The Research on the Application of Artificial Intelligence Technology in English Education

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Abstract: *With AI technology entering a new era, English education has also entered a high-quality development stage. This paper mainly explores the integration of AI technology and English education. It analyzes the role of AI technology in many aspects, such as the individualized reform of education content and coordination of educational technology and teaching methods. Therefore, this paper proposes a development strategy for the education industry, including promoting education quality and optimizing education governance, to solve the abovementioned issues. Finally, this article summarizes the application research of AI technology in English education, aiming to provide better support and services for English education and promote the high-quality development of English education.*

Keywords: *Artificial Intelligence; English Education; Individualized Teaching; Education Governance*

1. Introduction

The application of AI technology in English education is one of the primary responsibilities of education reform in the new era, and it is also a general term for education modernization. AI technology is divided into basic educational technology and non-basic educational technology, which are composed of traditional teaching methods and AI technology. To improve the quality of education, the education department also commissioned educational institutions to conduct research and development and application of AI technology. Since the 21st century, AI technology has become the key to education reform, and the quality of education has become a judging index. Unlike the traditional education model, AI education emphasizes individualized teaching, educational data mining, and intelligent tutoring. Therefore, the application of AI in English education is being put forward, and AI technology is providing a new possibility for English education.

AI technology originates from the development of science and technology, with computer science as the core, which contains excellent potential, and is also a tool for education reform. From the perspective of education structure, AI technology pursues the modernization of education and improves education quality through the combination of technology and education. However, this is only in theory. Up to now, the application of AI technology in English education has practiced a unique path. The comprehensive promotion of AI technology not only rewrites the education model and reflects educational innovation, but also changes the quality of education and impacts the education industry.

Therefore, discussing the application of AI technology in English education must have a forward-looking vision and pattern. Thus, the thesis proposes the application of AI technology in English education in the new era. In short, AI technology is the condition and guarantee for the high-quality development of English education[1]. From the current point of view, AI technology has made progress in English education, but there are also shortcomings. AI technology has not yet fully figured out the path to practical application in the field of education, and it continues to strive to move forward. Therefore, the application of AI technology in English education needs further research, which is theoretically significant and practical.

Based on the above background analysis, this paper proposes research on the application of AI technology in English education, aiming to solve problems in English education through AI theory and practice. Its main content is individualized teaching design and education quality improvement, which effectively responds to educational challenges and has practical significance.

2. Integration of Artificial Intelligence and English Education: Achieving the New Education Reform

2.1 The Individualized Redorm of Education Content

Individualized education, a new emerging concept with the development of AI technology, is imbued with the individualized learning idea, manifests the individualized orientation, and reflects the innovation strategy of education reform in the new era. However, individualized education is challenging to get consensus on, although we have already attempted to construct the essence and definition of it with traditional education standards. Individualized education emphasizes the formulation of education content and methods, according to the learner's interests, capabilities, and requirements. The individualized education model contrasts sharply with the traditional model, which shows a 'one size fits all' character and pays attention to learners' active participation and individualized development [2].

The achievement of individualized education depends on the support of AI technology. According to technical means such as education data mining, learning analysis, and intelligent recommendation systems, individualized education can achieve a detailed understanding of the learning situation of learners, and provide individualized learning resources and services for learners. This educational method contributes to inspiring learners' interest in learning and motivation, improving their learning effect and satisfaction.

However, the implementation of individualized education is facing challenges. Firstly, individualized education requires a large amount of education resources and the support of specialized teachers, which puts higher requirements on education institutions. Secondly, assessment and measurement standards of individualized education have not yet reached a consensus, so further research and exploration are needed. In addition, individualized education brings the issues of data privacy and educational equity, which need more attention and solutions.

In summary, individualized education is the central aspect of reform in the new era, the integration of AI technology and individualized education has brought new educational development opportunities. However, the implementation of individualized education is facing challenges and needs further research and exploration. Overcoming the challenges can better satisfy the need of personalization for learners, and also promote the high-quality development of education.

2.2 The Collaboration of Artificial Intelligence, Educational Technology, and Teaching Methods

2.2.1 Learner Demand Analysis and Individualized Teaching Design
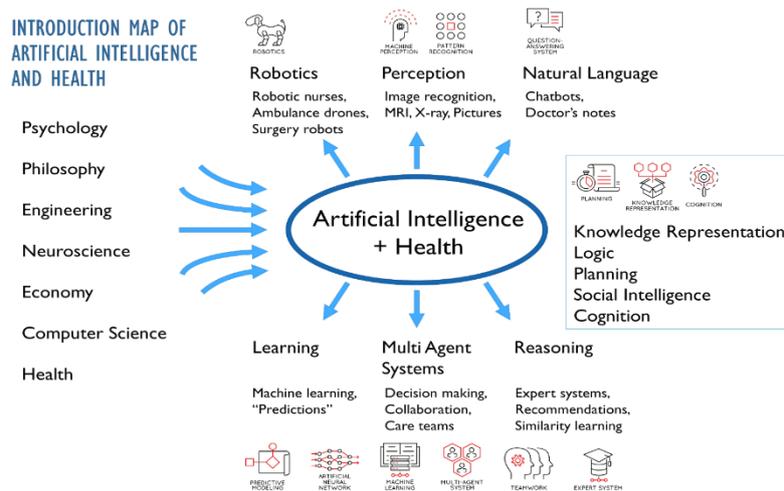

Figure 1: Collaboration of Artificial Intelligence, Educational Technology, and Teaching Methods.

As the essential standard of individualized teaching design, learner demand analysis expresses in depth for learning characteristics of learners. Educational psychology and educational technology discuss the different definitions of individualized teaching from the perspectives of learners' cognitive characteristics, interests, and learning habits. Some scholars argue that individualized teaching is the flexible application of teaching methods or the customization of teaching content because individualized teaching is more targeted to some extent and belongs to the educational science aimed at improving

learning outcomes. The synergy of AI, educational technology, and teaching methods is shown in Figure 1[3].

The history of individualized teaching can even be traced back to the ancient one-on-one teaching model, with the main activities including individual guidance from teachers to students, and the modern concept and technology of individualized teaching are closely related to the progress of AI and educational technology. With the assistance of educational technology, individualized teaching has become an essential responsibility for educational reform. Modern educational theory holds that the main contribution of individualized teaching is to provide teaching methods and content suitable for each learner's characteristics.

Therefore, the concept of individualized teaching initially focused mainly on individualized measures according to the Learner Requirements Standard Attributes. A deep understanding of learners' requirements allows teachers to design individualized teaching plans that align with student characteristics, thereby improving teaching effectiveness and student learning satisfaction. Individualized teaching design aims to provide the most suitable learning path for each student to achieve their potential development by flexible application of education technology and education methods.

2.2.2 Education Market Trends and Technology Decisions

Compared with the traditional education market, the modern education market emphasizes the inter-relationship between education demand and education supply, and has the characteristic of dynamic changes. Although some scholars question that education market trends may not be directly related to technology decisions, most scholars advocate that education market trends can provide a rational evaluation to technological decisions.

A classical model of the education market, including supply and demand factors, was proposed in education economics. Since then, this model has become a typical tool for analyzing the education market, leading to the development of the concept of educational technology decision-making. These scholars argue that educational technology decision-making is strategic and the key to the response of the education market. Only when the demand of the education market is accurately understood and predicted can educational technology decision-making produce positive effects[4]. Therefore, educational technology decision-making has resulted from the education market trends.

Some scholars also summarize educational technology decision-making as a two-factor model, which refers to the technology acceptance model based on education demand and the technology innovation model based on education supply. The former focuses on the existing education demands, while the latter focuses on leading educational demand through technological innovation, that is, forward-looking technological decision-making. Although educational technology decision-making has experienced some practical failures, in the long run, it can effectively promote the development of the education market, and the concept of educational technology decision-making has gradually become a consensus in educational research and practice.

3. The Educational Challenges Brought by Artificial Intelligence

3.1 The Imbalance of the Education System: Overreliance on Technology

The essence of the application concept of AI in education focuses on the issue of balance in the education system. The excessive dependence on technology refers to the application of AI thinking in education. To overcome the shortcomings of traditional education models, the AI education framework, as a new alternative model, has entered the research field. The basic concept of this framework is that education should ensure the effective implementation of technology; setting professional standards for educational output; capturing the needs of learners through technologies such as machine learning; and measuring educational effectiveness by using data mining methods.

The AI education framework has restructured the education system, and emphasized the need to enhance the personalization, intelligence, flexibility, and sustainability of education[5]. The AI education framework aims to meet the unique needs of each learner and improve the quality and efficiency of education by providing individualized learning paths, intelligent teaching aids, and flexible teaching methods. Meanwhile, the AI education framework also emphasizes the sustainability of education, achieving long-term development of the education system through continuous learning and optimization.

However, the AI education framework also faces some challenges. Firstly, excessive reliance on

technology may lead to neglecting human factors in education, making education mechanized. Secondly, the application of AI technology may bring about issues such as data privacy and educational equity, which must be taken seriously and addressed. Therefore, when applying AI education frameworks, it is necessary to balance the advantages and disadvantages of technology to ensure the comprehensive development of education and the rights of learners.

3.2 Education Jail: Alienation of Education Caused by Technology Overrides

The educational alienation caused by technological overrides is one of the main challenges of AI in education. Education alienation focuses on showing the imbalance of the education system, which directly reflects the conflict between traditional educational concepts of educational goals and methods and new technologies according to excessive reliance on technology. With the constitutive requirements of AI education forming step by step, education technology and various evaluation systems are also gradually receiving attention. However, according to practical application, the fact that the practice of technology still stays at the surface stage contradicts the education framework and generative mechanism, and thereby derived the issue of education jail.

Education jail refers to the phenomenon that the application process of technology in education, may lead to the distortion or neglect of education essence and purpose. The excessive reliance on technology may make the educational process overly reliant on machines and algorithms, and human factors such as individualized teaching by teachers and emotional communication with students may be overlooked. Education jail may also lead to a commercial tendency of education, and making it a commodity that ignores the due humanistic care and social responsibility of education. Therefore, when applying AI education, it is necessary to be vigilant about the emergence of educational jail. Education should adhere to people-oriented principles and focus on cultivating students' comprehensive development and innovative abilities. At the same time, it is necessary to strengthen the supervision and evaluation of educational technology, ensuring that its application conforms to the educational goals and values. Education aims to cultivate citizens with thoughts, emotions, and a sense of responsibility, not just to cultivate skilled workers who can adapt to market demands.

4. Development Strategies for the Education Industry under the Challenge of Artificial Intelligence Technology

4.1 Improvement of Education Quality: Application of Artificial Intelligence Technology

From the dimension of the development strategy of the education industry, the development of education quality is not only the basic stage of education reform but also the core reflection of the education industry. Therefore, the development strategy of the education industry takes the application of AI technology as the main generation logic. AI technology is the main driving force for improving educational quality and the main body of educational innovation.

At the present stage, the education industry strengthens education quality control from the perspective of quality management, in three main forms[6]: first, education data mining and analysis, which require clarifying the effective integration of AI technology between education data collection and processing; The second is the formulation and disclosure of educational standards, by establishing educational quality standards and evaluation standards and making these standards public to society, therefore the standardized control of educational quality can be achieved; The third is the internal reconstruction of the education workflow. In recent years, educational institutions and others have used AI technology to improve the quality and efficiency of education.

However, compared to the expected goals, the current application of AI technology in improving education quality still needs further improvement. The education industry needs to increase investment in the research and development of AI technology, promote the deep integration of technology and education, and achieve comprehensive improvement in education quality. At the same time, attention should be paid to cultivating the technical literacy of education practitioners and improving their ability to apply AI technology in education and teaching to promote the sustainable development of the education industry.

4.2 Education Sharing: Solution the Optimization of the System and Education Governance

The basic difference between AI technology and traditional education mode is its intelligent attribute.

The quality standards and evaluation criteria of AI education aim to improve the quality of education, and their development mainly reflects individualized teaching and educational data mining. In the framework of AI education, accurately identifying learners' needs, providing individualized learning support, intelligent tutoring, and analyzing educational data are the core values and highest standards of educational development.

Currently, the diversity in the field of education and the differences in AI technology have led to a complex situation of educational sharing. Although the application of AI technology in education has made some progress, due to the imperfection of the educational management system, AI education itself lacks effective evaluation and supervision mechanisms[7]. Therefore, a "weakness" in education sharing appeared, affecting education quality improvement.

Optimizing the education system and strengthening educational governance is necessary to address this challenge. Education sharing requires the participation of the government, schools, families, and society in the education process to form a joint force. The government should formulate relevant policies to guide and regulate the application of AI in education. Schools should strengthen education quality management and improve the professional competence and technical ability of teachers. Families should actively participate in their children's education process, paying attention to their learning and emotional needs. Society should create an excellent educational environment, and provide diversified educational resources and support.

Education sharing can promote the optimization of the education system and the improvement of educational governance, achieving a comprehensive improvement in educational quality. Education sharing also helps to cultivate innovative talents who can adapt to the needs of the new era and promote the development of education. At the same time, education sharing can also promote social equity and inclusive development, providing equal educational opportunities for everyone.

5. Conclusion

AI technology has penetrated the education field, posing new challenges and requirements for the education industry. AI is not only a symbol of modernization and intelligence in education, but also an essential means to improve the quality of education. It is an urgent need to achieve educational equity and maintain educational justice, fundamentally reflecting the inherent requirements of educational reform. AI technology has built a theoretical analysis framework and practical mechanism for improving educational quality under the guidance of educational demand. In recent years, modern information technologies such as AI have driven the transformation of the education industry. Through data-driven individualized teaching, it empowers educational innovation and the accuracy and scientificity of teaching methods. Its value aligns with the inherent logic of high-quality development of education. Therefore, education technology based on AI also provides a new path for the future development of the education industry. In short, the sustainable improvement and development of AI technology can help better meet the needs of learners and promote comprehensive progress in the education industry.

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