

Artificial Intelligence and Teaching Strategies: A Comparative Study of Higher Education in China and the United States

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Abstract: This study explores the integration of artificial intelligence in higher education teaching strategies in China and the United States, providing theoretical insights for global educational advancement. By systematically reviewing existing literature, the study identifies theoretical and practical pathways for embedding AI in these countries' educational systems. It examines the impact of AI on improving teaching strategies and educational quality. Utilizing qualitative research, policy analysis, and comparative methods, the research highlights specific differences and common challenges in AI's educational applications between the two nations. The analysis notes that the U.S. prioritizes personalized, data-driven teaching approaches due to its early adoption of AI, while China focuses on strategic investments to enhance educational quality and efficiency. Cultural distinctions and policy priorities influence how educational resources are allocated and teaching strategies are chosen, reflecting each country's strategic goals and educational values. The study concludes with recommendations for optimizing global teaching strategies through international collaboration and technology exchange. It emphasizes that AI in education is still in an exploratory stage, requiring ongoing assessment of its effectiveness and sustainability to foster a more innovative and inclusive teaching landscape.

Keywords: Artificial Intelligence; Teaching Strategies; Sino-American Comparison; Higher Education; Theoretical Analysis

1. Introduction

1.1 Research Background and Significance

In recent years, the rapid development of artificial intelligence (AI) has aroused widespread concern about its application in the field of education around the world. As an important driving force for training senior talents and promoting social development, higher education has put forward the requirements for improving the quality and efficiency of education in the face of changing social needs and scientific and technological progress. the introduction of AI technology provides a new perspective and thinking for the innovation of teaching strategies in higher education. As the two largest economies in the world, the United States and China are actively integrating AI technology into their higher education systems, but due to the differences in their cultural backgrounds, educational concepts and policy environments, their AI application models and effects are also very different. Exploring these differences can not only provide reference for the educational reform and practice of the two countries, but also provide valuable reference experience for other countries in the application of AI in the field of education.

1.2 Research Objectives and Problems

The purpose of this study is to explore the specific application of AI technology in education and teaching and the mechanism of its impact on teaching strategies through a comparative analysis of the current situation of AI application in Chinese and American higher education. the main research questions include: What are the main contents and forms of application of AI technology in higher education in China and the United States? How have educational strategies changed with the application of AI technology? What are the similarities and differences between China and the United States in this field and why? the research is expected to provide theoretical

support and practical guidance for the application of AI in global higher education through in-depth discussion of the above issues.

2. Literature Review

2.1 Application Status of Artificial Intelligence in Higher Education in China and The United States

The development of artificial intelligence technology is profoundly affecting the global higher education ecosystem, and the application of artificial intelligence in this field in China and the United States shows unique characteristics and trends. In the United States, the field of higher education makes full use of its first-mover advantage in the research and development of AI technology, and widely applies personalized learning systems and artificial intelligence teaching assistants in college courses to improve learners' experience and educational effects [1]. the study pointed out that the application of artificial intelligence in the field of education in the United States mainly focuses on intelligent tutoring systems, adaptive learning software and learning analysis platforms, which are committed to improving the testability and accuracy of educational results through data-driven methods [2]. Through these systems, students can get real-time feedback and adjust learning strategies according to their personal learning trajectory [3].

In contrast, China has shown rapid growth in the scale and speed of AI application in education. Driven by national policies, artificial intelligence has become an important factor in promoting the modernization of education. Especially in the process of "double first-class" discipline construction, artificial intelligence is regarded as a key path to improve education quality and promote discipline innovation [4]. the cooperation between the Ministry of Education and scientific and technological enterprises also provides a broad stage for the application of artificial intelligence in education, and more and more universities are implementing smart education programs in order to achieve the dual improvement of teaching quality and management efficiency [5]. In recent years, as the pace of cooperation between enterprises and universities has accelerated, the application of artificial intelligence in

classroom teaching, teaching management and resource allocation has become increasingly extensive. Through online learning platforms and AI-driven course management software, the fairness and accessibility of education have been significantly improved [6].

2.2 Theoretical Basis and Practice of Teaching Strategies

The rise of artificial intelligence technology provides a new perspective for the redesign and implementation of teaching strategies. It not only makes the concept of personalized education more possible to realize, but also promotes the reform of teaching content design, learning situation analysis tools and teaching evaluation standards [7]. From a theoretical point of view, the construction of teaching strategies must be based on the individual differences of students and the diversity of learning paths. AI technology can realize the student-centered teaching methodology to a certain extent through learning analysis technology and intelligent data collection [8]. Specifically, AI technology helps educators achieve dynamic assessment of students' learning behaviors and precise push of teaching content, helping to improve the overall teaching effectiveness [9].

In practice, the teaching strategies supported by AI technology pay attention to diversity and comprehensiveness, support personalized learning, and guide students to develop self-regulation ability and innovative thinking [10]. Specific implementation forms include intelligent classroom, MOOC platform, flipped classroom and other AI-based online education forms, which promote real-time interaction and efficient feedback between teachers and students, and students are not only the receivers of knowledge, but also the builders and sharers of knowledge [11]. the analytical data provided by AI provides a basis for teachers to adjust teaching strategies and make teaching more scientific, effective and forward-looking [12].

2.3 Review of Relevant Research on Comparison Between China and the United States

In the field of educational application of AI, the comparative study between China and the United States is of great value. This can not only show the specific differences in

educational policies, cultural backgrounds and technological channels of different countries, but also provide diversified perspectives and inspiration for global education development [13]. Many studies have proved that although China and the United States have different emphases in the application of AI in the field of education, they are all oriented towards building a technology-based intelligent education ecosystem.

In the context of the widespread use of AI in education, the United States pays more attention to the innovative and forward-looking application of technology, and scholars continue to explore how to further improve the customization and innovation of teaching with the help of AI [1]. Studies have shown that American universities not only widely apply AI technology in undergraduate education, but also adopt AI in graduate education for high-level knowledge management and research ability cultivation [14].

China's research on the application of AI in education focuses more on how to integrate national education policies with scientific and technological development strategies, and emphasizes the practical implementation in improving educational equity and teaching efficiency. China's education policy tends to gradually narrow the dilemma of uneven distribution of educational resources through the extensive application of AI technology, effectively improve the quality of education, and promote the inclusive development of education [15]. Relevant studies show that China's higher education shows great flexibility and adaptability in the application of AI. Especially in remote areas, the popularization of educational resources has been greatly improved through online education and AI learning platforms [16].

To sum up, although China and the United States have differences in the focus and realization path of AI application in higher education, they are both at the forefront of using cutting-edge technology to improve education models, providing a powerful inspiration for future education reform on a global scale. the value of this kind of transnational research is that it not only describes the application status of AI in education, but also reveals how educators can better achieve educational goals through scientific and technological means, so as to

promote the comprehensive development of individuals and society [17].

3. Method

3.1 Research Design and Methodology

This study chooses literature analysis and comparative research as the main methodological path. Through a systematic review of existing relevant academic papers and reports, this paper analyzes the status quo, strategies and effects of the application of artificial intelligence in higher education in China and the United States in a multidimensional framework. the design of this study takes a qualitative research approach with the intention of revealing the complex impact and diverse manifestations of AI in education. Qualitative research is particularly concerned with social, cultural and policy factors, which are often as important in educational applications as technical ones. Another important methodological choice is comparative analysis. By comparing the policies, technologies and practices of China and the United States in the application of AI in education, we will reveal their different paths and shared trends, and strengthen our understanding of the application of AI in the global education field. This study uses a structured topic model to carry out literature topic data mining, in order to obtain profound insights on research topics from a large number of literatures [9].

3.2 Data Collection and Analysis

The data sources of this study mainly include AI-related policy documents, official website information, scientific papers and case studies in the higher education systems of China and the United States. In order to ensure the comprehensiveness and reliability of the analysis, we classified the data, including policy support, technical facilities, teacher-student interaction, and learning resource allocation. Data collection is qualitative, but quantitative data has been introduced in some cases to provide a clearer picture of specific phenomena, such as the penetration of AI technology in the curriculum. Data analysis follows the general procedures of qualitative analysis methods, including preliminary data sorting, identification of thematic patterns, construction of theoretical framework, and

specific deconstruction and interpretation of research questions [10].

4. Discuss

4.1 Analysis of The Influence of Artificial Intelligence on Teaching Strategies

Rapid advances in artificial intelligence have had a multifaceted impact on traditional teaching strategies in higher education. Teaching strategies have relied on fixed textbooks, lesson plans and unified assessment criteria, but the introduction of AI has led to the development of personalized learning, interactive teaching and instant feedback mechanisms. With the assistance of artificial intelligence, teaching is no longer a unilateral knowledge transfer, but a two-way interactive knowledge construction process. AI can provide teachers with detailed learning analysis based on students' data performance, and adjust the content and form of instruction based on this analysis. Through intelligent learning analysis tools, teachers can more accurately grasp the needs and adaptation level of students, so it is expected to develop more personalized and effective teaching plans [4]. In addition, AI technology can also support diversified evaluation mechanisms, such as optimizing the learning performance evaluation model through the accumulation of learning data, so that teaching evaluation is no longer solely dependent on final exams [7].

Especially in the scenario of online education, AI can greatly improve the acquisition efficiency of learning resources and realize adaptive learning path customization. Studies have found that AI-driven learning environments can recommend appropriate learning resources according to different students' learning progress and style, ensuring that students can efficiently complete learning tasks with personalized support [16]. In traditional classrooms, artificial intelligence can assist teachers in more accurate classroom management and contextualized teaching through virtual assistants and intelligent teaching tools to improve the overall teaching experience and learning effect [8].

4.2 Discussion on The Differences Between Chinese and American Higher Education in The Application of Artificial Intelligence

China and the United States show different

ideas and paths in applying artificial intelligence to promote their higher education development. Higher education institutions in the United States are particularly focused on personalizing teaching and innovation-driven research through AI. In the process, the rich technical background and financial support have enabled the United States to take a leading position in AI technology research and educational applications. American universities not only have a competitive edge in technology, but also encourage interdisciplinary integration and innovative learning in educational concepts [1].

In contrast, China's higher education system, supported by national strategic policies, strives to make breakthroughs in the wide application of technology and the improvement of educational equity. the guidance of national policies has promoted the positive impact of AI on the allocation of educational resources and the fairness of learning opportunities. With the support of AI, China is committed to solving the problem of regional imbalance in educational resources, and has realized the inclusive transformation of education through massive open online courses and intelligent education platforms [5].

These differences are not only reflected in the depth and breadth of technology application, but also in the educational policy orientation and cultural background. American culture advocates individuation and innovation, and is more inclined to the development of breakthrough technology in AI teaching application; China puts more emphasis on collective interests and improving the macro level of education, and pays more attention to the systematic driving force of education reform in policy design. Through in-depth analysis of these differences, global educators can gain inspiration from different perspectives and help formulate education strategies and AI application paths suitable for national development [6].

5. Conclusions and Recommendations

5.1 Research Conclusions

The study reveals the profound impact of artificial intelligence in reshaping higher education strategies in China and the United States, as well as significant cultural and policy differences in this area. AI not only

infuses the update of teaching content and innovation of teaching methods, but also leads a new era of educational equity and personalized learning. the successful experiences of China and the United States in different directions provide reference for the global education system to make broader progress with the support of AI technology [15].

5.2 Recommendations for The Development of Higher Education

In order for the application of AI in the field of education to more effectively promote the development of higher education, relevant policymakers and educators need to pay strategic attention to the deep integration of technology and education. In terms of resource allocation, we should pay attention to the construction of intelligent teaching platforms and the improvement of teachers' AI application ability. At the same time, it is necessary to continue to carry out and enhance the research and development of key technologies such as learning analysis and educational data governance, so as to exert the intelligent potential of AI to a greater extent and realize the optimal allocation of high-quality educational resources [13].

5.3 Outlook for Future Research

Future research can further explore the ethical issues of AI technology application, long-term educational effects, and the professionalization of teaching caused by AI technology. At the same time, it is necessary to expand the research horizon and pay attention to the different impacts of diverse social and cultural backgrounds and educational environments on the application of AI in education. Promote a more constructive and inclusive role for AI in global education systems through interdisciplinary research and international collaboration. This will not only promote the sustainability of educational development, but also create a richer foundation for the global knowledge economy and cultural integration [17].

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