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Research on Blended Teaching Model in Finance and Economics Education using AIGC Technology

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Abstract:
The paper explores how AIGC technology impacts blended education in finance and economics education, seeking to introduce innovative ideas and techniques for education reform and innovation. First, I focus on AIGC technology's capabilities, particularly in boosting education effectiveness and fostering creative thought processes; Second, I introduce AIGC technology's distinct use in blended learning, including content generation, customizing educational routes, as well as mechanisms for interaction and feedback; Third, I explore the challenges and methods of integrating AIGC technology into blended education, such as training teachers in AIGC technology and ensuring data security. The paper argues that AIGC technology offers robust technical assistance for blended education in finance and economics, enhancing individualized instruction and elevating the quality of teaching. However, we also need to consider the importance of integrity and uniform management to guarantee the safety and ethical aspects of teaching.

Key words:
AIGC technology, blended teaching model, finance and economics education.

1 Introduction

With the rapid development of AIGC technology represented by ChatGPT, China also introduced AI tools like ERNIE Bot, iFLYTEK Spark, Qwen, offering capabilities in text generation, semantic analysis, inductive summarization, clustering, training and learning, etc. The technology will have great potential and diverse application scenarios in the field of education. It not only provides rich resources and platforms for education and teaching, but also provides possibilities and opportunities for the innovation and optimization of education and teaching model. Meanwhile, the concept of blended teaching has gained significant attention and implementation in higher education, both domestically and internationally, serving as a hybrid of online and offline teaching methods. Blended teaching can make full use of the advantages of information technology, break the limitation of time and space, realize the sharing and optimization of teaching resources, improve teaching efficiency and quality, meet student personalized learning needs, promote students' active learning, and cultivate students' innovative ability and lifelong learning ability.

As an important major in higher education, finance and economics plays an important role in the country's

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economic development and social progress. However, the present education approach for students majoring in finance and economics faces several issues, including overly theoretical and deficient in practice and innovation; an overly traditional teaching style devoid of personalization and interactivity; and an overly singular teaching evaluation that misses diversity and feedback. Such issues do not match the requirements of expertise and skills in finance and economics education, nor do they align with the benefits and features of AIGC technology. In such a background, it is of great importance to explore how to develop a blended teaching model suitable for finance and economics education using AIGC technology, to enhance the effect of teaching and learning for these majors.

This study focuses on the blended education model of students majoring in finance and economics using AIGC technology. The term 'blended teaching model' denotes a natural blend of digital and traditional teaching methods, using the advantages of AIGC technology to optimize teaching materials, methodologies, and effectiveness. The study explores the specific application of AIGC technology in the blended teaching model, including content creation, personalized learning path design, as well as interaction and feedback mechanism, it examines the challenges and coping mechanisms encountered when integrating AIGC technology into blended teaching, including the teacher's AIGC technology training and data privacy. This paper offers both theoretical direction and practical advice for the education transformation of students majoring in finance and economics, providing a teaching and learning approach suitable for the modern intelligent era.

2 Literature review

2.1 Research of blended learning

The blended learning model combines face-to-face teaching with students' autonomous learning in order to optimize the synergistic effect of teaching and learning. This model is not only a simple combination of traditional and online learning, but also a deep integration of teaching concept, environment, method, content and evaluation (Moskal et al., 2013). The design of blended courses integrates online and face-to-face teaching in order to enhance the higher education quality and sustainability. It involves developing teaching principles for sustainable blended learning, reducing commuting, balancing virtual and physical spaces (Chang, 2023). The method is adaptable to multiple fields, including language teaching, sociology, and science education, offering novel strategies during the epidemic (Versteijlen et al., 2023). By combining theoretical knowledge with practical experience, blended learning courses such as Integrated Sociology Courses (ISP) prepare students for different career paths and industry needs (Zhu, 2022). The adoption of blended learning approaches, like the flipped classroom model, can tackle issues inherent in conventional teaching techniques and enhance student involvement, as well as education effect. Cronje (2020) considered that blended learning's definition ought to be grounded in educational theories, encompassing hands-on teaching and experiential learning. Margolis et al. (2017) argued that the success of a blended learning model depended on ten key factors such as the setup phase, consistency when team teaching, timeliness of posted materials, time on task, accountability for online activities, structured active learning, instructor's use of feedback on student readiness, incorporation of student feedback on the course, brief reviews of online materials in the classroom, and ensuring that the technology is user-friendly. Scholars have studied blended research curriculum design, which covers the choice of course content, teaching model, technology platform and other aspects, forming a variety of design

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types such as flipped classroom, MOOC learning, and Wechat group (McGee, 2014; McGee & Reis, 2012). In addition, it also pays attention to the evaluation of blended teaching learning effect, including learning satisfaction, cognitive level, learning engagement, etc. (Banerjee, 2011; Diep et al., 2017; Vaughan et al., 2017). Some scholars consider blended teaching support services, discuss teaching cognitive tools, learning resource construction and teacher development (Kumar et al., 2021; Oliver & Stallings, 2014).

Although scholars have a lot of researches on blended learning, there are still lack of literatures on how to apply AIGC technology to blended learning under the intelligent era. This paper aims to explore how AIGC technology can help students to summarize learning content, assist data analysis, interpret code, text analysis, and provide one-to-one question-and-answer, so as to help realize personalized teaching, further enrich and optimize blended learning model.

2.2 Research of AIGC technology in education

AIGC technology has a disruptive impact in the field of education, not only changing the teaching and evaluation process, but also profoundly influencing education theory and practice (Zhu & Yang, 2023). As an example of AIGC products, ChatGPT opens up new possibilities in the field of education. Chen et al. (2024) found that with its powerful text generation and understanding capabilities, it had a revolutionary impact on pedagogy, learning experience, personalized education, etc. Researches on AIGC in education mainly focus on AIGC technology performance evaluation, teaching application, enhanced learning outcomes, advantages and disadvantages of AIGC education application, and AIGC education application prospects. This technology is conducive to the realization of personalized education (Lo, 2023), and improve teaching efficiency (Grassini, 2023). In terms of teaching resources and applications, AIGC technology can generate courseware and exercises, assist in grading assignments, and provide intelligent question-answering services (Fuchs, 2023). AIGC significantly enhanced students' self-efficacy, creativity, novelty and diversity, educators must deeply understand and address students' unique needs and challenges when designing and implementing AIGC-based teaching strategies because there are significant differences among people (Huang et al., 2024). However, AIGC also brings risks such as academic fraud and content authenticity, which need to strengthen ethical regulation and supervision. Futterer et al. (2023) analyzed Twitter data based on topic modeling and sentiment analysis, outlined global perceptions and reactions to ChatGPT about education, discussed average reactions on Twitter, such as incidents like using ChatGPT to cheat on exams. There are also scholars worried about AIGC using in education, Fuchs (2023) pointed the potential risk that students may over-rely on technology when using the NLP model in higher education, which will damage the development of important critical thinking skills. Education institutions can mitigate the disruptive impact of the technology and promote academic integrity by developing clear policies and guidelines, designing assessments of AIGC-generated texts (Adeshola & Adepoju, 2023).

Although previous studies have involved the application of AIGC technology in the single education model, the effects and influencing factors in the blended learning model still lack. This paper discusses the specific application and effect of AIGC technology in blended learning, and provides a new perspective and solution for education practice.

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3 Exploring the capabilities of AIGC technology in finance and economics learning

3.1 AIGC Technology can provide a personalized learning path

The application of AIGC technology provides a new model for modern education learning and helps students set personalized learning paths. Through accurate analysis of students' learning needs and preferences, AIGC technology can tailor the most suitable learning plan for each student, formulate personalized teaching goals, design comprehensive and practical teaching content, and use a variety of teaching methods which can better stimulate students' learning interests and effects, and improve students' practical ability and innovative spirit.

This application of personalized learning is particularly prominent in the field of finance and economics education. Students receive tailor-made learning materials and tasks to study at their own progress and interests. For example, if students encounter difficulties in understanding a certain financial model, AIGC technology can automatically recommend related supplementary materials or more intuitive case studies to help students overcome the difficulties. This kind of real-time and targeted learning support not only deepens students' understanding of complex concepts, but also greatly improves the speed at which students master financial knowledge. Students discover problems through repeated independent learning, and then discuss with teachers and classmates. They learn from each other and find paths while solving problems. The roles of students and teachers have changed throughout the learning process, students participate in the teaching process, teachers appropriately adjust the teaching process according to students' needs and guide students to learn. This change in learning model not only enables students to have a deeper understanding and application of the knowledge they have learned, but also develops their critical thinking skills. The design of personalized learning paths also takes into account students' feedback and learning effects. AIGC technology can have a better understanding of students' learning situations through continuous tracking and analysis, and adjust learning in a timely manner to ensure that learning activities are always in line with students' actual needs. Consistent with the learning goals, teachers can make informed teaching decisions through continuous tracking and analysis, ensuring real-time updates and optimization of personalized learning paths, and providing students with a continuously evolving learning environment.

3.2 AIGC technology can promote interactive learning activities

AIGC technology provides a safe learning environment that simulates real-world financial scenarios by implementing interactive learning activities, such as virtual simulations, role-playing, real-time Q&A, and collaborative projects, improving the dynamics and participation of learning. The application of these virtual reality can change the inflexibility of traditional education's "cramming" teaching, as well as separation of teaching and practice. Virtual scenes can be created according to the individual learning needs, allowing learners to immerse themselves in specific scenes and enhance the learning experience, which will deepen the understanding of knowledge.

For example, AIGC technology can virtualize financial activities, such as stock market trading simulations, allowing students to try different investment strategies in a risk-free environment, learn how to analyze stock

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price trends and make investment decisions. AIGC technology can realize role-playing activities, allowing students to play different roles, such as investors, governments, banks, financial institutions, and enterprises. By simulating the economic decision-making process, students can have an in-depth understanding of economic principles and market operations. Under AIGC technology, students exchange information and share knowledge through technical tools during activities, and use intelligent learning software to utilize learning resources, which will encourage students to work in teams to solve practical financial and economic problems, promote critical thinking and problem-solving abilities, it can stimulate students' interest in learning and have motivation to learn.

The application of virtual simulation scenarios allows students to practice and explore in a simulated and safe environment, improving their practical ability and adaptability. Virtual simulation scenarios can help students apply the theoretical knowledge they have learned to actual situations and cultivate their practical problem-solving and innovation abilities. The introduction of teamwork and competition elements further increases the interest of learning, encourages students to participate actively, devote their strengths in the team and learn how to collaborate with others, which is an extremely valuable experience for their future careers. Students supported by intelligent technology can obtain multi-sensory stimulation through immersive experience, push precise learning content to students and create personalized learning situations, allowing them to learn independently in real situations. It can greatly stimulate students' learning drive, improve learning efficiency, promote learners' personalized development, and then enhance comprehensive application ability.

3.3 AIGC technology can promote students' critical thinking

Critical thinking is a valuable skill in all areas of today's society, especially in the rapidly changing area of finance and economics, where it becomes the cornerstone of problem solving and innovation. The development and application of AIGC technology can effectively promote students' critical thinking skills. AIGC technology challenges students' traditional thinking models by providing diverse problem situations and perspectives, encourages them to question existing knowledge and assumptions, and provides students with ideas and knowledge from multiple dimensions to explore new solutions. For example, AIGC technology can provide students with multiple perspectives to think and analyze how events will develop under different environments. For example, it can create a simulated stock market environment, require students to predict stock price trends and develop an investment strategy based on historical data and current market conditions, then hypothesize how stock prices will vary if government policies or economic environment change. This requires students to not only understand the fundamentals of the stock market, but also be able to critically analyze information and identify potential risks and opportunities. In addition, AIGC technology can also provide timely feedback and guidance to help students identify and improve their thinking processes, and guide students to think from different aspects and methods, thereby helping them break through the limitations of their thinking and discover new solutions. Through the analysis of real examples, students can cultivate independent thinking and critical thinking, learn to analyze and solve problems.

3.4 AIGC technology can improve students' innovative ability

AIGC technology encourages students to think across disciplines through AIGC-assisted design, stimulating students' creative thinking and problem-solving ability. Interdisciplinarity refers to thinking that involves

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two or more disciplines from beyond the boundaries of one known discipline. Interdisciplinarity emphasizes the construction of a new knowledge system through the intersection and synthesis of multiple disciplines, so as to solve complex problems that cannot be solved by a single discipline. The emergence and application of AIGC provides a complete immersive scientific and technological environment for the development of innovative thinking, profoundly change the way people think, enabling students to explore and practice through different aspects. AIGC can provide students with interdisciplinary and cross-field knowledge. Students can be guided to use AIGC tools to identify new problems, generate ideas, design and test solutions, and achieve their goals from multiple paths. In addition, AIGC allows students to apply the knowledge and methods they have learned to solve practical financial problems, encouraging them to develop innovative solutions from the perspectives of multiple disciplines. For example, AIGC tools can be used to conduct market analysis, risk assessment, financial modeling and other activities, provide new ideas and methods in finance, economics, sociology, political science, etc. This kind of cross-border knowledge not only allows students to learn theoretical knowledge comprehensively and connects it with practice, but also inspires students to have the courage and passion to explore the unknown and challenge the status quo. AIGC technology presents highly integrated interdisciplinary knowledge content in a structured manner, promoting students' selection and organization, which provides raw materials for the interdisciplinary innovative thinking, promotes students' in-depth thinking and cognitive processing, and in the process of human-machine dialogue, students can cultivate basic innovative thinking such as logical thinking and critical thinking through continuous questioning.

4 Application of AIGC technology in blended learning model

4.1 Content creation

The emergence of AIGC technology not only represents that the education model has entered a new era, but also means that education resources have been developed. The implementation of this technology not only expands the sources and styles of teaching resources greatly, but also brings opportunities for personalized and real-time updating of teaching content, which undoubtedly enhances the depth and diversity of course content. By adopting advanced natural language processing (NLP) techniques, AIGC technology can generate various teaching materials autonomously or adaptively including lecture notes, multimedia materials and examination questions. These teaching materials not only closely integrated with specific teaching courses and learning objectives, but also can be continuously updated based on the latest academic research and industry trends to ensure that the content is both timely and relevant. As an example, when we teach financial management, AIGC technology can create teaching content with the latest empirical evidence based on current corporate financial information and the latest theories, so that students can deeply understand and master knowledge closely related to the current economic situation. In addition, AIGC technology can analyze students' academic speed and reactions so that it can make adaptive adjustments to the difficulty and content of teaching materials to ensure a customized learning experience for each student. This highly personalized learning strategy is not only designed to improve the quality of students' learning significantly, but also encourages students to further deepen and explore their learning path.

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4.2 Personalized learning path design

AIGC tools can provide students with in-depth analysis of their learning progress, interests, performance and other related data, and provide specific learning plans tailored for each student. The main advantage of this technology is that it can comprehensively consider students' knowledge background, learning purposes and their personality, thereby providing highly targeted and efficient teaching assistance. More importantly, AIGC technology has the characteristics of real-time adjustment of teaching paths and can flexibly adapt to students' learning progress and real-time feedback, thereby ensuring that teaching materials always match students' specific needs. For example, in an accounting learning environment, if students encounter difficulties when discussing a certain accounting principle, AIGC technology can quickly identify and answer these questions, and automatically recommend targeted supplementary materials, video explanations, or related exercises to help the student overcome the difficulties. The system can also adjust the difficulty and content depth of subsequent courses according to the learning effect of students, so as to ensure the suitability and effectiveness of the learning path. This highly personalized learning aid significantly enhances students' learning outcomes and performance, ensuring that each student receives the highest quality guidance throughout their education journey.

AIGC technology is used in the design of personalized learning paths, providing a solid technological foundation for truly realizing a personalized learning experience. AIGC technology conducts in-depth analysis of students' learning needs and preferences, provides real-time content adjustments and forward-looking teaching support. This can not only enhance students' learning outcomes significantly, but also help promote better allocation of education resources and innovative progress, which will push the education industry in a more personalized direction.

4.3 Interaction and feedback mechanism

AIGC technology plays a role in improving the interactivity between students and learning resources. This not only enhances students' learning experience significantly, but also creates a new way for personalized learning. The use of AIGC technology, combined with a real-time question answering system and interactive learning methods, not only creates an immersive learning experience for students, but also helps students strengthen their understanding and memory of knowledge through real-time feedback strategies, which greatly improved their learning effectiveness and efficiency. This unique interactive learning method and instant feedback strategy create a highly personalized and interactive learning atmosphere for students. At the same time, it also enables teachers to promptly understand each student's performance in class and their mastery of the content they have learned, so that they can teach in a targeted manner. This method not only improves the attractiveness and participation of learning, but also helps students master knowledge more effectively through precise guidance and feedback. As AIGC technology becomes more and more perfect, its ability to personalize teaching and improve learning effects will continue to be explored and utilized more deeply, thereby bringing more innovation and room for advancement to the education.

AIGC technology can provide students with instant knowledge feedback information. This method is not only based on students' answers, but also provides an in-depth interpretation of students' learning processes. Through AIGC technology, users can identify and solve students' knowledge blind spots, and at the same

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time provide customized learning materials and suggestions in a timely manner to help students fill gaps in knowledge and better optimize learning methods. This unique education assistance allows students to adjust their learning paths according to their actual needs, thereby achieving more efficient learning outcomes. In addition, AIGC technology can also continuously improve learning materials and teaching methods based on student learning feedback to ensure that the content taught always remains upto-date and relevant to meet students' continuous learning changes.

5. Problems and coping strategies of applying AIGC technology in blended learning

5.1 AIGC technical training for teachers

The rapid progress and widespread use of AIGC technology in the education will have a profound impact on education methods. The introduction of this technology not only significantly broadens the diversity and interactivity of teaching materials, but also promotes the gradual transformation of the teacher's role from a single role to a guide and mentor, thus greatly transcending the traditional boundaries of knowledge transfer. In this transition, teachers not only need to be proficient in the basic content of the curriculum, but more importantly to be able to use AIGC technology effectively to support and facilitate student learning. In order to help teachers adapt smoothly to this role change, it is important to provide them with opportunities for professional growth and training. Teacher training should cover the contents such as the use of technical tools to evaluate and provide feedback on student learning effectiveness, explore how to efficiently manage and plan teacher training course. After these trainings, teachers not only have the practical ability to operate AIGC related technologies, but also can deeply understand and apply the education ideas contained in these technologies, which will improve the quality and efficiency of teaching practice.

5.2 Data privacy and security

The use of AIGC technology in the education can create an unprecedented interactive learning environment for students. However, the widespread use of these technologies also raises clear threats to data protection and security. Personal information, including learning patterns, performance records and other personally identifiable information, may be potential targets for cyberattacks. These threats will not only bring huge risks to personal privacy, but may also reduce learners' trust in the online learning system, further affecting the overall healthy development and durability of the online education system.

Given these challenges, implementing strong data protection measures is even more critical. The implementation of strict data security protection is the core to ensure that personal information is absolutely worry-free. In addition, strengthened data encryption technology is not only key in its application, it is designed to reduce the risk of illegal theft and improper use of data to ensure that all information being transmitted and stored is encrypted. Furthermore, the accessibility of sensitive information needs to be restricted, allowing only formally authorized individuals to access a specific type of data, and access should be strictly controlled according to work to reduce the potential risk of data breach.

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6 Findings and suggestions

This paper selects the education of finance and economics as its core research content, and deeply explores how to use AIGC technology to design a blended teaching model that is more suitable for finance majors, which can improve the effectiveness and quality of teaching. The paper systematically explores and discusses the huge potential of AIGC technology in education, its specific application in the blended learning model and the various challenges and solutions faced in this model. The main conclusions of the paper are listed as follows:

(1) The paper explores the application capabilities and importance of AIGC technology in the finance and economics education, especially from the two perspectives of improving learning efficiency and stimulating innovative thinking, highlighting the advantages that AIGC technology can play in financial education. The paper believes that AIGC technology can bring detailed, varied, real-time and accurate teaching information and materials to financial education, help students deepen their understanding and mastery of finance, and further enhance the quality and practical ability of education. AIGC technology can also bring personalized, interactive and problem-oriented teaching methods to financial education, thereby stimulating students' learning enthusiasm and motivation, as well as strengthening their innovative thinking and problem-solving skills.

(2) The paper describes the application method and execution strategy of AIGC technology in the blended learning model. Starting from three dimensions: content innovation, personalized learning path design, as well as interaction and feedback mechanisms, it deeply explores how AIGC technology can help and optimize the teaching process and results of blended learning. AIGC technology can automatically generate teaching content suitable for blended learning based on the teaching goals, thereby improving the quality and diversity of teaching. AIGC technology also has the ability to design personalized learning plans based on learners' unique learning needs and characteristics, provide learning resources and activities suitable for learners' needs, which can offer timely, effective and targeted teaching support.

(3) The paper deeply explores the key issues and challenges encountered when using AIGC technology in a blended learning environment, including AIGC technology training for teacher, data privacy protection and security, etc. Based on these analyses, we put forward a series of solution suggestions, such as strengthening the training and guidance of AIGC technology for teachers, and establishing relevant mechanisms and specifications for data protection and sharing to ensure that AIGC technology is used safely, efficiently and sustainable in the education.

Based on the results mentioned above, I have the following suggestions:

(1) Higher education institutions should pay more attention to the application of AIGC technology in the teaching process. With the continuous acceleration of economic globalization, finance and economics education has received more and more attention from countries around the world, but our country's finance education is still in the exploratory stage. The concepts and methods of finance education are in urgent need of change. Educators and learners should actively participate and adjust to achieve better optimization and innovation of teaching methods. We should not only pay close attention to the progress and practical application of AIGC technology, but also need to strictly monitor and evaluate the practical effects, and build appropriate evaluation systems to ensure the high quality and practicality of AIGC technology.

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(2) Teachers should make maximum use of the advantages of AIGC technology to improve the level of intelligence and personalization in the teaching process. At the same time, it is also necessary to pay attention to cultivate students' independent learning abilities and critical thinking, and avoid over-reliance and negative adaptation to AIGC technology to ensure the humanity and diversity of teaching content.

(3) Students should actively use the various functions of AIGC technology to improve learning efficiency and effectiveness. At the same time, we should also focus on broadening the horizons and deepening the depth of learning, use the feedback and suggestions provided by AIGC technology to conduct self-evaluation to achieve initiative and depth in the learning process.

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