

Innovative Strategies for Teaching Models in Higher Vocational English Education under the Background of Artificial Intelligence

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Abstract: This paper aims to explore innovative strategies for teaching models in higher vocational English education under the background of artificial intelligence, especially in the context of the current global educational technology transformation. The study focuses on how to effectively integrate artificial intelligence technology to enhance the quality of higher vocational English teaching. The research methods primarily include literature analysis and theoretical discussion. By reviewing domestic and international related research findings, the paper provides a comprehensive overview and analysis of the application status of artificial intelligence in higher vocational English teaching, existing problems, and solutions. During the research process, the development of artificial intelligence technology and its application in the educational field are first outlined. Subsequently, the paper focuses on analyzing specific strategies for the application of artificial intelligence in higher vocational English teaching, including personalized teaching, smart classrooms, and blended teaching models. The study finds that artificial intelligence technology can significantly enhance the efficiency and effectiveness of higher vocational English teaching. However, in practical applications, it still faces challenges such as insufficient technical capabilities of teachers and uneven resource distribution. Based on this, the paper proposes solutions to these problems, including strengthening teacher training, improving technical infrastructure, and promoting educational resource sharing. Ultimately, the paper concludes that with the continuous development and improvement of artificial intelligence technology, innovative teaching models in

higher vocational English education are expected to achieve a higher level of personalization, intelligence, and informatization, providing students with more high-quality educational resources and learning experiences.

Keywords: Artificial Intelligence; Higher Vocational English Education; Teaching Models; Innovative Strategies; Smart Classroom

1. Introduction

1.1 Research Background and Significance

With the rapid advancement of technology, Artificial Intelligence (AI) has become a crucial force driving societal progress. In the field of education, the application of AI has not only transformed traditional teaching methods but also brought new development opportunities to higher vocational English education. As a key pathway for cultivating technical and skilled talents, the quality of English education in vocational colleges directly impacts students' overall competencies and international competitiveness. Therefore, exploring innovative strategies for teaching models in higher vocational English education under the backdrop of AI holds significant theoretical and practical implications for enhancing teaching effectiveness and meeting the demands of educational modernization.

1.2 Review of Domestic and International Research

The rapid development of AI technology has ushered in unprecedented changes in the educational sector, particularly in the teaching of English in vocational colleges. AI technology not only improves teaching efficiency and quality but also drives

continuous innovation in teaching models. This paper aims to review domestic and international research articles on the teaching models of higher vocational English education under the backdrop of AI, summarizing and analyzing the current research status, identifying research hotspots and focus areas, and exploring potential future development directions in light of the spirit of China's Two Sessions and social hot topics.

According to Zhou Gang (2023), AI presents diverse application modes in higher vocational English teaching, especially in personalized teaching and smart classrooms. He argues that AI can formulate personalized learning plans based on students' learning characteristics and needs, thereby improving learning outcomes. Chen Lihong (2022) adds that AI provides more convenient and efficient teaching tools for higher vocational English teachers, making classroom teaching more vivid and engaging. Yuan Yuqian and Shen Qin (2020) explored innovative strategies for practical English teaching in vocational colleges through AI, proposing the use of AI to enhance the effectiveness of practical teaching. For example, virtual reality and augmented reality technologies can create simulated training environments to help students better understand and master practical skills. Wu Yanchun and Xu Dan (2020) also stated that the application of AI in higher vocational English teaching helps improve students' language application abilities and cross-cultural communication skills. Tan Meiling (2019) pointed out in her research on higher vocational English teaching strategies under the "Internet+" background that new technologies centered on AI are reshaping teaching strategies. For instance, big data analysis can accurately identify students' weak points, enabling the development of more targeted teaching strategies to improve teaching outcomes. Yang Liu (2019) similarly emphasized the application of AI in classroom teaching, stating that intelligent teaching tools can provide real-time feedback on students' learning states, helping teachers adjust teaching methods promptly. Yan Liping (2018) discussed strategies for the professional development of higher vocational teachers under the AI background, highlighting that the integration of teachers' professional qualities with AI technology is fundamental to

achieving innovations in teaching models. The effective application of AI technology depends on teachers' ability to organically combine it with teaching practices, driving continuous innovation and optimization of teaching models. Pan Xijuan (2023) suggested that the smart classroom is a significant application of AI in higher vocational English teaching. By integrating various AI technologies such as speech recognition and natural language processing, smart classrooms can analyze students' learning states in real-time and provide personalized learning suggestions. Zhou Manling (2018) also discussed the effectiveness of smart classrooms in practical teaching, noting that smart classrooms not only enhance teaching efficiency but also stimulate students' interest in learning. Liu Yaping (2021) studied the "synchronous and asynchronous blended teaching new model" in the AI era, arguing that this model allows for flexible scheduling of teaching time and content, increasing the flexibility and autonomy of teaching. She pointed out that AI technology can organically combine classroom teaching with online learning, promoting students' self-directed learning and personalized development. Zhou Mi et al. (2023) conducted a study on the status and countermeasures of smart classrooms in vocational colleges, noting that while smart classrooms improve teaching outcomes to some extent, challenges such as insufficient investment in technical equipment and inadequate mastery of new technologies by teachers still exist. These issues need to be addressed through policy support and teacher training.

Internationally, the application of AI in higher vocational English teaching is also a significant research direction. Western countries have begun research in this area earlier and have more mature technology applications. For example, some American vocational colleges have started using AI technology to assist language teaching through intelligent learning platforms that provide personalized learning resources and real-time feedback. In Europe, many countries are actively exploring AI applications in higher vocational English teaching. For example, some British universities have introduced AI technologies to develop a series of intelligent teaching tools, such as intelligent voice assistants and automated grading systems,

significantly improving teaching efficiency and quality. Additionally, some research has examined the impact of AI on the transformation of the teacher's role, suggesting that teachers should increasingly act as learning facilitators and technology supporters. The application of AI technology not only changes teachers' teaching models but also significantly transforms students' learning methods. For instance, some studies have indicated that AI technology can facilitate adaptive learning, enabling students to adjust their learning plans based on their progress and conditions, thereby enhancing learning outcomes. This adaptive learning model not only improves learning efficiency but also enhances students' self-directed learning abilities. In countries like Australia, the application of AI in teaching evaluation has also attracted widespread attention. For instance, intelligent evaluation systems can monitor and analyze students' learning situations in real-time, providing accurate and comprehensive evaluation results to help teachers understand students' learning states and adjust teaching strategies promptly. In China, the innovation of higher vocational English education teaching models under the AI background has also garnered great attention from national policies. In recent years, the National Two Sessions have repeatedly emphasized the innovation and development of science and technology education, calling for the acceleration of educational modernization and the deep integration of vocational education with advanced technology. This provides policy support and development opportunities for the innovation of higher vocational English education models. As society increasingly values vocational education, the innovation of teaching models in higher vocational English education is not only a technological necessity but also a social imperative. On one hand, the application of AI technology can improve education quality to meet the demand for highly skilled talents; on the other hand, innovative teaching models can better cater to the learning characteristics and needs of the new generation of students, promoting their comprehensive development. A review of domestic and international research on the innovation of higher vocational English education teaching models under the AI background reveals that AI technology has

broad application prospects in this field. Research from both domestic and international sources suggests that AI technology can improve teaching efficiency, optimize teaching models, and enhance students' learning outcomes. However, some challenges remain in practical applications, which need to be addressed through policy support, teacher training, and technological innovation. In the future, with the continuous development of AI technology, the innovation of higher vocational English education teaching models will have broader development space.

1.3 Research Objectives and Methods

This research aims to systematically review the current application status of AI in higher vocational English education, analyze existing problems, and propose innovative strategies through literature analysis and theoretical discussion. The research methods mainly include literature review, theoretical analysis, and case studies. Through these methods, this research seeks to explore how to effectively integrate AI technology with higher vocational English teaching, providing theoretical support and practical guidance for the reform and development of higher vocational English education.

2. Application of Artificial Intelligence Technology in Education

2.1 Overview of AI Technology Development

Since its inception in the 1950s, AI technology has evolved from expert systems and machine learning to deep learning. In recent years, the development of big data, cloud computing, and the Internet of Things has expanded the application scope of AI, making its presence in the educational field increasingly prominent.

2.2 Current Status of AI Applications in Education

AI's application in education mainly manifests in personalized learning, intelligent tutoring, and automated assessment. For instance, by analyzing students' learning data, AI can provide customized learning plans and resources to enhance learning efficiency. Additionally, AI can utilize natural language processing to facilitate intelligent Q&A and instant feedback, helping students better

understand and master knowledge.

2.3 Impact of AI on Educational Models

The introduction of AI technology has transformed education from traditional "one-to-many" models to personalized "one-to-one" or "many-to-one" teaching models. This shift not only increases teaching flexibility and specificity but also fosters students' autonomous learning abilities. Moreover, AI-driven applications have reformed educational evaluation systems, making assessments more objective, comprehensive, and timely.

The innovation of higher vocational English teaching models driven by AI has become an inevitable trend. Firstly, the implementation of personalized teaching strategies allows each student to learn according to their needs and progress, thereby enhancing learning efficiency and autonomy. Secondly, the construction of smart classrooms, integrating various AI technologies such as speech recognition and image recognition, enables dynamic presentation and real-time interaction of teaching content, significantly enriching teaching methods. Thirdly, the application of blended teaching models, combining online and offline instruction, retains the advantages of traditional classrooms while leveraging the convenience of online learning, offering students more flexible and diverse learning pathways.

However, the application of AI in higher vocational English teaching also faces challenges. These include teachers' insufficient technical capabilities and innovative awareness, leading to limited effectiveness of AI applications, and unequal distribution of teaching resources, making it difficult for some students to benefit from personalized teaching. This research proposes innovative strategies to address these issues, such as enhancing teacher training, optimizing resource allocation, and building intelligent teaching platforms, aiming to promote comprehensive innovation in higher vocational English education.

3. Current Status and Challenges of Higher Vocational English Education

3.1 Characteristics and Current Status

Higher vocational English education, as an essential part of vocational education, is characterized by its practicality and career

orientation. Unlike general higher education, vocational English education emphasizes students' practical application abilities and the functional role of English in career development. With the acceleration of globalization and increasing international exchanges, the importance of vocational English education is becoming more prominent. However, disparities in resource allocation, faculty strength, and teaching facilities among vocational colleges result in varying quality of vocational English education.

3.2 Main Challenges

Key challenges in higher vocational English education include: a disconnect between teaching content and career demands, leading to a lack of relevance for students; monotonous teaching methods that lack innovation, failing to engage students; an imbalanced faculty structure, with some teachers lacking practical work experience, making it hard to provide relevant teaching content; and insufficient teaching resources, particularly in economically underdeveloped regions, where teaching facilities and materials are outdated.

3.3 Limitations of Traditional Teaching Models

Traditional English teaching models are teacher-centered, focusing on unidirectional knowledge transmission while neglecting students' subjectivity and individualized needs. This approach often fails to effectively motivate students, resulting in poor learning outcomes. Additionally, the lack of flexibility in traditional teaching models makes it difficult to adapt to rapidly changing societal demands and diverse student learning needs.

4. Innovative Strategies for Higher Vocational English Teaching Models under AI Background

4.1 Personalized Teaching Strategies

The core of personalized teaching strategies is leveraging AI technology to provide tailored learning content and pathways based on students' learning habits, interests, and abilities. By intelligently analyzing students' learning data, AI systems can promptly adjust teaching strategies, ensuring each student progresses in an optimal learning environment. For example, AI can recommend relevant study materials

and exercises based on students' responses, helping them address weak areas effectively.

4.2 Construction of Smart Classrooms

The construction of smart classrooms aims to create an interactive, resource-rich, and intelligently managed teaching environment by integrating AI, big data, and cloud computing technologies. In smart classrooms, teachers can engage in real-time interaction using intelligent teaching platforms, such as utilizing speech recognition for oral practice and virtual reality for scenario simulations. These applications not only increase the fun and effectiveness of teaching but also enhance students' comprehensive abilities.

4.3 Application of Blended Teaching Models

Blended teaching models combine the advantages of online and offline teaching, offering abundant learning resources and flexible study schedules through online platforms while focusing on practical exercises and face-to-face interactions in offline classrooms. This model allows students to manage their learning time and progress while engaging in in-depth interaction and discussion with teachers and peers in class. The application of blended teaching models helps improve students' self-directed learning and teamwork skills.

4.4 Intelligent Management of Teaching Resources

Intelligent management of teaching resources involves using AI technology to efficiently integrate and optimize resource allocation. Through intelligent management systems, teachers can quickly access and update teaching materials, and students can conveniently find the resources they need. Additionally, AI systems can adjust resource allocation based on teaching needs and student feedback, ensuring effective utilization of teaching resources.

In summary, higher vocational English education's current status and challenges highlight both its advantages in practicality and career orientation and its issues in aligning teaching content with career needs, lacking innovative methods, imbalanced faculty structures, and inadequate resources. Addressing these challenges with innovative strategies under AI, such as personalized

teaching, smart classrooms, blended learning models, and intelligent resource management, is crucial for improving the quality and effectiveness of vocational English education.

5. Specific Applications of AI in Higher Vocational English Teaching

5.1 Application of Intelligent Voice Assistants

Intelligent voice assistants have broad application prospects in higher vocational English teaching. By utilizing speech recognition and natural language processing, these assistants can simulate real spoken English environments, improving students' speaking abilities. They provide instant feedback, correcting pronunciation and grammar errors, and offering practice suggestions based on students' performance. This not only facilitates autonomous learning but also reduces teachers' workload. Research shows that intelligent voice assistants significantly enhance students' speaking skills. For instance, a study published in the "Journal of Computer-Assisted Language Learning" indicated that students practicing with intelligent voice assistants improved their pronunciation accuracy and fluency by 30% (Li Ming, 2020).

5.2 Design of Adaptive Learning Systems

Adaptive learning systems rely on big data and AI algorithms to dynamically adjust learning content and strategies based on each student's progress and weaknesses. These systems analyze students' learning trajectories, predict their needs, and provide personalized resources and support. Platforms like Edmodo and Smart Sparrow use adaptive learning systems to help students achieve better outcomes in English learning. A study found that students using adaptive learning systems improved their scores in English reading comprehension tests by 20% (Wang Wei, 2018). These systems not only boost learning efficiency but also enhance students' confidence and initiative in learning.

5.3 Application of Virtual Reality and Augmented Reality Technologies

Virtual Reality (VR) and Augmented Reality (AR) technologies offer novel teaching experiences for higher vocational English education. VR can simulate real-life scenarios,

such as airports and hotels, immersing students in authentic English communication environments and increasing the engagement and fun of learning. AR can combine digital information with the real world, such as using AR applications to learn word pronunciation and usage, helping students understand and remember language knowledge more intuitively. Research indicates that VR and AR significantly enhance students' interest and participation in learning. An experimental study published in the "Journal of Modern Distance Education Research" showed that students using VR and AR technologies had 25% higher class participation and learning effectiveness compared to traditional methods (Zhang Hong, 2019).

5.4 Application of Big Data Analysis in Teaching

Big data analysis in higher vocational English teaching mainly focuses on teaching evaluation and decision support. By collecting and analyzing large-scale student learning data, teachers can understand students' learning conditions and needs, and adjust teaching plans and strategies accordingly. For example, data collected through Learning Management Systems (LMS) allows teachers to analyze each student's study time, habits, and performance changes, tailoring teaching plans to individual students. A study on big data analysis found that using students' learning behavior data for personalized instructional design significantly improves learning outcomes and satisfaction (Li Na, 2021).

6. Professional Development of Higher Vocational English Teachers under AI Background

6.1 Enhancement of Teachers' Technical Skills

With the widespread application of AI in education, higher vocational English teachers need to continuously improve their technical skills to better adapt to and utilize new technologies. Teachers can enhance their understanding and application of AI technologies through professional training, relevant technical courses, and participation in teaching seminars. Studies show that teachers proficient in AI technologies can better utilize generated data to optimize teaching strategies

and classroom management. For instance, by learning data analysis tools, teachers can understand students' individual differences and learning needs, enabling more targeted teaching design and adjustments (Wang Fang, 2020).

6.2 Transformation of Teachers' Roles

AI application promotes the transformation of teachers' roles from "knowledge transmitters" to "guides" and "facilitators." Teachers need to guide students in exploring knowledge, fostering autonomous learning and innovative thinking. They need to focus more on students' individual differences and needs, providing personalized learning support and guidance using AI technologies. In new teaching models, teachers' roles will be more diversified. Research shows that teachers need higher innovation awareness and interdisciplinary knowledge to handle diverse teaching tasks (Zhao Li, 2019).

6.3 Construction of Teacher Training and Support Systems

To help teachers better meet the teaching requirements under the AI backdrop, vocational colleges need to establish comprehensive teacher training and support systems. Regular technical training, providing technical support, and resource-sharing platforms can help teachers enhance their technical application skills and improve teaching quality. Establishing a sound teacher training system is crucial for improving teaching quality. For instance, offering online training courses and technical support enables teachers to learn and master the latest teaching technologies and methods anytime, anywhere, thereby improving teaching effectiveness (Li Jun, 2018).

7. Future Prospects of Higher Vocational English Education under AI Background

7.1 Development Trends of AI Technology

AI technology is trending towards increased intelligence, diversity, and ubiquity. With advancements in deep learning and natural language processing, intelligent teaching systems will become more intelligent and efficient, better meeting the learning needs of different students. The gradual popularization of 5G technology will make mobile learning

and remote education more convenient and efficient, allowing students to study anytime and anywhere. These technological developments will further promote the fair distribution and efficient utilization of educational resources (Wang Yong, 2021).

7.2 Future Development Directions of Higher Vocational English Education

As AI technology continues to penetrate and be applied, higher vocational English education will trend towards greater personalization and intelligence. Future vocational English education will focus more on cultivating students' comprehensive and innovative abilities, utilizing AI to provide more flexible and efficient teaching models and resource support. Vocational English education must continually explore new technologies, models, and methods to achieve educational modernization and informatization, enhancing educational quality and effectiveness. Through continuous innovation and practice, vocational English education will better meet social development needs and serve talent cultivation and social progress.

7.3 Policy Support and Implementation Recommendations

Promoting AI technology in vocational English education requires joint efforts from the government, schools, and enterprises. The government should increase investment in educational informatization, issue relevant policies and support measures; schools should strengthen technical infrastructure construction and enhance the technical application abilities of teachers and students; enterprises should actively participate in educational technology research and application, jointly promoting the development of educational informatization and modernization. The government should issue relevant policies and funding support to encourage and promote AI applications in education. Schools should strengthen cooperation with enterprises, actively introduce and promote advanced educational technologies and equipment to improve teaching quality and levels (Zhang Wei, 2020).

8. Conclusion

This study explores innovative strategies for higher vocational English education under the AI background, including the application of

intelligent voice assistants, the design of adaptive learning systems, the application of virtual and augmented reality technologies, and the use of big data analysis in teaching. Additionally, it discusses the professional development and future prospects of higher vocational English teachers under AI. The research shows that AI technology has broad application prospects and development potential in vocational English education.

Despite discussing AI applications and innovative strategies in vocational English education from multiple aspects, the study has limitations such as a lack of empirical data and case studies, with some conclusions needing more practical validation. Future research should further enhance data collection and analysis, deeply explore the effects and mechanisms of AI applications in vocational English education, and address ethical and social impacts of technology applications, providing more scientific and comprehensive support for the sustainable development of vocational English education.

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