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Research on Transformation Path of Teacher Education Model and Construction of New Ecology under AI Empowerment

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Abstract: Under the background of the wide application of AI technology, the field of education has ushered in a profound change, which has renewed teachers' quality and teacher education model has innovated. Exploring the integration and development of artificial intelligence technology and teacher education has become an important educational topic. This paper puts forward a new idea of reforming the teacher education model based on AI technology, promoting the development of teacher education in the direction of science and fun, and analyzes the construction strategy of AI-based education ecology, so as to provide reference for promoting the integration of AI and college teacher education and building a new education ecology.

Keywords: AI; Universities and colleges; Teacher education model; Education ecology

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1. Introduction

In today's rapid development of artificial intelligence technology, facing the 2.0 era of integrated innovation and intelligent leadership, how to use new technologies such as artificial intelligence, big data and cloud computing to reconstruct the teaching mode of colleges and universities, create a new teaching ecology, update the teacher education mode, create a new type of education team, and promote the development of modern education has become a new topic for teachers to think about. According to the existing literature, artificial intelligence technology plays a more obvious and positive role in the field of education than traditional teaching methods [1]. Therefore, artificial intelligence will become the educational technology with the greatest development potential after computer networks and multimedia. In this paper, the reform of the teacher education model and the construction of teaching ecology in the era of artificial intelligence are discussed in depth.

2. The concept connotation of artificial intelligence technology

2.1. Concept of artificial intelligence technology

Artificial Intelligence, also known as "AI." The term was first coined in 1956 at the Dartmouth Six Weeks Conference, which defined artificial intelligence as "a machine whose learning or intelligence properties can be accurately described." It can be seen that artificial intelligence technology is an emerging science and technology that simulates, expands and extends human intelligence. As an emerging research direction, artificial intelligence aims to understand the nature of intelligence and create new intelligent machines with intelligent behaviors similar to human beings [2]. Since its emergence, it has set off an upsurge of discussion in the scientific and educational circles. Today, with the continuous deepening of the research on artificial intelligence, its theory and technology are becoming more mature, and the scope of application is gradually expanding. The application of new technologies such as artificial intelligence, big data and cloud computing into the field of education can help colleges and universities establish effective and interactive smart classrooms, and further combine science and technology with education and teaching [3].

2.2. The development of artificial intelligence technology in the field of education

By using AI technology, colleges and universities can build a complete teaching system to provide support and help for teacher education. For example, the easy to operate classroom recording tool built based on artificial intelligence technology records all the routine classroom teaching plans, which facilitates teaching and research reflection, and establishes and accumulates school-based resources; The classroom interaction tools built can make teacher-student interaction more efficient and deepen normal university students' understanding of education [4]. The digital teaching platform based on artificial intelligence technology helps teachers to break the "cramming" teaching method, improve the participation of normal students in class, and make classroom teaching more interesting. At the same time, the platform also enables teachers to have a timely understanding of the teaching situation in the classroom and make timely adjustments to the course content. Using the function of big data collection and analysis, teachers can also carry out accurate guidance and teaching management for normal students, implement the concept of teaching according to their aptitude, and provide personalized teaching for normal students. Intelligent analysis tools also provide scientific support for schools' teaching evaluation and management decisions. Through the service mode of "cloud + network + terminal," the information environment of the classroom is configured, and various terminal devices in the classroom are seamlessly linked and used intelligently, thus creating a learning environment full of wisdom [5]. In short, the in-depth application of artificial intelligence technology will bring a "revolutionary" impact on traditional teaching and will inevitably impact teacher education. It is the only feasible path for colleges and universities to actively face the basis and challenges brought by artificial intelligence.

3. The transformation path of teacher education mode under AI empowerment

3.1. Personalized and customized teacher education programs

Artificial intelligence technology has promoted the development of precision teaching and the development of teacher education in the direction of precision. In the training of normal talents, colleges and universities can collect and analyze students' learning data, sort out learning characteristics, learning efficiency, learning preferences, etc., connect with the new requirements of teachers' literacy in the education field of the intelligent era, formulate more accurate training programs, and match personalized education programs for different

students. At the same time, teachers can provide precise intervention and help according to students' learning needs. The intelligent platform records students' learning data, obtains data from various dimensions such as independent learning, classroom performance, and learning state, analyzes the potential characteristics and rules of their learning behaviors, and judges whether students have achieved their training goals [6]. Based on the learning information analyzed by big data, teachers can also check students' attendance, study time, test scores, etc., which can also help realize the precision of teaching management. Based on the information obtained from the analysis, teachers can conduct "one-to-one" guidance more efficiently, and urge students to complete online homework and check online learning resources promptly. The big data platform can also intelligently generate learning reports, analyze the professional knowledge and skill level of teachers, and provide directions for the subsequent optimization of training programs. The new generation of learners growing up in the background of artificial intelligence are eager to adopt a self-paced learning style anytime, anywhere, and artificial intelligence can obtain students' learning behavior data through big data to provide students with appropriate learning resources and learning environment. At the same time, it can promote the transformation of students' emotions and cognition and cope with learning with a positive attitude [7].

3.2. Precise delivery of education and training content

By automatically analyzing the learning behaviors of normal students, AI intelligently deduces the learning needs of students, and then pushes relevant education and training content for normal students and in-service training teachers. This precise push is not limited to course materials and videos, but can also include personalized learning suggestions, targeted practice questions, and the latest educational ideas and practice cases. With the push of the AI system, normal students and teachers can have access to richer learning resources that are more suitable for them. Colleges and universities can build intelligent educational resource libraries to automatically screen and recommend suitable learning materials based on students' professional direction, learning progress, and learning interests. In addition, AI technology can identify students' learning difficulties and weak links, provide timely counseling and remedial measures, and ensure that students fully master knowledge and skills. This kind of precise push can greatly improve the learning efficiency and effect of students, but also reduce the burden of teachers, so that they can focus more on teaching and research [8].

3.3. Intelligent long-term companion learning

AI technology can intelligently accompany normal university students and teachers to learn and participate in training. The AI system can automatically generate a record of the lecture, which is convenient for the subsequent review of normal students, can carry out key marks, mark out the important and difficult contents, and form a set of wrong questions, which can be retrained by normal students at the end of the semester or after the training. Normal students can make learning plans, and the AI system can automatically manage the learning plans, follow up on the learning progress of normal students, and remind them. This kind of intelligent long-term study companion enables students to manage their study plans more accurately and efficiently, and at the same time, they can find and solve problems in learning in time, improving students' learning quality and satisfaction. At the same time, the intelligent companion learning system can also provide teachers with students' learning dynamics and feedback, helping them better understand the students' learning situation, to formulate more effective teaching strategies. AI also helps teachers change their roles. Some "mechanical" work, such as traditional lesson preparation, homework correction, and after-class question-answering, can be completed by intelligent auxiliary systems, thus helping teachers to devote more energy to innovative and inspiring teaching, such as situational

interaction, development of creative thinking and personalized guidance [9].

3.4. Intelligent analysis of training effects

Evaluation is an important part of teacher education, and the evaluation based on artificial intelligence can realize the whole process of evaluation, and carry out a comprehensive evaluation of the learning process of normal university students and the training results of in-service teachers. In the context of artificial intelligence, teachers should attach importance to the supervision and evaluation of teachers and the training process [10]. Teachers can apply the monitoring and evaluation module in the AI system to monitor the learning process and training of normal university students and in-service teachers, to achieve better process management.

In terms of specific evaluation indicators, online discussion, reporting and speech ability, teamwork ability, organization and coordination ability, problem solving ability, innovation and entrepreneurship ability, logical thinking ability, professional ethics and other indicators can be integrated, so that the evaluation results not only reflect the students' understanding and mastery of educational theories and skills, but also make the evaluation results more comprehensive and accurate. Applying big data technology to carry out evaluation, teachers can make several data statistical charts to present students' learning data more clearly, objectively analyze whether students are up to standard in terms of academic performance, learning psychology, and habit formation, and combine target assessment with process assessment [11]. Evaluation methods should also be diversified, and the number and frequency of evaluations should be appropriately increased in the teaching process by integrating student self-evaluation, mutual evaluation, and teacher evaluation. Assessment results can be applied to data mining, data visualization technology, and other means to carry out in-depth analysis and generate visual evaluation reports.

4. Education ecology in the context of AI

4.1. Forming a learning atmosphere where everything is connected

With the help of AI, the campus in the future is likely to become an intelligent and connected space. AI technology can make cold machines become a kind of interactive equipment that makes people feel warm. These intelligent machines will continue to learn human habits and summarize different teaching methods to help students learn more actively and more personally. AI technology is used to monitor the sound, smell, temperature and other parameters in the classroom, and automatically adjust the indoor air conditioning, lighting, ventilation equipment, etc., to effectively give play to the campus safety warning function, ensure that every system in the school can operate more efficiently and environmentally friendly, and create a comfortable and comfortable learning environment for students [12]. In the "smart campus", the facial recognition of artificial intelligence can effectively improve work efficiency. Face recognition is a sign of an intelligent campus, which can provide a safer campus environment, provide more intelligent management for teaching, and help teachers understand the growth of students more comprehensively and systematically [13].

4.2. Comprehensive development of students

In the new era, interdisciplinary talents with innovative consciousness and an open vision are needed. Based on AI technology, many tedious and repetitive tasks are being replaced by machines, which makes human personality more and more important in the future society, which also makes the future education further highlight the concept of "people-oriented", and pay attention to students and the generation of students' characteristics. This

makes the training of normal university students and in-service teacher training pay more attention to teachers' educational innovation ability and their ability to explore and cultivate students' characteristics. The famous German philosopher Jasper described education as shaking another tree with one tree, one cloud pushing another cloud, and one heart awakening another heart [14]. Therefore, a teacher is a combination of wisdom, emotion and creativity. In the future, the application of artificial intelligence in education, such as tutoring, online learning and classroom teaching, will continue to deepen, and students will be able to understand more diversified information and develop comprehensively under the promotion of artificial intelligence technology.

4.3. Continuous improvement of teachers' educational ability

With the help of artificial intelligence technology, teaching analysis and classroom management can be carried out intelligently, and teachers can spend more time studying teaching and educating people. The rapid update of artificial intelligence technology makes teachers increasingly feel a sense of crisis, and tedious teaching management and analysis work is being replaced by artificial intelligence technology. Under such a background, teachers must continuously improve their abilities, constantly adapt to the new teaching mode and teaching ecology created by new technology, and meet the new talent needs brought by social development [15].

5. Conclusion

The development of artificial intelligence has brought great changes to teacher education work, providing personalized, customized teacher education programs, accurate push of education and training content, intelligent long-term companion learning, intelligent analysis of training effects, and other functions. The training of normal students and teacher training should make good use of artificial intelligence, constantly improve the education and training methods, comprehensively mobilize the enthusiasm of normal students and in-service teachers to participate in learning and training activities, improve the quality of teaching and training, and help normal students and teachers grow up healthily and develop comprehensively. This paper discusses how to use artificial intelligence to build a new teacher education model and education ecology, and provides specific teaching strategies, hoping to contribute wisdom to the education of college teachers.

Disclosure statement

The author declares no conflict of interest.

References

[1] Yang Y, Hu J, Ma J, et al., 2024, Exploring Educational Models for Training Postgraduate Students in Oral Medicine in the Era of Artificial Intelligence. Journal of Clinical Stomatology, 40(11): 686–688.

[2] Liu BS, Wang YL, 2024, Challenges and Solutions for Reforming Vocational Education Models under Guided Pathways. Journal of Jiangsu Vocational and Technical College of Economy and Trade, 2024(4): 69–71 + 79.

[3] Li D, Shao C, 2024, Research on the Reform of Vocational Education Models under the Reconstruction of Credit Banks in the Context of Digital Transformation. Educational Observation, 13(22): 8–10 + 32.

[4] Yi S, Xu S, Li Q, 2024, Exploration on Teaching Reform of Polymer Material Molding and Processing Course Based on OBE-CDIO Education Model. Chemical Engineering Management, 2024(20): 32–35.

[5] Shen WZ, 2024, Research on Ideological and Political Education Model and Strategy Reform From the Perspective of "Internet +". Journal of Hubei Open Vocational College, 37(10): 106–108.

[6] Deng J, Li F, 2024, Research on Printed Materials and Suitability Curriculum Reform Under Digital Education Model. Paper Making Equipment and Materials, 53(4): 173–175.

[7] Xiao N, 2024, Reform and Practice of Blended Education Model of Front Office and Guest Room Management Courses Based on Superstar Learning Pass. Modern Commerce Industry, 45(8): 195–197.

[8] Zhang YR, Ma J, Zhang Y, 2024, Research on Hybrid Education Model Reform Based on OBE Concept – Taking Logistics Technology and Equipment Course as an Example. Modern Commerce and Trade Industry, 45(6): 252–254.

[9] Zhao J, 2024, Application of Research-Oriented and Teaching-Back Education Model to the Teaching Reform of Semiconductor Physics Course. Physics and Engineering, 34(1): 67–72.

[10] Sun L, Liu Y, 2023, Blended Education Model: Reform and Innovation in Teaching Concepts. Journal of Heilongjiang Teacher Development College, 42(12): 46–49.

[11] Qiu A, 2023, Strategies for the Reform of Secondary Vocational Accounting Education Model in the Era of Big Data. Asia Pacific Education, 2023(20): 185–188.

[12] Zhu Y, 2023, Analysis of Higher Mathematics Teaching Reform Strategy Under Innovative Education Model. Journal of Hubei Open Vocational College, 36(18): 18–20.

[13] Lu X, Luo Y, Yao Y, et al., 2023, Exploration on Teaching Reform of Fine Chemical Comprehensive Experiment Course Based on CDIO Engineering Education Model. China Modern Educational Equipment, 2023(17): 80–82.

[14] Gao X, Peng S, Zheng X, et al., 2023, Research and Practice on the Path of Reform and Development of Blended Education Models. Journal of Longdong University, 34(5): 129–134.

[15] Li T, 2023, Application of Internet Technology in Innovation and Development of Ideological and Political Education Model in Colleges and Universities – Review of the Reform and Development of Ideological and Political Education in Schools Under Network Environment. Media, 2023(17): 104.