This changes the traditional classroom teaching evaluation method (Wu et al., 2021). AI analyzes teachers' teaching behavior and students' learning process in a timed, dynamic way. It enriches the evidence base of educational evaluation and helps identify and respond to key issues promptly (Zheng et al., 2024). Big data technology collects and analyzes teacher and student performance in real time, offering an objective evaluation. Universities use real-time feedback systems to allow teachers to understand student progress and adjust strategies, improving teaching effectiveness.

3. The challenges faced by university english teachers in ai-based teaching

3.1. Teacher's Technological Adaptability

In order to satisfy the requirements of the artificial intelligence era, organizations that provide teacher training are required to undergo transformations. The era of smart teacher training has begun as a result of new technology and creative thinking that enhance teacher training (Ma, 2024). However, instructors' technological adaptation hampers the development of smart teacher training.

Whether teachers can accept and use intelligent teacher training systems in their work and learning is an important practical issue affecting their professional development (Jin et al., 2024). Intelligent teacher training systems help teachers master and apply modern educational concepts and methods by providing personalized learning resources and real-time feedback. Compared with traditional methods, the system reduces teachers' time and energy consumption on training so that they can devote more to teaching and interacting with students. At the same time, teachers receive continuous professional development support. Through long-term data accumulation and analysis, the system helps teachers reflect on and improve their teaching practice and enhance their professionalism. Teachers can use the timely feedback and suggestions the system provides to adapt to new methods and technologies more quickly, enhance their confidence, and improve their teaching effectiveness. The acceptability of the Intelligent Teacher Training System varies among teachers of different ages, specializations, and levels. Therefore, the expectation of promoting teacher reform through the application of smart training systems still faces the challenge of technology acceptance.

3.2. Teacher Training in the Era of Artificial Intelligence

Intelligent teacher training collects and analyzes teacher performance data through technological tools to provide tailored recommendations to meet teachers' specific needs and improve training effectiveness. It uses intelligence to analyze teachers' teaching experience, characteristics, and progress to develop customized training plans, effectively overcoming the limitations of traditional training methods (Jin et al., 2024). Teacher training institutions in local universities face backward training equipment, backward training ideas, and a lack of specialization of training teams, which affect the development of teacher training.

Despite the rapid advancement of artificial intelligence technology, the current state of AI teaching facilities and equipment is inadequate to satisfy the training requirements of instructors in the future (Ma, 2024). Teaching facilities and equipment that are outdated in terms of AI technology impede the advancement of "AI + Teacher Training." Instructors find it challenging to implement the knowledge they have acquired due to the discrepancy between the training materials they receive and the actual teaching environment. The efficacy of classroom instruction cannot be enhanced by teacher preparation at nearby colleges, as it is primarily theoretical in nature.

The three stages of training—centralized training, practical visits, and summary completion—remain stagnant (Ma, 2024). Due to its antiquated content, one mode, unclear impact, inadequate evaluation, and other issues, traditional teacher training is difficult to update to the times (Qin & Zhou, 2024). Too much emphasis is placed on theory in teacher preparation, practice is neglected, it is incompatible with contemporary educational ideas, it is not relevant or adaptable, and it does not address the needs of various teachers and subjects. The quality of education is impacted by outdated content, and students' learning experiences and knowledge acquisition are impacted by participating teachers' use of outdated methods (Qin & Zhou, 2024). The current situation needs to be altered right away, and universities should adopt more adaptable, scientific, and useful methods of teacher preparation in order to satisfy the demands of modern education. Put more emphasis on useful outcomes than formality. This can help develop skills that are in line with the future of society and encourage teaching and learning to be compatible with the AI era.

Developing an intelligent training system for university teachers requires the full cooperation of professional and management teams. However, it is currently facing challenges such as uneven quality of the management team, lagging knowledge updating, outdated concepts, imbalance in age structure, lack of service consciousness, and lack of skills. These problems hinder the fulfillment of training needs and undermine the motivation of teachers to progress and develop. Due to the professional and specific nature of teacher training, local universities must provide personalized training (Ma, 2024). The content and system of training for different specializations may differ significantly from other disciplines. For example, English teachers in some universities may need to be proficient in automatic writing assessment systems such as E-rater and iWrite, as well as intelligent tutoring systems such as YourVerbalZone and Robo-Sense. In addition, English teachers must have a basic understanding of neural machine translation systems such as DeepL and Google Translate to improve their technological literacy and teaching effectiveness. However, local universities often face limitations in providing such specialized training, making English teachers underqualified in AI-enhanced pedagogy.

3.3. Data protection and ethical concerns

The deeper application of AI in education has significantly impacted education. AI-assisted English language teaching involves student data collection and analysis, which raises privacy and ethical issues (Mao, 2024).

The primary risks to data privacy include over-collection, inadequate legal frameworks, and insufficient technical capacity. Teachers frequently utilize artificial intelligence tools to collect data on students' learning progress, grades, and interests. However, this practice can compromise student privacy and information security. For instance, analyzing a substantial volume of student data is necessary in the context of AI-assisted English teaching. In the context of designing questionnaires, university English teachers with a limited understanding of the scope and limitations of data collection may unintentionally collect superfluous private information, resulting in excessive data accumulation. Incorrect management of this data could result in the infringement of students' privacy.

In data processing, students' identities are not adequately protected, and there is a risk of disclosure due to a lack of anonymization and de-identification measures. Improper desensitization operations or misunderstandings may raise ethical issues (Yang & Chu, 2024). Data security cannot be guaranteed during data transmission and storage due to inadequate protection measures, which may cause educational organizations to face compliance issues when handling student data. Inadequate technological means of data processing in the education sector, such as lack of anonymization and de-identification, increase the likelihood of student data leakage.

3.4. Ethical concerns

Machine learning, especially the use of artificial neural networks, has fueled the success of artificial intelligence but raises ethical questions due to its opacity, unpredictability, and the need for

large data sets. These systems are adaptive, which makes it difficult to predict their response or rely on past behavior to predict future actions (Stahl, 2021).

Common ethical issues relate to AI algorithms' accuracy and fairness, particularly bias, which encompasses cultural, sociohistorical, and gender aspects. For instance, due to cultural differences, AI systems may unequally evaluate students from different backgrounds. Observations reveal that certain US educational technology companies' intelligent assessment systems incorrectly assess the critical thinking skills of East Asian students. This is due to the algorithms used by these systems being based on Western classroom interactions and not considering the cultural significance of introverted expression in Eastern educational cultures. This has resulted in biased assessment outcomes.

Furthermore, gender bias has been shown to lead to unfair assessment results. Algorithms may be biased in favor of one gender based on the gender distribution in the training data, affecting the accuracy of the results. These problems may impact teachers' judgments about education and the precision of AI algorithms. Reliance on biased AI systems that make incorrect assumptions about certain student groups may impact teachers' choices and teaching methods.

4. Photographs and figures

4.1. Improving teachers' technological adaptability

To accomplish the integration of "intelligence" and "teacher training," AI technology must be extensively adopted (Jin et al., 2024). However, we must acknowledge that teachers' acceptance of novel technology can vary significantly. In the context of teacher education research, a personalized training model that caters to teachers' developmental and learning requirements has emerged as a prevailing societal trend (Du, 2021). The initial step involves using data analysis to formulate bespoke learning pathways, considering factors such as teachers' age, individual needs, and interests. For those more open to technological innovation, AI training is offered to facilitate the effective utilization of the AI platform for teaching purposes and enhance their AI literacy across various domains (Hu, Xu & Zhang, 2023). Conversely, for those who are less inclined toward technology, basic intelligence training is provided. Secondly, the training objectives and needs of teachers are clarified, and an accurate training platform is designed to ensure the relevance and effectiveness of the training (Jin et al., 2024). Finally, the enhancement of AI technology's practicality and ease of use improves efficiency and reduces burden, thereby increasing teachers' acceptance and satisfaction with intelligent training. In conclusion, it is imperative that "Intelligence + Teacher Training" address the differences in teachers' technology acceptance, implement personalized training, use data analysis to design an accurate platform, increase teachers' acceptance and satisfaction, and improve the overall effectiveness of training.

4.2. Training Dilemma Breakthrough

The Office of the Ministry of Education recommends the integration of artificial intelligence into elementary and secondary school curricula and after-school programs. The Ministry of Education has requested increased funding for hardware and enhanced classroom facilities to address obsolete teaching equipment, enabling educators to utilize AI effectively. The government must increase education funding significantly to update AI teaching facilities. Enterprises and the government should work together to promote updating education technology, with enterprises providing cutting-edge technology and the government supporting schools in adopting new technology through policies and funding. Schools should introduce advanced tools such as smart blackboards, smart classroom management systems, virtual reality (VR), and augmented reality (AR) to simulate real teaching scenarios and provide customized hands-on training opportunities (Qin & Zhou, 2024). These tools enhance classroom interaction and support personalized teaching.

In addressing the problem of lagging training concepts, the deep integration of AI and teacher training will trigger changes. To promote sustainable development, local university teacher training institutions should embrace intelligent training thinking and align with AI concepts (Ma, 2024).

Firstly, training content and methods need to be updated to introduce the latest educational concepts and technologies and ensure that the training covers the latest research results, teaching methods, and technological trends. Training institutions should follow AI education's policies and regulations, enhance intelligence awareness, and invite industry experts or scholars to give special lectures to share cutting-edge educational research results and practical experience. Secondly, the establishment of a new development direction for intelligent teacher training is imperative. Promoted by the government, colleges, and universities with a sense of teaching mission should be cultivated to create a positive public opinion environment and social foundation for 'intelligent teacher training' (Ma, 2024). Encourage training institutions to participate in teaching reform projects, improve teachers' teaching and innovation ability through practical projects, and promote teaching concepts to adapt to the development of the AI era.

It is clear that training teams are not professionally trained enough. As a result, it is becoming more and more clear that teacher training institutions need to be professionally trained as well. This is because teacher professionalization in China is still being developed and improved. The professionalization of teacher training institutions demands the comprehensive mastery of pertinent professional knowledge and management skills, necessitating systematic learning and the implementation of teacher education and training following established standards (Ma, 2024). Firstly, there is a necessity to strengthen the professional training of the training management team to enhance their professionalism and management skills, optimize the academic structure, and recruit management personnel with a high level of education and extensive experience. Secondly, there is a need to improve the professional skills of the training team, conduct joint research with professional teachers, develop personalized training programs, and provide public courses covering AI technology and other fields, as well as customized training content. Finally, strengthening cooperation and exchanges with local universities and other institutions is paramount to sharing resources and experiences and thus enhancing the overall quality of training.

4.3. Data privacy protection

The privacy protection principle regulates data processing to ensure individual privacy is respected and legally protected against data leakage and privacy invasion (Yang & Chu, 2024).

It is crucial for educators to collect only information that is directly related to the objectives of teaching and learning. They must refrain from collecting sensitive personal data and define the course syllabus's core teaching and learning objectives. In the context of group learning, educators should pay close attention to students' cooperative attitude, task completion, and the quality of discussion. When utilizing AI tools, it is imperative to implement rigorous data management protocols to ensure legal compliance.

In the data transmission and collation phase, data security must be ensured to prevent illegal interception or theft and to avoid leakage of students' sensitive information (Zhang & Zhang, 2022). To respect and protect the data privacy of educational users, technologies such as encryption, desensitization, log tracking, and data auditing need to be applied to comply with data security norms and safeguard the data privacy of teachers and students (Dong, Zheng & Peng, 2019). Teachers should implement data anonymization or de-identification to protect student identity information when using AI tools to process student data. At the same time, a data desensitization mechanism should be established to reduce the risk of leakage by deleting or modifying personally identified information and processing data as anonymous data. Educational institutions should strengthen security measures for data transmission and storage to ensure data transmission and storage encryption to prevent unauthorized access. These measures can help reduce AI tools' privacy and information security risks when collecting student data and ensure data confidentiality and integrity.

To satisfy the need for educational data privacy protection, educational institutions must develop strict data security protocols and sign service agreements with technical service providers (Zhao, Zhang & Wang, 2022). In applying AI in education, institutions should establish an accountability mechanism to clarify the responsible parties and ensure supervision and implementation (Yang &

Chu, 2024). In order to improve data privacy protection laws and ensure adherence to data collection, storage, and processing, they should concurrently refer to standards like the EU General Data Protection Regulation (GDPR). To ensure that they are knowledgeable about the best privacy protection practices while handling data, educational institutions should also improve the training provided to administrators and teachers on data privacy protection. These steps protect students' privacy while simultaneously assisting in the delivery of high-quality education.

4.4. Response to ethical concerns

Artificial intelligence products should meet the needs of all types of learners, promote equality in education, and avoid bias. Product development needs to focus on equity and inclusion, reduce bias in education, promote a balanced distribution of educational resources and outcomes, and adapt to the progress of a diverse and inclusive society (Yang & Chu, 2024).

The government and associated organizations should create educational regulations that adhere to moral and legal requirements to encourage the use of AI in education. To guarantee equitable treatment for all educational users, educational administrations, educational institutions, and social organizations should set up a single data processing system that handles data collection, storage, analysis, and decision-making. They should also monitor user needs in real time and create an impartial and equitable educational data service mechanism (Zhao, Zhang & Wang, 2022).

In the early stages of AI system development, ensure that the training data are representative, unbiased, and authentic and that the vendor provides proof of this (Yang & Chu, 2024). Ensure fairness and representativeness of the data when collecting and using educational data to prevent the influence of sociohistorical and demographic bias. Cleaning and processing the training data to remove noise and outliers maintains the fairness of the AI algorithm. Additionally, we must adhere to the principle of fairness to prevent unfair assessments influenced by cultural background, social history, and demographics.

Optimization of algorithms necessitates the collection of user feedback to ensure adaptation to changing student populations and instructional environments. It is important to make sure that algorithms can be used with students from a variety of backgrounds by using diversity testing that includes multiple datasets and pre-training models. These measures ensure that every student receives an education of high quality, irrespective of socioeconomic status, ethnicity, race, language, gender, or other personal characteristics.

5. Conclusion

This research concentrates on the current state of AI applications in university English teaching, evaluates its function in teaching evaluation and feedback, and offers insights into its practical utility in personalized teaching and evaluation feedback. The study proposes strategies to address the four main problems encountered by university English teachers in using AI for teaching: technology adaptation, smart teaching training challenges, privacy protection of teaching data, and ethical issues in applying AI technology. These strategies cover improving teachers' technological adaptability, solving training dilemmas in multiple dimensions through training equipment updating, conceptual innovation, and team building; protecting the privacy of teaching data in all aspects; and adequately addressing ethical challenges to promote educational equity further. Furthermore, this research assists university English teachers in navigating the obstacles of the AI era, assists them in making adaptive adjustments to their professional development, encourages innovation and change in English education at colleges and universities, and recognizes the profound integration of technology and education. In order to improve the quality of teaching and the learning experience of students, future research should investigate the collaborative teaching model of AI and teachers in greater detail, despite the limitations of this study.

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