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Research on Blended Teaching Model in Higher Vocational Colleges Empowered by Artificial Intelligence Generated Content

Bin Xiao[1*], Haiquan Qiu[2]
[1,2]School of Information Engineering, Guangzhou Vocational College of Technology & Business, Guangzhou, China

Abstract— With the rapid development of Artificial Intelligence Generated Content (AIGC) technology, its application in the field of education has become increasingly widespread, especially in blended teaching in higher vocational colleges, showing great potential. This paper aims to explore how AIGC technology can empower blended teaching in higher vocational colleges and construct a corresponding teaching model. Through literature review, a comprehensive overview of AIGC technology and its applications in the educational field was conducted. Subsequently, by analyzing specific cases, the current application status and effects of AIGC technology in blended teaching in higher vocational colleges were discussed. Based on this, a blended teaching model empowered by AIGC was constructed, including dimensions such as teaching content creation, teaching interaction, and teaching evaluation. The research found that AIGC technology can significantly enhance the richness and interactivity of teaching content, optimize the teaching evaluation process, thereby improving teaching effectiveness. At the same time, the study also pointed out potential challenges in the application process, such as technical integration, teacher training, and student adaptability, and proposed corresponding countermeasures. Finally, this paper provides recommendations on how higher vocational colleges can effectively utilize AIGC technology for blended teaching and looks forward to future research directions.

***Index Terms*— AIGC, Higher Vocational Colleges, Blended Teaching, Teaching Model, Educational Technology.**

1. Introduction

A. Research Background and Significance

AIGC technology refers to the use of artificial intelligence algorithms to automatically generate content, which can be in the form of text, images, audio, or video. In the educational field, AIGC technology can generate personalized learning materials and tutoring content based on students' learning behaviors and preferences, providing a customized learning experience. Additionally, AIGC can assist teachers in innovating teaching content and managing teaching activities, enhancing teaching efficiency and quality. Against the backdrop of the digital era, the education industry is undergoing unprecedented transformation. As one of the emerging educational technologies, AIGC technology brings new opportunities to higher vocational college teaching in areas such as content creation, personalized learning path design, and intelligent tutoring. Higher vocational colleges, as important bases for cultivating highly skilled talents, face dual challenges of innovative teaching models and improving educational quality. Blended teaching models, combining the advantages of online and offline teaching, have become an important direction in current educational reforms. The introduction of AIGC technology provides new ideas and tools for the innovation of blended teaching models in higher vocational colleges. The significance of this research lies in exploring how AIGC technology can be combined with blended teaching models in higher vocational colleges to improve teaching effectiveness and student learning experiences. By constructing a blended teaching model empowered by AIGC, this research aims to provide theoretical support and practical guidance for teaching reform in higher vocational colleges. The research objectives include: 1) analyzing the current application status of AIGC technology in blended teaching in higher vocational colleges; 2) constructing a blended teaching model empowered by AIGC; 3) exploring the potential of this model in enhancing teaching effectiveness and student learning experiences; 4) proposing challenges and countermeasures for implementing this model.

B. Literature Review

Artificial Intelligence Generated Content (AIGC) technology, as an important branch of the artificial intelligence field, has developed rapidly in recent years. Chen et al. (2024) conducted a study on the application of AIGC technology in the educational field, finding that content generation technology based on deep learning can significantly enhance the personalization and adaptability of educational resources. The study further pointed out that the application of AIGC in educational scenarios has expanded from single text generation to multimodal content generation, including teaching videos and interactive exercises [1]. The theoretical research on blended teaching models has been quite mature, with scholars systematically analyzing the practice of blended teaching in higher vocational colleges, confirming the significant advantages of this teaching model in improving learning outcomes [2]. Huang (2024) emphasized the importance of technical support for the successful implementation of blended

*Corresponding author: binxiao84@126.com

teaching, especially in the post-pandemic educational environment [3]. Ding et al. (2024) conducted a case study of AIGC applications in 50 higher vocational colleges in China, showing that the application of intelligent teaching assistants significantly improved teachers' work efficiency and students' learning experiences [4]. Ren Ming (2024) focused on analyzing the application effects of AIGC technology in professional course teaching, particularly in innovative applications in experimental and case-based teaching [5]. Zhan et al. (2023) pointed out the main challenges in the educational application of AIGC technology, including technical integration and teacher training, and proposed corresponding solutions [6]. Although the application prospects of AIGC technology in the educational field are broad, there are also some challenges. The complexity of technical integration, the adaptability of teachers and students to new technologies, and issues related to data privacy and security are common concerns in current research. Additionally, ensuring the accuracy and effectiveness of AIGC-generated content is a key issue for future research.

2. Research on Blended Teaching Model in Higher Vocational Colleges Empowered by AIGC

A. Theoretical Basis of Blended Teaching Model

The blended teaching model is based on constructivist learning theory and online learning theory, innovatively developed by combining the characteristics of AIGC technology. Under the guidance of constructivist theory, this teaching model emphasizes students' knowledge construction and meaning creation with the assistance of AIGC. Online learning theory provides a technical support framework for blended teaching, while the introduction of AIGC technology further enhances the intelligence and personalization of the teaching process. The organic combination of this theoretical foundation provides a solid theoretical support for constructing a new blended teaching model.

B. Design Principles of Blended Teaching Model

The design of the blended teaching model is centered on learners, emphasizing the diversity of teaching interactions. The design follows the principles of "online and offline integration, virtual and real combination," fully leveraging the advantages of AIGC technology in teaching resource generation, learning support, and teaching evaluation. The teaching process focuses on the unity of knowledge transmission and ability cultivation, creating authentic vocational scenarios through AIGC technology to enhance the practicality and professionalism of teaching. At the same time, it emphasizes the dialectical unity of teacher-led and student-centered, constructing an open and collaborative teaching environment.

C. Composition Elements of Blended Teaching Model

The teaching model includes three core elements: teaching environment, teaching activities, and teaching evaluation. The teaching environment integrates traditional classrooms, online learning platforms, and AIGC intelligent tools to build a multi-dimensional and three-dimensional learning space. The design of teaching activities includes the organization of teaching content and learning activities in three stages: before class, in class, and after class. Teaching evaluation adopts a combination of formative and summative evaluation, achieving real-time monitoring and personalized feedback through AIGC technology.

D. Implementation Process of Blended Teaching Model

The implementation of the teaching model follows a systematic process design. The first step is teaching analysis, clarifying teaching objectives and learning needs. The second step is the teaching design stage, integrating AIGC technology to design teaching resources and learning activities. During the teaching implementation stage, online and offline teaching methods are combined, with AIGC technology providing intelligent assistance and personalized support. In the teaching evaluation stage, diversified evaluation methods are used to promptly grasp learning outcomes and make teaching adjustments.

E. Guarantee Mechanisms of Blended Teaching Model

To ensure the effective implementation of the teaching model, a comprehensive guarantee mechanism needs to be established. In terms of technical support, a stable and reliable AIGC teaching platform and tool system should be built. In terms of teacher development, training in blended teaching skills and AIGC technology application should be conducted. In terms of teaching management, flexible teaching organization methods and a teaching quality monitoring system should be established. Additionally, continuous teaching research and practical exploration should be carried out to continuously optimize and improve the teaching model. The design and implementation of this teaching model fully consider the characteristics of higher vocational education and talent cultivation goals, combining the advantages of AIGC technology with blended teaching organically, aiming to enhance teaching effectiveness and talent cultivation quality. Through practical testing and continuous improvement, this teaching model will provide valuable references for teaching reform in higher vocational colleges.

3. Application of AIGC Technology in Blended Teaching

A. Application of AIGC Technology in Teaching Content Creation

The application of AIGC technology (Artificial Intelligence Generated Content technology) in blended teaching is becoming increasingly widespread, covering various aspects from teaching content creation to interaction, evaluation, and management, providing new tools and methods for educators. Through advanced technologies such as deep learning and natural language processing, AIGC can enhance teaching quality and effectiveness in multiple dimensions. First, AIGC technology plays a crucial role in teaching content creation. Using deep learning algorithms, AIGC can automatically or assist in generating teaching materials and provide personalized learning content based on students' learning progress and abilities. Teachers can use AIGC technology to update teaching

resources in real-time, ensuring that teaching content remains synchronized with the latest academic research and industry trends. Additionally, AIGC can help design interactive learning modules, such as virtual experiments and simulation scenarios, which not only enhance students' practical experiences but also promote active student participation in learning.

B. Application of AIGC Technology in Teaching Interaction

In terms of teaching interaction, AIGC technology also shows great potential. As an important component of blended teaching, teaching interaction can effectively promote students' thinking and knowledge absorption. Through intelligent tutoring systems, AIGC can provide personalized suggestions based on students' questions and homework feedback, helping them solve learning difficulties. At the same time, AIGC technology can act as an online discussion assistant, guiding students to engage in in-depth classroom discussions and providing information support to stimulate students' thinking. Additionally, the emergence of virtual learning partners allows students to interact with intelligent agents, which not only increases the fun of learning but also enhances the immersion and coherence of learning.

C. Application of AIGC Technology in Teaching Evaluation

The application of AIGC technology in teaching evaluation also provides new ideas for the innovation of educational evaluation methods. Through automated scoring systems, AIGC can efficiently evaluate students' assignments and tests, providing timely feedback on their learning outcomes. This method not only improves the accuracy of scoring but also reduces the workload of teachers. Additionally, AIGC can analyze students' learning behaviors, evaluate their learning outcomes and participation based on learning data, and provide personalized learning suggestions and improvement strategies to help students continuously improve during the learning process.

D. Application of AIGC Technology in Teaching Management

The application of AIGC technology in teaching management is equally significant. Teachers can use AIGC technology to monitor students' learning progress and status in real-time, promptly identifying and addressing difficulties students encounter during their learning process. The management of course content also becomes more efficient, with AIGC technology automatically updating and maintaining teaching resources to ensure the timeliness and accuracy of course content. Additionally, based on collected teaching data, AIGC can provide suggestions for optimizing teaching strategies, helping teachers improve teaching quality.

4. Advantages and Challenges of Blended Teaching Model Empowered by AIGC

A. Advantages

The blended teaching model combined with AIGC technology undoubtedly has significant advantages. First, AIGC technology can automate many teaching tasks, greatly improving teaching efficiency and reducing teachers' workload. Second, AIGC can provide each student with personalized learning content and paths, fully meeting students' individual needs and promoting the realization of differentiated teaching. AIGC technology can also stimulate students' learning motivation through interactive learning modules, promoting their active participation. Most importantly, AIGC technology can help students improve their learning outcomes through intelligent tutoring and personalized feedback.

B. Challenges and Countermeasures

However, despite the broad application prospects of AIGC technology in blended teaching, there are still some challenges. First, how to effectively integrate AIGC technology into existing teaching platforms and systems requires solving technical compatibility and resource allocation issues. Second, teachers need to receive relevant training to fully utilize AIGC technology in their teaching. For students, adapting to the new learning methods and interaction modes brought by AIGC technology may require some time and adjustment. Additionally, AIGC technology needs to pay attention to ethical and privacy protection issues when processing student data, ensuring strict compliance with relevant laws and ethical norms during the collection and analysis of student data.

In summary, the application of AIGC technology brings significant potential and opportunities to blended teaching. It not only enhances teaching efficiency but also provides students with more personalized and interactive learning experiences, promoting the innovation and development of education and teaching.

5. Conclusion and Recommendations

This research conducted a comprehensive study on the blended teaching model in higher vocational colleges empowered by AIGC through literature review, case analysis, and theoretical construction. The study found that AIGC technology has significant application potential in teaching content creation, teaching interaction, learning evaluation, and teaching management, bringing the following advantages to blended teaching in higher vocational colleges:

Enhancing personalized teaching experiences: AIGC technology can provide personalized learning content and paths based on students' characteristics and needs.

Enriching teaching resources: AIGC technology helps generate diverse and rich teaching resources, enhancing the interactivity and practicality of learning.

Improving teaching efficiency: Through automated content generation and learning management, teachers can conduct teaching activities more efficiently.

Enhancing learning motivation: AIGC technology provides interesting and interactive learning activities, increasing students' interest and participation.

This research provides recommendations on how higher vocational colleges can effectively utilize AIGC technology for blended teaching and looks forward to future research directions.

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