

Artificial intelligence promotes the parallel path of teacher team construction and digital education construction

Qing Liu

1. Chongqing Vocational College of Architecture and Technology, Chongqing 401331, China
 2. Sehan University, Mokpo 650106, South Korea
-

Abstract: With the rapid development of science and technology, artificial intelligence has gradually penetrated into the field of education, bringing unprecedented opportunities for the construction of teachers and digital education. This article discusses how artificial intelligence can play a boosting role in these two, and puts forward the path of parallel development. In terms of teacher team construction, artificial intelligence can help teachers improve teaching ability and efficiency by providing intelligent teaching aids, accurate educational data analysis, personalized teacher training plans and other means. At the same time, in the construction of digital education, the application of artificial intelligence can promote the digitalization, personalization and intelligence of educational resources and create a more efficient and convenient learning environment. This article further analyzes the challenges and coping strategies for implementing this parallel path, aiming to provide reference and reference for decision makers and practitioners in the field of education. Through active exploration and practice, we are expected to build a more intelligent, open and inclusive education ecosystem, laying a solid foundation for the cultivation of innovative talents to meet the needs of the future society.

Keywords: Artificial Intelligence; Teacher Team Construction; Digital Education Construction; Parallel Path

1. Introduction

Today in the 21st century, with the rapid development of information technology, human society is gradually entering the era of intelligence. As an important cornerstone of social progress, the field of education has also ushered in unprecedented opportunities for change. As the representative of the new generation of information technology, artificial intelligence (AI) is profoundly changing the face of education and opening up a new parallel path for the construction of teachers and digital education. This article aims to explore how artificial intelligence can promote the coordinated development of teacher team construction and digital education construction, so as to provide reference and reference for educational reform in the new era.

2. Overview of artificial intelligence to promote the construction of teachers and digital education

2.1 Conceptual definition

2.1.1 Conceptual definition

Artificial intelligence refers to the technology and method of simulating and realizing human intelligence through computer programs or machines. It enables computers to perceive, understand, judge, reason, learn, identify, generate, interact and other human intelligence, so that it can perform various tasks and even exceed human intelligence in some ways.

2.1.2 Artificial intelligence promotes the construction of teachers

Artificial intelligence promotes the construction of teachers, which refers to the use of artificial intelligence (AI) technology to enhance teachers' professional capabilities, improve teaching efficiency, optimize the allocation of educational resources, and promote the overall development of teachers. This process aims to solve the pain points in teacher building through technical means, and improve the overall quality and educational innovation ability of the teaching team.

2.1.3 Artificial intelligence promotes the construction of digital

Artificial intelligence promotes the construction of digital education, which refers to the digital processing of educational resources using artificial intelligence technology (such as machine learning, natural language processing, data mining, etc.), building an intelligent

teaching system, optimizing the teaching process, improving the learning experience, realizing the sharing and efficient use of educational resources, and promoting the development of education in a more fair, personalized and efficient direction.

2.1.4 The concept of parallel path between teacher team construction and digital education construction

The parallel path of teacher team construction and digital education construction mainly refers to the comprehensive improvement of the quality of education and the profound transformation of the education model through the simultaneous promotion of the professional development of teachers and the wide application of digital education technology under the background of educational modernization and digital transformation. This parallel path reflects the organic combination of “software” and “hardware” in the development of education, that is, the teaching team, as the core resource of education, promotes and develops with the emerging tool of digital education technology.

2.2 Main features

2.2.1 Characteristics of teacher team construction

2.2.1.1 Personalized and intelligent development

Artificial intelligence can assist teachers in repetitive and low-value-added manual labor, such as correcting homework, statistical analysis results, etc., so that teachers have more time and energy to devote to creative and high-value-added innovative labor. At the same time, artificial intelligence promotes the role of teachers from traditional knowledge transfers to designers, guides and evaluators of learning activities, paying more attention to the personalized development of students and the cultivation of innovative abilities.

2.2.1.2 Data-driven and precise teaching

Artificial intelligence can collect and analyze a large amount of teaching data, provide accurate teaching feedback and personalized teaching suggestions for teachers, help teachers optimize teaching strategies and improve teaching results. At the same time, with artificial intelligence technology, teachers can achieve comprehensive tracking and personalized evaluation of students' learning process, find problems in time and take measures to intervene.

2.2.1.3 Human-computer integration and collaborative teaching

An important feature of artificial intelligence to promote the construction of teachers is human-computer integration, that is, teachers teach together with robot teachers and AI teachers to form a new teaching model of two teachers. At the same time, in the environment of human-computer integration, teachers and intelligent systems work together to jointly promote the all-round development of students.

2.2.2 Characteristics of digital education construction

2.2.2.1 Personalized learning experience

Digital education can provide personalized learning content and learning paths according to students' learning style, hobbies and learning progress to meet the personalized needs of students. At the same time, using artificial intelligence technology, the digital education platform can build an intelligent recommendation system to recommend suitable learning resources and courses for students.

2.2.2.2 Enhanced engagement and participation

Digital education stimulates students' interest in learning and promotes interaction and communication between teachers and students through online discussion, virtual experiments, multimedia teaching, etc. At the same time, students can communicate with teachers and students in real time through online platforms, share learning experience, and obtain timely feedback and guidance.

2.2.2.3 Resource sharing and opening up

Digital education realizes the sharing and integration of educational resources by establishing an online teaching platform and resource library, breaking geographical and school restrictions, and making high-quality educational resources more widely disseminated and utilized. At the same time, many digital education resources are open to the public and promote the popularization and dissemination of knowledge.

2.3 Main significance

2.3.1 Promote the fairness and quality of education

Through the construction of digital education, high-quality educational resources can be widely shared across geographical restrictions.

The application of artificial intelligence technology enables students in remote areas to have access to high-quality teaching content and learning resources, which effectively alleviates the uneven distribution of educational resources and promotes educational equity. At the same time, artificial intelligence can provide customized learning paths and resource recommendations according to students' individual differences and learning needs to realize personalized teaching. This teaching method can stimulate students' interest and potential in learning and improve the learning effect, so as to improve the overall quality of education.

2.3.2 Promote the professional development of teachers

The teaching team needs to constantly adapt to the development of new technologies and master the application ability of modern information technology such as artificial intelligence. In this process, the intellectual literacy of teachers has been significantly improved, and intelligent tools can be better used to assist teaching and improve teaching efficiency and quality. At the same time, the introduction of artificial intelligence has promoted the role of teachers from traditional knowledge transfers to designers, guides and evaluators of learning activities. This role change requires teachers to have higher professional quality and innovation ability, and constantly learn and update educational concepts and methods to meet the educational needs of the intelligent era.

2.3.3 Innovative educational models and teaching methods

The construction of digital education promoted by artificial intelligence has spawned a variety of new teaching modes, such as hybrid teaching, flipped classroom, etc. These models break the space-time limitations of traditional classroom teaching, enrich teaching methods and forms, and improve the flexibility and interactivity of teaching. The application of artificial intelligence technology makes teaching methods more scientific, accurate and efficient. Through data analysis and intelligent recommendation, teachers can more accurately understand students' learning situation, adjust teaching strategies and methods in time, and improve teaching effect and learning satisfaction.

2.3.4 Improve the efficiency of education management and the scientificity of decision-making

The application of artificial intelligence in education management, such as intelligent class scheduling, student status management, teaching evaluation, etc., has greatly improved management efficiency and reduced the work burden of managers. At the same time, the intelligent management system can collect and process a large amount of data in real time, providing strong support for education management. The education decision support system based on big data and artificial intelligence technology can provide comprehensive and objective data analysis and prediction results for education managers, and help managers formulate education policy more scientifically. Policy and planning to improve the scientificity and effectiveness of decision-making.

2.3.5 Promote the modernization and sustainable development of education

Artificial intelligence promotes the parallel path of teacher team construction and digital education construction, which is one of the important symbols of education modernization. This process has accelerated the innovation and application of educational technology and promoted the comprehensive upgrading and optimization of the education system. At the same time, it has provided a strong impetus for the sustainable development of education by continuously improving the professionalism and innovation ability of teachers, as well as continuously optimizing digital education resources and platforms. This development model not only contributes to the improvement of the current quality of education, but also lays a solid foundation for the development of future education.

3. There are problems with artificial intelligence in promoting the construction of teachers and digital education

3.1 Challenges at the technology application level

3.1.1 Inadequate technology integration

Although the application of artificial intelligence technology in the field of education has begun to take shape, there is still a problem of insufficient technology integration on the whole. On the one hand, when some schools and educational institutions introduce artificial intelligence technology, they lack systematic planning and design, resulting in the isolation and fragmentation of technology applications, making it difficult to form an effective educational synergy. On the other hand, when using artificial intelligence technology, teachers often stay at the superficial level and fail to deeply explore their educational value and achieve deep integration with teaching content.

3.1.2 High technical threshold

The complexity and professionalism of artificial intelligence technology have brought great difficulties to the application of teachers. Many teachers lack in-depth understanding of artificial intelligence technology, and it is difficult to master its operation methods and application skills, resulting in poor technical application effect. In addition, when some schools introduce artificial intelligence technology, they lack necessary technical support and training services, which makes it difficult for teachers to solve problems in the process of use, which further affects the application effect of technology.

3.1.3 Data security and privacy protection

The application of artificial intelligence technology in the field of education involves the collection, analysis and processing of a large amount of student data, which raises severe challenges in data security and privacy protection. On the one hand, how to ensure the safe storage and transmission of student data and prevent data leakage and abuse is an urgent problem to be solved. On the other hand, how to balance the relationship between technology application and privacy protection and ensure that students' personal privacy is not violated is also an important topic that teachers need to face.

3.2 Challenges at the level of teacher building

3.2.1 Inadequacy of digital literacy

At present, many teachers have obvious shortcomings in digital literacy and are difficult to adapt to the educational needs of the artificial intelligence era. On the one hand, some teachers lack an in-depth understanding of information technology and it is difficult to master their application methods and skills in teaching; on the other hand, it is difficult for some teachers to flexibly use artificial intelligence technology to solve practical problems in the face of complex teaching scenarios. This lack of digital literacy not only restricts the in-depth application of artificial intelligence technology in the field of education, but also affects the overall quality improvement of teachers.

3.2.2 The concept of education lags behind

Some teachers still stay in the traditional mode of education concept, and it is difficult to adapt to the educational changes in the era of artificial intelligence. They often rely too much on traditional teaching methods and means and ignore the exploration and application of new technologies. The lag of this educational concept not only limits the professional development of teachers, but also affects the innovation and development of the entire education system.

3.2.3 Insufficient teacher training

Although artificial intelligence technology training activities for teachers have been carried out in various places, there is still a problem of insufficient training on the whole. On the one hand, the training content is often too broad and general to meet the personalized needs of different teachers; on the other hand, the training method is single, lacks interaction and practicality, and it is difficult to stimulate teachers' interest and motivation in learning. This lack of training leads to the lack of necessary professional knowledge and skill support for teachers in the application of artificial intelligence technology.

3.3 Challenges in the construction of digital education

3.3.1 Uneven distribution of educational resources

The construction of digital education requires a large amount of human, material and financial resources, but there is often an uneven distribution of resources in the process of actual promotion. On the one hand, some developed regions and high-quality schools can make full use of artificial intelligence technology to improve the quality and effectiveness of teaching; on the other hand, some underdeveloped areas and weak schools find it difficult to enjoy the dividends of digital education due to lack of resources. This problem of unequal distribution of resources not only exacerbates the occurrence of educational inequities, but also restricts the overall promotion of digital education construction.

3.3.2 The education evaluation system lags behind

The current education evaluation system still mainly focuses on traditional indicators such as students' examination scores and promotion rate, and it is difficult to fully reflect the application effect and value of artificial intelligence technology in the field of education. This

lagging evaluation system not only fails to encourage teachers to actively explore and apply new technologies to improve the quality and effectiveness of teaching, but also fails to accurately evaluate the overall effectiveness and existing problems of digital education construction. Therefore, the establishment of an education evaluation system adapted to the era of artificial intelligence has become one of the urgent problems to be solved.

3.3.3 Insufficient motivation for educational innovation

In the process of promoting the construction of digital education, some schools and teachers lack sufficient innovation motivation and practical courage. They are often used to using traditional teaching methods and means to carry out teaching activities, and lack enthusiasm for the exploration and application of new technologies. This lack of innovation power not only limits the depth and breadth of the application of artificial intelligence technology in the field of education, but also affects the innovation and development vitality of the entire education system.

3.4 Ethical and regulatory challenges

3.4.1 Ethical issues are prominent

With the wide application and in-depth development of artificial intelligence technology in the field of education, a series of ethical issues have gradually emerged. For example: how to ensure that students' personal privacy is not violated, how to avoid the adverse impact of algorithmic bias on students, and how to guide students to correctly view and use artificial intelligence technology, these problems require us to pay great attention to and take effective measures to solve in the process of promoting the construction of digital education.

3.4.2 Inadequate regulatory mechanism

At present, the regulatory mechanism for the application of artificial intelligence technology in the field of education is not perfect, and there are many regulatory gaps and loopholes. On the one hand, there is a lack of special regulatory agencies and personnel responsible for supervising and managing the application of artificial intelligence technology in the field of education; on the other hand, it is difficult for existing laws, regulations and policy documents to fully cover and effectively standardize the educational application of artificial intelligence technology. This imperfect regulatory mechanism not only brings potential risks and challenges to the construction of digital education, but also affects the healthy and orderly development of the entire education system.

4. Countermeasures for artificial intelligence to promote the construction of teachers and digital education

4.1 Comprehensively improve teachers' digital literacy and AI application capabilities

4.1.1 Deepen digital literacy education and consolidate the digital foundation for teachers

In the era of artificial intelligence, teachers' digital literacy is the key to improving the quality and effectiveness of teaching. Therefore, we need to deepen digital literacy education to ensure that teachers can master and use various digital tools and technologies. This includes basic information technology application capabilities, such as office software, network communication, etc.; it also involves more advanced data processing and analysis capabilities, as well as multimedia content production and publishing capabilities. Through systematic training and practice, teachers can better integrate digital technology into daily teaching and improve teaching efficiency and student participation.

4.1.2 Promote AI education applications and improve teachers' AI practical ability

In order to let teachers better adapt to the teaching needs of the era of artificial intelligence, we need to actively promote the application of AI education and improve teachers' AI practical ability. This can be achieved by organizing training and seminars on various AI education applications, so that teachers can experience and understand the great potential of AI technology in teaching. At the same time, teachers are encouraged to apply AI technology to curriculum design, teaching method innovation and student evaluation, and constantly explore and optimize the application mode of AI in teaching through practice.

4.1.3 Establish an innovative incentive mechanism to inspire teachers' enthusiasm for AI applications

In order to stimulate teachers' enthusiasm for innovation in the application of AI education, we can set up corresponding innovation

incentive mechanisms. For example, an AI education innovation fund was established to support teachers in carrying out AI-related teaching innovation projects; an AI education innovation competition was held to encourage teachers to submit teaching innovation plans based on AI technology, and to give winners certain awards and recognition. Through these incentives, teachers can be stimulated to innovate and promote them to make more attempts and explore in the application of AI education.

4.1.4 Establish an interdisciplinary cooperation platform to promote the improvement of teachers' AI literacy

In the process of improving teachers' AI application ability, interdisciplinary cooperation is particularly important. We can establish an interdisciplinary cooperation platform for educators, computer scientists, psychologists and other multidisciplinary backgrounds to participate in it. Through this platform, teachers can communicate and cooperate with experts in different fields to jointly explore the application modes and methods of AI technology in education. At the same time, this platform can also be used as an important resource for teachers to improve their AI literacy, providing them with the latest research results and practical experience.

4.2 Optimize the allocation of educational resources and promote educational equity

4.2.1 Use AI technology to accurately identify the needs of educational resources

The allocation of traditional educational resources is often based on experience and macro data, and it is difficult to accurately meet the actual needs of different regions, different schools and different students. Artificial intelligence technologies, such as machine learning and big data analysis, can accurately identify the demand distribution and changing trends of educational resources through the in-depth mining of historical and real-time data. In this way, we can formulate educational resource allocation plans more scientifically to ensure that educational resources can be accurately delivered to the places and people most in need.

4.2.2 Optimize the allocation mechanism of educational resources through AI

On the basis of accurately identifying the demand for educational resources, we can further use artificial intelligence technology to optimize the allocation mechanism of educational resources. By building an intelligent educational resource allocation platform, the dynamic adjustment and optimized allocation of educational resources can be realized. This platform can automatically adjust the allocation ratio and delivery method of educational resources according to the actual situation of different regions and schools to ensure that educational resources can be distributed more fairly and reasonably to each student.

4.2.3 Improve the quality of teachers with the help of AI

The quality of teachers is a key factor affecting the allocation of educational resources and educational equity. With the help of artificial intelligence technology, we can provide teachers with more personalized and accurate training and development opportunities. Through the intelligent teaching assistance system, teachers can prepare lessons, teach and evaluate students' learning effects more efficiently. At the same time, by using AI technology for educational data analysis, teachers can also more accurately understand students' learning needs and problems, so as to provide more targeted teaching guidance.

4.2.4 Use AI to promote the construction of digital education

Digital education is an important way to realize the optimal allocation of educational resources and educational equity. Using artificial intelligence technology, we can build a more intelligent and personalized digital education platform. This platform can automatically adjust the teaching content and difficulty according to students' learning progress, interest preferences and cognitive ability, so as to teach according to their aptitude. At the same time, through the digital education platform, we can also radiate high-quality educational resources to a wider range of regions and student groups to further promote educational equity.

4.3 Improve the education evaluation system and incentive mechanism

4.3.1 Build an intelligent education evaluation system

The traditional education evaluation system often relies on paper tests, manual scoring and other methods, which are not only inefficient, but also difficult to comprehensively and accurately reflect the learning situation of students and the teaching effect of teachers. The introduction of artificial intelligence technology can bring new changes to education evaluation. Through the intelligent education evaluation

system, we can realize the real-time collection, analysis and feedback of students' learning data, so as to have a more comprehensive and accurate understanding of students' learning progress, mastery of the situation and existing problems. At the same time, the intelligent education evaluation system can also objectively and impartially evaluate the teaching effect of teachers and provide targeted improvement suggestions for teachers.

4.3.2 Optimize the incentive mechanism and stimulate the innovative vitality of teachers

In the construction of the teaching team, the incentive mechanism plays a vital role. However, the traditional incentive mechanism is often too simple to fully stimulate the innovative vitality and teaching enthusiasm of teachers. In order to solve this problem, we can use artificial intelligence technology to optimize the incentive mechanism. Through the intelligent teaching assistance system, we can track teachers' teaching behavior and teaching effect in real time, and provide teachers with personalized incentives based on these data. For example, for teachers who have achieved remarkable results in teaching innovation, we can give additional rewards and honors to motivate them to innovate.

4.3.3 Use AI technology to achieve fairness in educational evaluation

The fairness of education evaluation has always been the focus of attention in the field of education. However, in the traditional education evaluation system, it is difficult to achieve true fairness due to the interference of human factors and the inconsistencies of evaluation standards. The introduction of artificial intelligence technology can provide a strong guarantee for the fairness of educational evaluation. Through an intelligent education evaluation system, we can ensure the unity and objectivity of evaluation standards, so as to avoid interference by human factors. At the same time, the intelligent education evaluation system can also conduct a comprehensive and in-depth analysis of students' learning data, and provide personalized evaluation and development suggestions for each student.

4.3.4 Combine AI technology to improve the development path of teachers

The career development of teachers is an important part of the construction of teachers. However, in the traditional teacher development path, it is difficult to achieve the all-round development of teachers due to the lack of effective data support and personalized guidance programs. Combined with artificial intelligence technology, we can provide teachers with a more personalized and accurate development path. Through an intelligent teaching assistance system and education data analysis platform, we can track teachers' teaching behavior and career development in real time and provide them with targeted training and development advice. This will help teachers to continuously improve their teaching ability and professional quality, and realize the sustainable development of their careers.

4.4 Strengthen ethical supervision and ensure the safety of education

4.4.1 Clarify ethical principles and establish a normative framework

It is necessary to clarify the ethical principles of the application of artificial intelligence technology in the field of education, such as respect for human rights, protection of privacy, fairness and transparency, traceability of responsibility, etc. On this basis, a corresponding normative framework is established to provide clear guidance for the application of artificial intelligence technology in education. These normative frameworks should cover data collection, algorithm design, model training, result application and other links to ensure the compliance and ethics of technology application.

4.4.2 Strengthen the ethical review of technology research and development and application

In the research and development and application of artificial intelligence technology, a strict ethical review mechanism should be established. Applications involving sensitive areas such as student privacy and educational equity must be reviewed and approved by a professional ethics review committee before they can be implemented. The review includes but is not limited to the rationality of the technical solution, the legality of data processing, and the fairness of the application of results. Through ethical review, technical abuse and misconduct can be effectively prevented.

4.4.3 Improve the ethical awareness of teachers and students

Teachers are the key role of artificial intelligence technology in the application of education, and their ethical awareness directly affects the application effect and educational security of technology. Therefore, we need to strengthen the ethical education and training of teachers

and improve their ethical literacy and sense of responsibility. At the same time, as recipients of education, students should also have a certain ethical awareness and be able to identify and resist bad information and technology abuse. Schools and education departments can popularize ethical knowledge and cultivate students' ethical concepts by setting up ethical courses, holding ethics lectures, etc.

4.4.4 Establish a sound regulatory system

In order to ensure the healthy development of artificial intelligence technology in the field of education and the safety of education, we need to establish a sound regulatory system. This includes the establishment of special regulatory agencies, the formulation of sound regulatory policies, and the establishment of an efficient complaint and reporting mechanism. Regulators should regularly inspect and evaluate the application of artificial intelligence technology in the field of education, and rectify and deal with problems in a timely manner. At the same time, all sectors of society are encouraged to participate in supervision and form a good atmosphere for the whole society to pay attention to educational safety.

5. Conclusion

As a powerful technical force, artificial intelligence is profoundly changing the face of education. In terms of teacher team construction and digital education construction, artificial intelligence has shown great potential. Through the application of intelligent tools, the deep mining and analysis of educational data, the customization of personalized teaching plans and the optimization of the education management system, artificial intelligence not only improves the teaching ability and efficiency of teachers, but also creates a more personalized and efficient learning environment for students. At the same time, the integration of artificial intelligence has also promoted the sharing and coordinated development of educational resources, and promoted the dual improvement of educational fairness and quality. Therefore, actively exploring and practicing the parallel path of artificial intelligence, teacher team construction and digital education construction is an important measure to follow the development trend of the times and promote the modernization of education. The implementation of this parallel path will lay a solid foundation for building a high-quality education system and cultivating talents needed in the future society.

References

- [1] Liang Yingli, Liu Chen. Analysis of the current situation, typical characteristics and development trends of artificial intelligence education applications [J]. China Electrochemical Education, 2018(03):24-30.
- [2] Jiang Zhijian, Zhao Xingmin, Lu Desheng. Strategies for the development of vocational education in the context of artificial intelligence [J]. China Vocational and Technical Education, 2017(30):54-59.
- [3] Dong Wenjuan, Huang Yao. Change and model construction of vocational education in the context of artificial intelligence [J]. China Electronic Education, 2019(07):1-7,45.
- [4] Huang Ronghuai. Artificial intelligence transformation education has become a global consensus [J]. China Education Network, 2019 (6): 28-29.
- [5] Zhang Hua. Lost and clear about the role of teachers [J]. Journal of Southwest University (Social Science Edition), 2010.36(02): 129-134.
- [6] Edwards C, Edwards A, Spence P, et al. I, teacher: using artificial intelligence (AI) and social robots in communication and instruction[J]. Communication Education, 2018,67:473-480.
- [7] Hammershøj L G. The new division of labor between human and machine and its educational implications[J]. Technology in Society, 2019,59:101-142.
- [8] Bdiwi R, De Runz C, Faiz S, et al. Smart learning environment: Teacher's role in assessing classroom attention[J]. Research in Learning Technology, 2019,27.
- [9] Brooks C , Burton R , Kleij F , et al. Teachers activating learners: The effects of a student-centred feedback approach on writing achievement[J]. Teaching and Teacher Education, 2021, 105(1):103387.
- [10] Bin Y U , Kumbier K . Artificial intelligence and statistics[J]. Frontiers of Information Technology & Electronic Engineering, 2018, 19(01):6-9.

[11]Hutchins E L. The Distributed Cognition Perspective on Human Interaction[C], 2020.

Author Introduction:

Liu Qing (1989-), female, Han ethnicity, from Jiangjin, Chongqing, professional title (position), master's student, research direction is digital education.