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Construction Strategy for a New Ecosystem of General Education in College English Oriented towards the Application of Artificial Intelligence Technology

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ABSTRACT
With the rapid development of artificial intelligence (AI) technology, college English general education is facing unprecedented opportunities and challenges for transformation. Focusing on the application of AI technology, this paper first analyzes the significance of AI empowering college English general education in the new era. Then, it explores the innovative practices of AI technology in English teaching, including specific applications and cases of intelligent teaching systems, speech recognition, generative AI, and other technologies. Furthermore, it proposes strategies for constructing a new ecosystem of college English general education, covering aspects such as teaching modes, teacher and student roles, resource systems, and evaluation mechanisms. Finally, it summarizes the profound impact of AI technology on college English general education, providing a reference for English teaching reform in higher vocational colleges.

Keywords: *Artificial intelligence; College English; general education; New educational ecosystem; Construction strategy*

1. INTRODUCTION: NEW ERA AND NEW ECOSYSTEM: THE ERA BACKGROUND AND SIGNIFICANCE OF EMPOWERING COLLEGE ENGLISH GENERAL EDUCATION WITH ARTIFICIAL INTELLIGENCE

In the new era of digital wave sweeping the world, artificial intelligence technology has become the core driving force for promoting educational reform. The Proposal of the Central Committee of the Communist Party of China on Formulating the 15th Five Year Plan for National Economic and Social Development, which was deliberated and approved at the Fourth Plenary Session of the 20th Central Committee of the Communist Party of China, proposes to "deeply implement the digital education strategy". Minister of Education Huai Jinpeng pointed out that artificial intelligence is a "golden key" for the education system, which not only concerns the future of education, but also determines the future of education. With the successive release of policy documents such as the "New Generation Artificial Intelligence Development Plan" and the "Action Plan for Artificial Intelligence Innovation in Higher Education Institutions", "Artificial Intelligence+Education" has moved from concept to practice, injecting strong momentum into university English general education.

As an important component of higher education, general education in college English aims to cultivate students' cross-cultural communication skills, language application abilities, and lifelong learning abilities. However, traditional English general education has problems such as a single teaching mode, insufficient personalization, and unequal distribution of resources. In the context of the deep integration of globalization and informatization, the demand for compound foreign

language talents in society is becoming increasingly urgent. Students are required not only to have a solid language foundation, but also to master the application ability of artificial intelligence tools. This poses a severe challenge to the traditional English general education system.

The empowerment of artificial intelligence technology provides the possibility to break through the bottleneck of general education in college English. On the one hand, technologies such as intelligent teaching systems, speech recognition, and natural language processing can achieve precise matching and personalized delivery of teaching resources, solving the teaching dilemma of "one size fits all"; On the other hand, technologies such as generative AI and virtual simulation can create immersive learning environments, enhancing students' language practice abilities and innovative thinking. For vocational colleges, integrating artificial intelligence technology into English general education is not only a practical need to cultivate technical and skilled talents who can adapt to the development needs of new quality productivity, but also an important measure to promote the digital transformation of their own education and improve teaching quality.

In addition, empowering college English general education with artificial intelligence can help promote educational equity. By building a digital teaching resource platform, geographical and temporal limitations can be broken, allowing vocational college students in remote areas to also share high-quality educational resources. At the same time, the application of artificial intelligence technology can reduce the repetitive labor of teachers, allowing them to devote more energy to teaching design and personalized guidance for students, thereby achieving an overall improvement in the quality of education. In the context of the new era, building a new ecosystem of college English general education that is oriented towards the application of artificial intelligence technology is not only an inevitable trend in education reform, but also a key path to cultivating high-quality talents with international perspectives and innovative abilities.

2. ARTIFICIAL INTELLIGENCE TECHNOLOGY EMPOWERS INNOVATIVE PRACTICES IN COLLEGE ENGLISH TEACHING

2.1 Intelligent Teaching System: Implementation of Precision and Personalized Teaching

Intelligent teaching system is one of the most widely used fields of artificial intelligence technology in English teaching, and its core lies in achieving the teaching goal of "teaching according to students' aptitude" through big data analysis and machine learning. The system is capable of collecting real-time learning data from students, including homework completion status, test scores, online learning duration, and mastery of knowledge points. Through algorithm models, the data is deeply mined to accurately identify students' learning weaknesses and personalized needs.

In teaching practice, teachers can develop differentiated teaching plans for students at different levels based on the data analysis results of intelligent teaching systems. For example, for students with weak English foundations, the system can push basic vocabulary, grammar micro lessons, and supporting exercises; For students who have spare capacity, resources such as expanded reading materials and academic English writing guidance are provided. The English adaptive learning system built by the Open University of China based on the iFlytek model is a typical case. The system generates a "targeted exercise book" by analyzing students' error data and provides specialized training on virtual tone for degree English candidates, resulting in an average improvement of 15% in student grades.

The advantage of intelligent teaching systems lies in their ability to break through the temporal and spatial limitations of traditional teaching and support ubiquitous and mobile learning. Students can log in to the learning platform anytime and anywhere through mobile phones, tablets, and other terminals, arrange their learning progress according to their own pace, and the system tracks the learning process in real time and provides instant feedback. For example, vocational college students can use fragmented time to complete oral dialogue exercises or vocabulary tests pushed by intelligent systems during practical training breaks, effectively improving learning efficiency. In addition, the intelligent teaching system also has a resource

intelligent recommendation function, which can automatically match the most suitable teaching resources based on students' learning interests and needs, achieving precise matching between resources and needs.

2.2 Speech Recognition and Synthesis Technology: A Revolutionary Breakthrough in Oral Teaching

Mute English has always been a pain point in college English teaching, and the application of speech recognition and synthesis technology has brought revolutionary breakthroughs to oral teaching. This technology can capture students' speech signals in real time, quantitatively evaluate the accuracy of pronunciation, intonation standardization, and reasonable speed, and generate detailed error correction suggestions to help students improve their oral expression in a timely manner.

In practical applications, various voice intelligent tools can be introduced into English classrooms in vocational colleges. For example, "CoolE Bot" chatbot in Taiwan region, China is based on Azure OpenAI technology, simulating more than 30 situational dialogues such as doctor's consultations and detective solving cases. It supports switching between American/British accents, and students interact with AI through voice or text. The system analyzes grammar, pronunciation, and logical coherence in real time. The robot serves over 30000 students per month and has accumulated over 1 million conversations, effectively improving students' frequency and enthusiasm for oral practice. The "EAP Talk" oral evaluation system developed by Shanghai Jiao Tong University combines speech recognition and big model technology to conduct multidimensional scoring for academic English speeches, discussions, and other scenarios, resulting in a 56% increase in student satisfaction.

Immersive VR oral classroom is an innovative form that combines speech technology with virtual simulation technology. The practical experience of introducing VR technology into junior high school English classrooms in Siming District, Xiamen can be used as a reference for vocational colleges. Students participate in international conferences, business negotiations and other scene simulations through virtual role-playing, and AI captures voice tone in real time and analyzes the adaptability of cross-cultural communication. Data shows that this teaching model increases students' confidence in oral expression by 40% and their mastery rate of scenario based vocabulary by 32%. For vocational colleges, VR oral scenarios can be designed based on professional characteristics, such as cross-border e-commerce negotiations for Business English majors and scenic area tours for Tourism English majors, to achieve a deep integration of language teaching and professional scenarios.

2.3 Generative AI Technology: Innovative Expansion of Teaching Resources and Models

Generative AI technologies represented by ChatGPT and big language models are becoming the core force driving innovation in college English teaching resources and models. This technology can automatically generate various teaching resources such as teaching outlines, lesson plans, exercises, reading materials, etc. It can also simulate teacher-student interaction and provide academic writing guidance, greatly improving teaching efficiency and innovation.

In terms of generating teaching resources, the practice of using the "Kimi AI Lesson Preparation System" by teachers at Chengdu No.7 Wanda School has reference value. After teachers input teaching objectives, they can generate hierarchical writing tasks within 10 minutes. For example, designing a "Workplace Etiquette Theme Discussion Paper" framework for vocational college students and automatically annotating advanced vocabulary replacement suggestions can improve lesson preparation efficiency by 50%. In the course of "General Academic English Writing", Nanjing University has utilized AI to generate teaching guidelines and optimize the course outline, combined with ideological and political education, PBLL-C teaching method, and information technology application principles, to form a teaching model that integrates Chinese characteristics. Vocational college English teachers can use generative AI tools to customize teaching cases and practical tasks based on students' professional backgrounds and cognitive levels. For example, they can generate reading materials for "Equipment Operation English Instructions" for students majoring in mechanical and electrical engineering, and scripts for "English Dialogue between Doctors and Patients" for students majoring in nursing.

In terms of innovative teaching modes, generative AI can support the development of inquiry-based learning and project-based learning. For example, in the bilingual course "Fundamentals

of Artificial Intelligence and DeepSeek Applications" at Shenzhen University of Technology, pharmacy students use AI to screen active ingredients in traditional Chinese medicine, simultaneously improving their professional English and research abilities, and increasing research efficiency by three times. Vocational colleges can learn from this model and design "AI+major" integration projects in English general education, such as business English majors using AI for market research and English report writing, art and design majors using AI to generate English creative copy, etc., to achieve the coordinated development of language learning and professional skills training.

2.4 Intelligent Writing Correction System: From Grammar Correction to Logic Optimization

English writing is an important part of language learning, and in traditional writing teaching, teachers face problems such as heavy grading workload and delayed feedback. The intelligent writing correction system, through natural language processing technology, can achieve automation and precision in essay correction, extending from grammar correction to logical structure optimization, providing strong support for writing teaching.

The "AWESOM System" of Shanghai Jiao Tong University is based on a generative large model to analyze academic English papers sentence by sentence, providing comprehensive feedback from language accuracy, logical structure to academic standards. For example, the system can identify issues such as "misuse of subjunctive mood" and "missing logical conjunctions" in student papers, and recommend classic literature examples and revision plans, resulting in an average writing score for students increasing from 4.45 to 7.69 (out of 10 points). The English composition intelligent correction platform developed in collaboration between the Open University of China and iFlytek serves 3 million learners annually. It locates common errors (such as Chinglish expressions and tense confusion) through knowledge graphs and pushes targeted exercises, resulting in a 34% decrease in student writing error rates.

For English teaching in vocational colleges, intelligent writing correction systems can meet the needs of students at different levels. In the basic stage, students can strengthen their basic abilities such as grammar and vocabulary through the system. The system can point out spelling and grammar errors in real time and provide modification suggestions; Students in the improvement stage can use the system to optimize their logical structure and provide academic guidance. For example, in the English abstract writing of vocational college students' graduation thesis, the system can check the completeness of the research objectives, methods, results, and other elements of the abstract, and optimize the academic expression. At the same time, the system can also provide teachers with an analysis report on the overall writing situation of the class, helping them grasp the teaching focus and carry out targeted counseling.

3. ANALYSIS AND SUGGESTIONS ON THE STRATEGY OF BUILDING A NEW ECOLOGICAL ENVIRONMENT FOR COLLEGE ENGLISH GENERAL EDUCATION UNDER THE BACKGROUND OF ARTIFICIAL INTELLIGENCE TECHNOLOGY APPLICATION

3.1 Reshaping the "Human-Machine Collaboration" Teaching Model and Clarifying the Role Positioning of Teachers and Students

The application of artificial intelligence technology is not to replace teachers, but to reconstruct a new teaching model of "human-machine collaboration". In the new ecosystem, the role of teachers needs to shift from traditional knowledge transmitters to learning guides, resource designers, and emotional communicators. Vocational colleges should strengthen the training of teachers' artificial intelligence literacy, and enhance their application and teaching design abilities of intelligent teaching tools through special lectures, practical workshops, school enterprise cooperation, and other forms. For example, organizing teachers to participate in the "AI+English Teaching" skills competition, encouraging teachers to integrate intelligent speech systems, generative AI and other tools into classroom teaching, and designing interactive and innovative teaching activities.

The role of students should shift from passive recipients to active learners and explorers. Teachers can assign inquiry based learning tasks through

intelligent teaching platforms, guiding students to use AI tools to independently collect data, analyze problems, and solve problems. For example, students can use generative AI to design a "cross-cultural communication topic research plan" and report their results through an intelligent voice system. At the same time, it is necessary to cultivate students' information literacy and critical thinking ability, guide them to rationally view AI generated content, learn to distinguish the authenticity of information, and avoid excessive reliance on AI tools.

Building a "human-machine collaboration" teaching model also requires the establishment of effective interactive mechanisms. In classroom teaching, the process of "AI preview+teacher lectures+group discussions+AI expansion" can be adopted, that is, students complete pre-class preview through intelligent systems, teachers focus on explaining difficult knowledge based on system data analysis, organize students to carry out group cooperative learning, and students use AI tools for expansion exercises after class. This model not only leverages the precision and personalization advantages of AI, but also retains the humanistic care and guidance role of teachers, achieving a deep integration of technology and education.

3.2 Building a Diversified Intelligent Teaching Resource System to Promote Educational Equity

Rich teaching resources are an important support for the new ecosystem of general education in college English. Vocational colleges should integrate internal and external resources, build a diversified intelligent teaching resource system with intelligent learning platforms as the core, covering course resources, practical resources, and cultural resources. Firstly, it is necessary to establish a school level English intelligent learning platform, integrating intelligent teaching systems, speech recognition, writing correction and other functional modules, and connecting with high-quality platforms such as the National Open University and iCourse to achieve resource sharing. For example, introducing the adaptive learning system of the Open University of China and the resources of iFlytek's large model to provide students with a massive amount of learning content.

Secondly, it is necessary to develop school-based intelligent resources with vocational college characteristics. Design intelligent learning modules for professional English that cater to the needs of different professions, such as VR scenic area guidance resources for tourism English majors, cross-border e-commerce dialogue resources for business English majors, and doctor-patient communication simulation resources for nursing English majors. Generative AI tools can be used to generate teaching cases, exercises, and other resources in batches, and a teacher team can be organized to review and optimize them to ensure the accuracy and applicability of the resources. At the same time, it is necessary to build an intelligent resource library for English culture, integrating cultural background knowledge, film and television works, literary works, and other content from various countries. Through AI technology, intelligent recommendation and immersive experience of cultural resources can be achieved to enhance students' cross-cultural communication skills.

In addition, artificial intelligence technology should be utilized to promote educational equity. In response to the diverse sources and significant differences in foundations of vocational college students, intelligent systems are used to achieve precise delivery of teaching resources, ensuring that students at different levels can access suitable learning content. At the same time, we can collaborate with vocational colleges in remote areas to launch "AI synchronous classrooms", sharing high-quality teachers and course resources through live streaming and AI assistance, and bridging the education gap between urban and rural areas. For example, drawing on the experience of "AI synchronous classroom" at Qingshui Middle School in Zhongjiang County, Sichuan Province and Chengdu No.7 Middle School, we have organized excellent teachers from our school to carry out cross school AI teaching and improve the overall level of regional English teaching.

3.3 Establishing a Dynamic and Diversified Evaluation Mechanism to Improve Teaching Quality

The traditional single exam evaluation model is no longer suitable for the English teaching needs in the context of artificial intelligence, and a dynamic and diversified evaluation mechanism needs to be established. This mechanism should cover multiple dimensions such as learning process and learning outcomes, knowledge mastery and ability improvement, self-evaluation and peer evaluation, and achieve automation, precision, and

comprehensiveness of evaluation through artificial intelligence technology.

In terms of evaluation content, we need to break through the traditional language knowledge assessment and increase the evaluation of language application ability, cross-cultural communication ability, AI tool usage ability, and innovative thinking ability. For example, students' oral practice scores in intelligent speech systems, project report quality assisted by generative AI, and cross-cultural communication performance in VR scenes will be included in the evaluation scope. At the same time, AI technology should be used to track and analyze students' learning process throughout the entire process, generate learning behavior reports as an important basis for evaluation. For example, intelligent teaching systems can record students' online learning duration, resource access frequency, homework completion quality, interactive participation, and other data, and evaluate students' learning attitudes and self-learning abilities through algorithm models.

In terms of evaluation methods, it is necessary to achieve an organic combination of teacher evaluation, student self-evaluation, group peer evaluation, and AI evaluation. Teachers are primarily responsible for evaluating students' higher-order thinking abilities and emotional attitudes; Student self-evaluation can be completed through an intelligent platform, which provides evaluation indicators and reference standards to guide students to reflect on their own learning situation; Group peer evaluation can cultivate students' spirit of cooperation and critical thinking; AI evaluation is responsible for quickly correcting and quantitatively scoring objective questions, language accuracy, etc. For example, in writing teaching, the AI system first performs grammar correction and preliminary grading on the composition, and the teacher then evaluates the logical structure and depth of thought of the article. Students further improve their writing ability through self-evaluation and peer evaluation.

In addition, a feedback and application mechanism for evaluation results should be established. Timely feedback the evaluation data to teachers and students, teachers adjust teaching strategies and resource push based on the evaluation results, and students adjust their learning plans and methods based on the evaluation results. At the same time, linking the evaluation results with students' performance evaluations, internships, and employment opportunities to stimulate their learning motivation. For example, for students who excel in AI assisted learning and have outstanding language application abilities, priority should be given to recommending high-quality internship positions.

3.4 Strengthening AI Ethics Education and Standardized Management to Avoid Potential Risks

While artificial intelligence technology brings convenience, it also poses ethical and security risks, such as bias in AI generated content, students' excessive reliance on AI leading to decreased independent thinking ability, and personal learning data leakage. Therefore, in building a new ecosystem for general education in college English, it is necessary to strengthen AI ethics education and standardized management to ensure the healthy application of technology.

Firstly, it is necessary to integrate AI ethics education into the entire process of English teaching. Through classroom discussions, case studies, debate competitions, and other forms, guide students to understand the advantages and limitations of AI technology and establish a correct view of AI applications. For example, organizing a themed debate on the advantages and disadvantages of AI writing, allowing students to explore the relationship between AI assisted writing and academic integrity; Analyze cultural bias cases in AI generated content and cultivate students' critical thinking abilities. At the same time, it is necessary to clarify the usage norms of AI tools, such as requiring students to independently complete writing and speaking exercises before using AI for modification, and prohibiting direct plagiarism of AI generated content.

Secondly, it is necessary to strengthen the security management of learning data. Vocational colleges should establish and improve data security management systems, choose compliant intelligent teaching platforms and tools, and ensure the security of students' personal information and learning data. Sign a data security agreement with AI technology suppliers to clarify the scope and permissions of data collection, storage, and use, in order to prevent data leakage and abuse. At the same time, it is necessary to educate students on data security awareness, guide them to protect personal account information, and standardize the use of intelligent platforms.

Finally, it is necessary to establish a supervision and evaluation mechanism for AI teaching applications. Establish a supervision group composed of teachers, technicians, and student representatives to regularly evaluate and inspect the application effectiveness and ethical risks of AI teaching tools. Collect feedback from teachers and students on AI tools, and promptly identify and solve problems in their application. For example, if an AI writing tool is found to have low grammar correction accuracy, it should be promptly communicated with the supplier to improve or replace the tool; If it is found that students overly rely on AI for oral practice, teaching strategies should be adjusted to increase teacher-student interaction and group practice sessions.

4. CONCLUSION

This article focuses on the application of artificial intelligence technology in general education of college English, systematically exploring the construction strategies of a new educational ecosystem. The following research results are obtained:

Firstly, artificial intelligence technology provides a key solution to solve the dilemma of traditional university English general education. The intelligent teaching system achieves "personalized teaching" through data-driven approaches, speech recognition technology breaks through the pain points of "mute English" teaching, generative AI expands teaching resources and modes, intelligent writing correction system improves writing teaching efficiency, and the practical application of four types of technologies effectively solves problems such as single teaching mode and insufficient personalization, laying a technical foundation for the new education ecosystem.

Secondly, "human-machine collaboration" is the core logic of building a new educational ecosystem. Teachers need to shift from knowledge transmitters to learning guides and resource designers, while students need to shift from passive receivers to active explorers. The two rely on intelligent tools to form a positive interaction between teaching and learning, and at the same time, with a diversified intelligent resource system and dynamic evaluation mechanism, can achieve dual improvement of teaching quality and students' language application ability.

Thirdly, AI ethics and regulatory management are the guarantee for the sustainable development of the new ecosystem. In the application of technology, it is necessary to prevent risks such as data leakage and excessive reliance on AI by students. By integrating ethical education, improving data security systems, and establishing supervision and evaluation mechanisms, we can ensure that technology serves the essence of education.

In summary, empowering the construction of a new ecosystem for college English general education with artificial intelligence is an inevitable choice for vocational colleges to cultivate composite talents that meet the needs of new quality productivity. In the future, it is necessary to continuously deepen the integration of technology and teaching, dynamically optimize the ecosystem, and provide a more practical path for English teaching reform.

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