

Research on the Path of Integrating Generative Artificial Intelligence Technology into the University English Education Ecology in the Era of Digital Intelligence

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ABSTRACT

Against the backdrop of the era of digital intelligence, generative artificial intelligence technology is profoundly transforming the field of education, offering new ideas for addressing challenges such as insufficient resources, low efficiency, and ability cultivation in university English education. This paper reviews the positive impacts of generative artificial intelligence technology on enriching university English teaching resources, improving teaching efficiency, and cultivating students' abilities. Specific implementation strategies for integrating generative artificial intelligence technology into university English education are proposed from aspects including curriculum syllabus optimization, teaching content innovation, teaching mode reform, and teaching tool upgrading. The research results show that the deep integration of generative artificial intelligence technology and university English education will significantly enhance the quality and effectiveness of education, promoting the intelligent, personalized, and precise development of the university English education ecology.

KEYWORDS

Generative Artificial Intelligence; University English Education; Educational Ecology; Integration Path; Intelligent Teaching Introduction

In the context of the era of digital intelligence, generative artificial intelligence technology is profoundly influencing the development of various fields, and the field of education is no exception. As an important part of higher education, university English education faces many challenges, such as insufficient teaching resources, the need to improve teaching efficiency, and difficulties in cultivating students' abilities. With its powerful natural language processing and knowledge generation capabilities, generative artificial intelligence technology provides new ideas and methods for solving the problems of university English education and optimizing the university English education ecology. Therefore, in - depth research on the application of generative artificial intelligence technology in university English education is of great significance for promoting the reform and development of university English education.

1 Advantages of Generative Artificial Intelligence Technology in University English Education

1.1 Enriching Teaching Resources and Providing Personalized Learning Experiences

Generative artificial intelligence technology has powerful natural language generation capabilities. It can automatically generate high - quality and diversified English learning resources according to teaching needs. These resources can meet the learning needs of students at different levels and provide them with abundant learning materials. At the same time, generative artificial intelligence technology can also customize personalized learning content and paths for students according to their individual characteristics and learning progress. Through intelligent recommendation and adaptive learning, students can obtain learning experiences that are more in line with their own needs and interests, improving learning efficiency and motivation. The advantages of generative artificial intelligence technology in enriching teaching resources and providing personalized learning experiences inject new vitality into university English education, helping to stimulate students' learning interest and enhance learning effectiveness.

1.2 Improving Teaching Efficiency and Optimizing Teaching Design

Generative artificial intelligence technology plays an important role in the teaching design and implementation process, which can significantly improve the efficiency of university English teaching. Teachers can use generative artificial intelligence tools to quickly generate teaching syllabuses, lesson plans, courseware and other teaching resources, reducing the pressure of lesson preparation and saving time. Meanwhile, generative artificial intelligence systems can accurately diagnose students' learning difficulties and weak points by analyzing their learning data, and provide teachers with personalized teaching improvement suggestions to optimize teaching strategies and methods. In actual teaching, teachers can also use generative artificial intelligence technology to design intelligent teaching activities, such as intelligent Q&A, writing revision, oral practice, etc., providing instant feedback and guidance to improve classroom

interaction efficiency. The collaborative innovation between generative artificial intelligence technology and teachers can continuously optimize teaching design and improve teaching quality and efficiency.

1.3 Cultivating Students' Autonomous Learning and Higher - Order Thinking Abilities

Generative artificial intelligence technology provides strong support for cultivating college students' autonomous learning ability and higher - order thinking ability. In an intelligent learning environment, students can obtain personalized learning resources and guidance from generative artificial intelligence systems according to their own needs, independently arrange their learning progress and rhythm, and cultivate their autonomous learning awareness and ability ^[1]. At the same time, generative artificial intelligence systems can provide students with open - ended questions and tasks, encouraging them to engage in inquiry - based and project - based learning, and cultivating higher - order thinking abilities such as critical thinking and innovative thinking. In writing training, generative artificial intelligence tools can provide students with intelligent assistance in writing materials, writing frameworks, language expression, etc., helping them improve their English writing ability. In oral practice, students can interact in real - time with intelligent dialogue systems, receive speech recognition and language feedback, and improve their oral expression ability. Generative artificial intelligence technology creates an immersive and interactive learning environment for students, stimulates their learning motivation, and cultivates their autonomous learning and higher - order thinking abilities.

2 Implementation Paths for Integrating Generative Artificial Intelligence Technology into University English Education

2.1 Optimization of Curriculum Syllabus and Teaching Plan

With the assistance of generative artificial intelligence technology, university English education can optimize the curriculum syllabus and teaching plan. First, use generative artificial intelligence technology to conduct in - depth analysis of students' English learning needs and characteristics, and dynamically adjust the content setting and difficulty gradient of the curriculum syllabus according to the analysis results to ensure that the curriculum content is in line with students' actual learning needs. Second, use generative artificial intelligence technology to generate personalized teaching plans. For students with different learning bases and styles, formulate differentiated teaching objectives, teaching progress, and teaching strategies to achieve precise and personalized teaching. Finally, use generative artificial intelligence technology to monitor and evaluate teaching effects in real - time, and adjust teaching plans in a timely manner according to the evaluation results, continuously optimize the teaching process, and improve teaching quality. Through the optimization of the curriculum syllabus and teaching plan, university English education can better meet students' personalized learning needs and improve the pertinence and effectiveness of teaching ^[2].

2.2 Innovation of Teaching Content and Resources

Generative artificial intelligence technology provides strong support for the innovation of teaching content and resources in university English education. First, use generative artificial intelligence technology to automatically generate high - quality and diversified English learning resources, such as reading materials, writing samples, oral dialogues, etc., enriching teaching content and providing students with more extensive and in - depth learning materials. Second, use generative artificial intelligence technology to customize teaching content according to students' interests, learning styles, and ability levels, generating learning content that suits their characteristics and improving students' learning interest and effectiveness. Third, use generative artificial intelligence technology to manage and recommend teaching resources intelligently. According to students' learning behaviors and progress, dynamically recommend suitable learning resources to achieve precise matching and efficient utilization of resources ^[3]. Finally, use generative artificial intelligence technology to update and optimize teaching content in real - time. According to students' feedback and learning data, continuously adjust and improve teaching content to maintain its freshness and practicality. Through the innovation of teaching content and resources, university English education can provide students with a more abundant and personalized learning experience, enhancing students' learning effectiveness and satisfaction.

2.3 Reform of Teaching Modes and Methods

Generative artificial intelligence technology brings new opportunities for the reform of teaching modes and methods in university English teaching. In terms of teaching modes, the online - offline hybrid teaching mode can be explored, giving full play to the advantages of generative artificial intelligence technology in personalized learning, intelligent

tutoring, etc., and providing students with flexible, convenient, and efficient learning methods. Teachers can use intelligent teaching platforms to achieve the sharing of teaching resources and the monitoring of the learning process, optimizing teaching management and services^[4]. In terms of teaching methods, teachers can use generative artificial intelligence tools to design interactive and inquiry - based teaching activities, such as intelligent Q&A, situational dialogue, project cooperation, etc., to stimulate students' learning interest and participation enthusiasm, and cultivate their language application ability and problem - solving ability. In addition, teachers can also use the instant feedback and personalized guidance provided by generative artificial intelligence systems to achieve precise teaching and individualized instruction, improving teaching effectiveness. When using intelligent technology to achieve personalized teaching, it is also necessary to take into account the cultivation of students' cooperative learning ability, guiding students to learn from each other and improve together in collaborative tasks such as group projects. The innovative integration of generative artificial intelligence technology and teaching practice helps to build a new intelligent, personalized, and efficient university English teaching ecology.

2.4 Upgrading of Teaching Tools and Evaluation Systems

The development of generative artificial intelligence technology provides new paths for the upgrading of teaching tools and evaluation systems in university English teaching. In terms of teaching tools, intelligent writing platforms based on generative artificial intelligence technology can be developed to provide students with intelligent assistance functions such as writing idea generation, grammar correction, and language polishing, helping students improve their English writing ability. At the same time, using speech recognition and natural language processing technology, intelligent oral training systems can be constructed to provide students with functions such as pronunciation correction, speech scoring, and dialogue practice, comprehensively improving their listening and speaking abilities. In terms of teaching evaluation, teachers can use generative artificial intelligence technology to collect and analyze students' learning data, including learning behaviors, learning effects, knowledge mastery, etc., and establish a multi - dimensional and dynamic teaching evaluation system. Through intelligent learning diagnosis and feedback, provide students with personalized learning improvement suggestions, helping them adjust learning strategies in a timely manner and improve learning efficiency^[5]. The deep integration of generative artificial intelligence technology with teaching tools and evaluation systems helps to build a scientific, precise, and efficient support system for university English teaching, providing comprehensive intelligent services for teaching and learning.

2.5 Reshaping of Teachers' Roles and Professional Development

In the era of digital intelligence, the widespread application of generative artificial intelligence technology puts forward new requirements and challenges for the role positioning and professional development of university English teachers. Teachers need to actively embrace intelligent technology, constantly update their educational concepts, and reshape their role positioning. First, teachers should transform from simple knowledge transmitters to designers, organizers, and guides of the learning process. Using generative artificial intelligence technology, teachers can design personalized learning tasks and paths, guide students to explore independently, stimulate students' internal learning motivation, and cultivate their autonomous learning ability. Second, teachers should become experts and innovators in the application of intelligent technology. Teachers need to have an in - depth understanding of the principles and applications of generative artificial intelligence technology, actively explore strategies and methods for deeply integrating intelligent technology with teaching practice, continuously optimize teaching design and processes, and innovate teaching modes and methods to achieve intelligent and personalized teaching. Finally, teachers should strengthen cooperation with artificial intelligence systems, give full play to their respective advantages, and achieve human - machine collaborative education. Teachers should be good at using the massive teaching resources and intelligent services provided by artificial intelligence systems to provide students with more abundant and diverse learning support; at the same time, teachers should also play their roles in humanistic care and value guidance, cultivate students' humanistic qualities and moral characters, and shape students' sound personalities. University English teachers should continuously improve their information literacy and teaching innovation ability through continuous professional learning and practical exploration, actively adapt to the new normal of educational development in the intelligent era, reshape their professional roles, and achieve new breakthroughs in professional development.

2.6 Construction of Institutional Environment and Support Guarantee System

The deep integration of university English education and generative artificial intelligence technology requires the construction of a good institutional environment and support guarantee system. Scientific and reasonable top - level design and institutional arrangements are important prerequisites and foundations for promoting the standardized and

regular application of artificial intelligence technology in the field of university English education. On the one hand, education authorities and universities should formulate special plans and policy measures for artificial intelligence to promote the development of university English education, clarify development goals, key tasks, and implementation paths, and provide direction guidance and institutional guarantees for the intelligent teaching reform of university English. At the same time, relevant standards, specifications, and quality monitoring systems should be established and improved to standardize the application process and evaluation methods of artificial intelligence technology in university English education, ensuring the scientificity, suitability, and effectiveness of intelligent teaching.

On the other hand, universities should increase investment in the construction of intelligent teaching environments and facilities, build intelligent teaching platforms with complete functions, advanced technology, and easy operation, and provide high - quality intelligent teaching services for teachers and students. At the same time, special research centers for the application of artificial intelligence in education should be established, gathering interdisciplinary talent teams to carry out theoretical research and technical research on the application of artificial intelligence in education, providing continuous intellectual support and innovative impetus for intelligent university English teaching. In addition, attention should be paid to creating an open, inclusive, cooperative, and shared artificial intelligence education ecology, promoting collaborative innovation among multiple entities such as universities, enterprises, and scientific research institutions, and promoting the co - construction and sharing of artificial intelligence education resources, expanding a broader development space for intelligent university English teaching. A sound and perfect institutional environment and support guarantee system help to create a good atmosphere conducive to the integrated development of university English education and artificial intelligence technology, laying a solid foundation for improving the quality of university English education and cultivating composite English talents with artificial intelligence literacy.

3 Conclusion

The rapid development of generative artificial intelligence technology in the era of digital intelligence provides new impetus and paths for the reform of university English education. By deeply integrating generative artificial intelligence technology into all aspects of teaching, optimizing curriculum design, innovating teaching content, reforming teaching modes, and upgrading teaching tools and evaluation systems, the quality and effectiveness of university English education can be significantly improved. In the coordinated development of artificial intelligence and education, the university English education ecology will continue to be improved and upgraded, providing a solid foundation for cultivating high - quality talents with an international perspective, cross - cultural communication ability, and innovative thinking. Looking to the future, generative artificial intelligence technology will surely promote the intelligent, personalized, and precise development of university English education, creating a new situation for university English education.

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