WHIOCE PUBLISHING PTE. LTD.
PROVIDING
FIRST-CLASS SCIENTIFIC INFORMATION
FOR TOP SCHOLARS

2025 Volume 3, Issue 11
Lecture Notes in Education, Arts, Management and Social Science
ISSN(Online): 2705-053X

AI-Facilitated Innovations in Vocational College English Teaching Modalities

Jingwei Zhu*
Jiangsu Maritime Institute, Nanjing 211119, Jiangsu, China

**Author to whom correspondence should be addressed.*

Abstract: This study investigates the application of artificial intelligence (AI) in reforming English teaching methodologies at vocational colleges to enhance instructional quality and student engagement. Through empirical research, we evaluate the effectiveness of AI-driven tools and platforms in delivering personalized learning experiences, improving learning efficiency, and creating more interactive and adaptive learning environments.

Keywords: vocational education English; artificial intelligence; teaching reform.

Online publication: December 1, 2025

1. Introduction

In an era of rapid technological advancement, artificial intelligence (AI) has emerged as a transformative force across multiple sectors, including education. Within vocational colleges' English teaching frameworks, AI-powered innovations are revolutionizing traditional instructional models, enhancing learning efficiency, and fostering more personalized and interactive learning environments. This paper examines the impact of AI on English education in vocational institutions, with a focus on highlighting the key technological-driven innovations it has introduced[1].

The English education in vocational colleges aims to cultivate students' language proficiency and professional competencies. However, traditional teaching models often face challenges such as limited resources, low student engagement, and difficulties in assessment methods[2]. The persistent use of the "teacher lectures, students listen" approach has led to diminished learning interest and reduced classroom participation among students with weak English foundations, making it ineffective in improving language skills[3]. Additionally, monotonous assessment methods—primarily relying on final exams—fail to evaluate oral expression and practical application skills, resulting in standardized evaluation formats that lack actionable insights for teaching adjustments. Furthermore, limited faculty resources further compromise teaching efficiency and outcomes. The emergence of artificial intelligence technology presents new opportunities to address these issues by offering personalized learning methods, intelligent recommendation systems, and real-time feedback mechanisms[4].

The integration of artificial intelligence (AI) into English teaching at higher vocational colleges holds the potential to revolutionize learning experiences. AI tools can customize learning materials based on individual needs, provide real-time feedback, and adjust teaching strategies according to student performance. This project aims to validate the advantages

of AI-assisted teaching through empirical research, laying the foundation for its widespread application in vocational education[5].

2. Project Research

2.1. Methodology Literature Review:

Through Chinese databases including CNKI, Wanfang, and VIP, as well as international databases such as Web of Science and Springer, we conducted a comprehensive search of core academic publications, monographs, policy documents, and industry reports from the past three years. The study focuses on analyzing the application principles, practical models, current research status, and development trends of artificial intelligence (AI) technology in English language teaching. This analysis aims to establish a theoretical framework for the research and identify key research questions, thereby laying the foundation for theoretical development and clarifying critical research objectives.

Survey and Interview Methodology: This study developed specialized questionnaires and interview protocols for English teachers and students at vocational colleges[6]. The student questionnaire covered key aspects including current English learning status, awareness of AI-assisted teaching, personal learning preferences and needs, as well as practical experiences with AI educational tools. The teacher questionnaire focused on teaching challenges, utilization of AI tools, and suggestions for instructional reforms. The survey was conducted online, targeting faculty and students from multiple vocational institutions. A total of 1,000 student questionnaires were distributed, yielding 965 valid responses with a 96.5% response rate. Among teacher questionnaires, 100 were distributed and 96 valid responses were collected, achieving a 96% response rate. The data collection aimed to gather insights on attitudes and needs regarding AI-assisted teaching among vocational college English educators and learners[7-8].

Empirical Study: This study selected two peer classes from a vocational college as research subjects, divided into an experimental class and a non-experimental class. The non-experimental class adopted traditional English teaching methods, while the experimental class utilized an AI-assisted teaching tool for instruction over a six-month period[9]. The tool incorporated personalized learning pathways, intelligent recommendation systems, and real-time feedback mechanisms during the teaching process. Data were collected from participants' learning activities and interactions with the AI system. Comparative analysis of data from both classes was conducted to evaluate the practical effectiveness of the AI-assisted teaching tool[10].

Data Analysis: Statistical software was employed to analyze the collected data to evaluate the effectiveness of AI-assisted models in learning outcomes, engagement, and satisfaction.

2.2. Research Subjects and Implementation Process

Model Development: Based on literature review and survey findings, an AI-assisted teaching model was developed. Leveraging an intelligent English learning platform, the model integrates personalized learning, smart assessment, real-time feedback, multimodal instruction, and resource recommendation features. By analyzing students' pre-class preparation, classroom participation, and homework accuracy rates, it automatically identifies knowledge gaps and delivers tailored learning resources[11].

Teacher Training: Educators received training on the use of artificial intelligence (AI) tools to ensure effective implementation. The curriculum covered operational methods for intelligent learning platforms, design principles for AI-assisted instruction, development of personalized teaching plans, data interpretation, and teaching adjustment strategies. This ensures teachers can proficiently utilize AI tools in their teaching practice and fully leverage the auxiliary role of AI technology[12].

Teaching Practice: This model is implemented in real classroom environments through integrated approaches including online previewing, offline instruction, online reinforcement, and feedback mechanisms. Non-experimental classes adopt traditional teaching methods focusing on textbook explanations, in-class questioning, homework assignments,

and final exams, while experimental classes employ a blended learning model combining "online preparation + offline classroom sessions + online reinforcement + real-time feedback." Students in experimental classes complete foundational content preparation (e.g., vocabulary and grammar) via an AI platform before class, with automated generation of study progress reports that guide teachers in adjusting instructional priorities. During lessons, educators utilize AI tools for interactive teaching, real-time monitoring of knowledge acquisition, and targeted explanations of challenging concepts. After class, the AI platform delivers personalized assignments and learning resources based on student performance, providing immediate feedback on completed exercises. Teachers leverage platform data to assess learning progress and deliver tailored instructional support[13].

Data Collection: Collect learning data including duration, accuracy, and feedback for analysis. During the experiment, learning data from two classes were gathered, covering preview time, homework quality and accuracy rates, unit test scores, final comprehensive grades, student learning satisfaction ratings, and teachers' instructional reflection records. This comprehensive data collection provides robust support for subsequent result analysis.

2.3. Results Analysis

Enhanced Learning Efficiency: AI-driven personalized and recommendation systems provided tailored learning resources, resulting in a 35.7% improvement in after-class assignment completion efficiency among students in the experimental class compared to the non-experimental group. Their average test scores exceeded those of the non-experimental group by 18.5 points, demonstrating significant enhancement in learning efficiency[14].

Stimulating Learning Engagement: Interactive AI tools and diverse learning materials have significantly enhanced student interest and participation. These interactive AI solutions have transformed the traditionally monotonous English classroom atmosphere, with intelligent assistants and VR simulations effectively boosting learning motivation. Experimental class students demonstrated a 42.2% higher frequency of active participation—such as raising hands to ask questions and engaging in oral dialogues—compared to control classes. Post-class self-access rates on learning platforms reached 79.7%, far exceeding the 32.2% observed in non-experimental classes. This approach has fully ignited students' enthusiasm, shifting their learning paradigm from passive knowledge absorption to proactive exploration.

Enhancing Teaching Effectiveness: Real-time feedback enables teachers to promptly adjust strategies and improve overall instructional outcomes. The AI platform's real-time feedback mechanism allows educators to monitor each student's learning progress in real time, identify issues promptly, and swiftly adjust teaching pace and methods to ensure alignment between curriculum content and student needs. Meanwhile, AI tools automate repetitive tasks such as homework grading and automated assessments, reducing teaching workload and freeing educators to focus on instructional design, personalized tutoring, and pedagogical innovation. Post-experiment results demonstrated that students in the experimental class exhibited superior comprehensive English application skills, oral expression abilities, and writing proficiency compared to the control group, with significant improvements in overall classroom teaching effectiveness.

This report summarizes the empirical research findings and recommendations on AI-assisted English teaching reform in higher vocational education. It highlights the transformative potential of artificial intelligence in the field of education and provides practical insights for future implementation.

3. Diversification of Teaching Resources

Artificial intelligence technology has significantly enriched English teaching resources in vocational colleges. Traditional text-based materials have been enhanced with multimedia content such as audio, video, and images. AI systems utilizing natural language processing (NLP) and machine learning algorithms can automatically generate and recommend personalized learning resources tailored to students 'proficiency levels and interests. Platforms like U-Campus and other intelligent educational tools enable teachers to access diverse reading materials, thereby enhancing students' language application skills[15].

3.1. Creating Multimodal Learning Environments

Artificial intelligence facilitates the creation of multimodal learning environments in English classrooms, emphasizing information delivery and interaction through multiple sensory channels including visual, auditory, and tactile inputs. For instance, intelligent voice assistants can assist students in practicing listening and speaking skills. Virtual reality (VR) technology provides immersive language learning environments, while multimodal data analysis techniques evaluate student progress and deliver personalized feedback. These technologies collectively enrich instructional approaches and enhance learning experiences[16].

3.2. Innovation in Teaching Tools

Artificial intelligence is revolutionizing teaching tools for vocational English courses, particularly in listening, speaking, reading, writing, and translation. For listening and speaking skills, AI technologies like speech recognition and natural language processing (NLP) create personalized and interactive learning environments that significantly enhance teaching quality. AI systems can analyze students' pronunciation and intonation patterns, providing real-time feedback and corrections. Additionally, they simulate real-life scenarios such as business meetings and travel conversations, enabling students to practice authentic communication contexts[17].

In translation training programs, Neural Machine Translation (NMT) technology delivers high-quality translation outcomes while providing students with extensive practice materials. AI-assisted translation tools analyze complex sentence structures, recommend vocabulary choices, and display real-time accuracy and fluency metrics, thereby enhancing learners' translation proficiency.

In writing training, AI-assisted tools enhance students 'writing skills by generating writing prompts and analyzing compositions. The AI writing assistant evaluates grammar, vocabulary, and structural elements, providing detailed feedback and revision suggestions to improve the logical coherence and clarity of students' English writing.

3.3. Teaching Evaluation Reform

Artificial intelligence is revolutionizing the teaching evaluation framework for English courses in vocational colleges, effectively addressing issues such as subjectivity, inefficiency, and delayed feedback inherent in traditional assessment methods. Natural language processing technologies enable automated grading, text analysis, and semantic understanding, providing objective and precise data support for evaluation outcomes. Machine learning models trained on massive datasets can predict student learning performance and deliver personalized learning recommendations. Intelligent evaluation systems built on big data and machine learning technologies have achieved fully automated assessment processes, significantly reducing teachers' workload while enhancing the scientific rigor and accuracy of evaluation practices.

4. It is recommended to further optimize AI tools to enhance usability and adaptability, addressing the challenges faced by users.

Teacher Development: Continuous teacher training is crucial for fully leveraging the potential of artificial intelligence in teaching.

Model optimization: Artificial intelligence features should be integrated with traditional teaching methods to achieve a seamless learning experience.

Wider applications: Encouraging the broader adoption of AI-assisted models in vocational colleges can drive comprehensive teaching reforms.

5. Conclusion

Integrating artificial intelligence into English teaching models at vocational colleges signifies a paradigm shift from

traditional pedagogical approaches, charting new course for future educational development. This requires collaborative efforts among educators, technology developers, and society at large to continuously explore and optimize AI applications in education, ensuring technological advancements genuinely serve educational objectives and provide students with superior, personalized learning experiences. With ongoing advancements in AI technology, its transformative potential for vocational English education will grow exponentially, ultimately creating more efficient, engaging, and high-quality learning environments.

Disclosure statement

The author declares no conflict of interest.

References

[1] Graesser AC, VanLehn K, Rosenblum LS, et al., 2019, Advancements in intelligent tutoring systems. In The Cambridge Handbook of Artificial Intelligence in Education. Cambridge University Press.

[2] Selwyn N, 2019, Education and Technology: Key Issues and Debates. Routledge.

[3] Veale M, Binns R, 2017, Fairness, accountability and transparency in machine learning. In Proceedings of the 2017 Conference on Fairness, Accountability, and Transparency: 335-349.

[4] Litman DJ, Kamm CA, 2021, Natural language processing for education: A survey. Artificial Intelligence in Education, 31: 1-34.

[5] Charniak E, Riesbeck CK, Mcdermott DV, 2014, Artificial Intelligence Programming.

[6] Rosen M, 2022, English teachers. English in Education, 56: 106-107.

[7] Kharadi R D, Mariappan K, Patani J, et al., 2025, Effect of video-assisted teaching on cyberbullying awareness among adolescents. Bioinformation, 21(6): 5.

[8] Jayaraman U, 2016, Computer Assisted Teaching Creates Awareness on Global Warming.

[9] Ferino S, Kulesza U, 2023, Unveiling the Teaching Methods Adopted in DevOps Courses. Anais Estendidos do XIV Congresso Brasileiro de Software: Teoria e Prática (CBSoft Estendido 2023), 27-28.

[10] Patel K, Waller D, 2013, Methods adopted in teaching English to young learners in India. Uclan Journal of Pedagogic Research, (1): 1-12.

[11] Chang P J, 2024, One Size Does Not Fit All: AI-assisted Reports Tailored to Provider Needs. Radiology, 311(3): e240126.

[12] Yadav S, 2024, Empowering Educators for the Artificial Intelligence (AI) Era. In Advances in Educational Technologies and Instructional Design: 1-28.

[13] Sabzevari, 2011, Teaching Practice. Kerman University of Medical Sciences.

[14] Vegesna D V, 2024, AI-Driven Personalized Nutrition: A system for Tailored Dietary Recommendations. International Research Journal of Computer Science, 11(07): 545-550.

[15] Dai J, 2025, Practical exploration of English translation activity courses in universities under the background of artificial intelligence. Systems and Soft Computing, 7.

[16] Liu H, Liu Z, Wu Z, et al., 2020, Personalized Multimodal Feedback Generation in Education.

[17] Fauzi, Irviani R, Muslihudin M, et al., 2019, Revolutionizing Education through Artificial Intelligence: Fuzzy Multiple Attribute Decision Making Approach for Determining the Best Vocational High School. Applied Mechanics and Materials, 892: 234-239.