Digital intelligence driven and elemental energy cultivated together: Teaching application and method innovation based on artificial intelligence

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Abstract. With the rapid development of information technology, artificial intelligence technology is gradually being introduced in the field of education to achieve more efficient and personalized teaching. The educational concept of combining intelligence with numbers and cultivating abilities with all elements emerged in this context, aiming to promote the development and reform of education through the deep integration of artificial intelligence and education. The combination of digital and intelligent technologies emphasizes the dual role of digitalization and intelligence in the field of education, which promotes the quality and effectiveness of education through mutual promotion of digital means and intelligent technologies. Digitalization can provide education with massive data resources and efficient processing capabilities, while intelligence can achieve precise identification and satisfaction of students' personalized needs based on these data and resources. The joint cultivation of elements and abilities emphasizes the joint cultivation of literacy and abilities, that is, in the education process, not only should we focus on imparting knowledge, but also on cultivating students' literacy and abilities. Literacy includes information literacy, innovation literacy, humanistic literacy, etc., while abilities include learning ability and practical ability. Through the co cultivation of elements and abilities, students can better adapt to the development and changes of future society.

1. Introduction

With the rapid development of technology, artificial intelligence has penetrated into various fields of our lives, including education. The intervention of artificial intelligence technology has had a profound impact on teaching [1]. It not only challenges traditional teaching models, but also provides a new perspective and tools for teaching innovation. This article will delve into the application and innovation of teaching methods based on artificial intelligence, and improve the quality of teaching and the learning effectiveness of students through the concept of combining numerical intelligence with physical and mental abilities.

The application of artificial intelligence in the field of education is diverse, including but not limited to adaptive teaching, intelligent tutoring, automated assessment, and learning analysis. An adaptive teaching system is a system that can automatically adjust the pace and difficulty of teaching based on students' learning progress and ability level, in order to meet their personalized needs. The intelligent tutoring system can provide targeted learning resources and guidance by analyzing students' learning behavior and grades. Automated evaluation systems can quickly and accurately evaluate students' learning outcomes, reducing the workload of teachers. The learning analysis system can reveal students' learning patterns and habits through mining and analyzing learning data, providing teachers with more effective teaching suggestions.

The principles that we should adhere to in exploring the innovation of teaching applications and methods based on artificial intelligence are the combination of digital intelligence and elemental energy cultivation [2]. The combination of numbers and intelligence means that we will simultaneously focus on the development of students' knowledge and skills (intelligence) and emotional cognition (emotional intelligence). Su Neng Co training refers to the integration of educational resources to cultivate students' comprehensive qualities (including academic ability, innovative thinking, team collaboration, etc.) and practical abilities (such as problem-solving, communication and expression, etc.).

Through the application of artificial intelligence, we can achieve real-time monitoring and feedback on students' learning behavior, thereby adjusting teaching strategies in a timely manner and improving teaching quality. At the same time, artificial intelligence can also provide diverse learning resources and methods, meet the different needs of students, and stimulate their interest and initiative in learning.

At present, there are many teaching applications and methods based on artificial intelligence, such as intelligent assisted teaching systems, personalized learning plans, intelligent assessments, etc. These applications and methods can not only achieve precise identification and satisfaction of students' personalized needs, but also help them better improve their literacy and abilities.

Although current research has achieved certain results, there are still many shortcomings and issues that require further research. In the future, further in-depth research can be conducted on the educational philosophy of combining digital intelligence with physical education, and exploring more innovative teaching applications and methods based on artificial intelligence, in order to improve the quality and effectiveness of education and help students better adapt to the development and changes of future society.

2. Literature review

Artificial intelligence (AI) is a branch of computer science dedicated to understanding the essence of intelligence and creating intelligent machines that can respond in a similar way to human intelligence. This field includes research on robotics, language recognition, image recognition, natural language processing, and expert systems [1].

Neural networks are an important method of artificial intelligence, which simulates the information processing process of the human brain and trains through a large amount of data to learn specific knowledge and skills. Deep learning is a type of neural network that simulates the hierarchical cognitive characteristics of the human brain by increasing the number of network layers, enabling machines to acquire the ability to "abstract concepts". This ability has led to significant achievements in deep learning in fields such as image recognition, speech recognition, and natural language processing.

However, although artificial intelligence has been widely applied in many fields, there are also some problems. For example, when faced with complex and unstructured data, artificial intelligence is often difficult to handle. In addition, the decision-making process of artificial intelligence often lacks transparency, making it difficult to explain the reasons for making specific decisions. These issues limit the development and application of artificial intelligence.

In recent years, the development of COVID-19, deep learning and neural network has provided new opportunities and research directions for artificial intelligence. For example, artificial intelligence has played an important role in epidemic monitoring, vaccine development, medical diagnosis, and other aspects. At the same time, research on deep learning and neural networks is constantly deepening, providing strong technical support for the development of artificial intelligence.

In the future, artificial intelligence may be applied in more fields, such as autonomous driving, intelligent manufacturing, medical health, etc. At the same time, it will also face more challenges and issues, such as data security, privacy protection, ethics and ethics. Therefore, while promoting the development of artificial intelligence, we also need to pay attention to these issues to ensure the healthy and sustainable development of artificial intelligence.

3. Problems in the application of artificial intelligence in education and teaching

Although AI can provide personalized learning suggestions by analyzing students' learning data, current AI technology cannot fully meet students' personalized needs. This is because there are significant differences in students' interests, learning styles, and abilities, and current AI algorithms often only recommend based on the average performance of students, unable to take into account the uniqueness of each student [1].

Some educational institutions and teachers may overly rely on AI technology and overlook traditional teaching methods and educational concepts. They may believe that as long as AI technology is used, teaching quality can be improved, while neglecting important qualities such as cultivating students' creativity, critical thinking, and problem-solving abilities. This excessive dependence may lead to a decrease in the quality and effectiveness of education.

Data privacy and security issues. Using AI technology for education and teaching requires collecting a large amount of student data, including learning situation, behavioral habits, and personal preferences. The leakage of these data may pose a threat to students' personal privacy, and may even lead to criminals using these data for fraud or other illegal activities. Therefore, protecting students' data privacy and security is an important issue. At present, AI technology still has some limitations in certain fields. For example, in natural language processing, AI systems still face certain difficulties in understanding complex language structures and semantics. This may result in AI being unable to accurately understand and answer students' questions during the teaching process, or unable to provide accurate evaluation and feedback. In addition, the intelligence level of AI systems is also limited, and they cannot possess emotional and interpersonal skills like human teachers. The application of AI in education and teaching may also raise some ethical and moral issues. For example, if AI systems can predict students' future academic performance based on their learning situation, should they change their grades by intervening in their learning styles? This involves issues of fairness and ethical principles. In addition, whether the AI system is fair and transparent in the evaluation and decision-making process of students is also a question that needs to be considered.

Although artificial intelligence has great potential in the application of education and teaching, there are also some problems that need to be solved. In order to fully leverage the advantages of artificial intelligence, we need to strengthen the supervision and management of its use, ensuring that its application in education and teaching conforms to the goals and values of education. At the same time, we also need to continuously improve and improve AI technology to overcome its limitations and shortcomings. Only in this way can artificial intelligence truly bring positive impacts and changes to education and teaching.

4. Teaching application and method innovation based on artificial intelligence

The application of artificial intelligence (AI) in the field of education has enormous potential, which can change our education system from various aspects. However, in order to achieve its potential, some key issues need to be addressed, including improving educational equity, popularizing artificial intelligence knowledge, protecting privacy, and verifying effectiveness.

Firstly, it is necessary to continue developing more advanced artificial intelligence technologies to address this issue [2]. This includes improving natural language processing technology to better understand human language; Develop more accurate student models to better understand students' learning needs; And develop more intelligent educational software to better adapt to students' learning styles and speeds. The government and enterprises need to invest in research and development of more advanced artificial intelligence education technologies to promote the development of this field. This can include supporting research and development projects in universities and research institutions, or creating specialized artificial intelligence education technology companies. The application of artificial intelligence in the field of education requires cooperation from various aspects, including educational institutions, technology companies, and policy makers. Through cooperation, it can be ensured that artificial intelligence technology can meet the needs of the education system and truly assist students.

Secondly, artificial intelligence assisted education should aim to improve educational fairness. It is necessary to ensure that all students have equal access to artificial intelligence education resources, regardless of their region or family background. This may require financial support and policy guidance from the government and relevant institutions to ensure that all students can enjoy the benefits of artificial intelligence technology [3].

The government can provide financial support to enable schools and institutions to purchase and implement artificial intelligence education technology. This can include direct funding, tax breaks, or other incentive measures. The government can formulate policy guidance to ensure equal application of artificial intelligence education technology in all schools and institutions. This can include specifying which technologies meet the requirements and how to evaluate and monitor their usage. The government can provide training and support to help teachers and students understand and use artificial intelligence education technology. This can include online tutorials, workshops, and seminars, as well as providing technical support and guidance.

Schools and institutions need to popularize artificial intelligence knowledge to teachers and students through pilot projects, training courses, and other means, so that they can understand its advantages and applications. At the same time, it is necessary to design simple and easy-to-use artificial intelligence education tools, so that teachers and students can easily get started. Schools and institutions can carry out pilot projects to allow teachers and students to experience the application of artificial intelligence in education. This can help them understand the advantages and applications of artificial intelligence, and provide feedback and suggestions to improve technology. Schools and institutions can provide training courses to introduce teachers and students to the basic concepts and applications of artificial intelligence. This can help them better understand the role of artificial intelligence in education and provide technical support and guidance. Technology developers need to design simple and easy-to-use artificial intelligence education tools, so that teachers and students can easily get started. This can improve the application rate and effectiveness of technology, enabling more people to benefit from the application of artificial intelligence in the field of education.

The application of artificial intelligence technology in the field of education may involve privacy issues for students and teachers. Strict privacy protection policies need to be established to ensure the security and confidentiality of all data. Schools and institutions need to establish clear privacy protection policies that specify how to collect, use, and store personal information of students and teachers. This requires compliance with relevant laws and regulations, and regular review and updates. All collected personal information needs to be encrypted and securely stored to prevent data leakage. This requires the use of reliable security technologies and measures, including firewalls, encryption algorithms, and other security tools. Anonymization processing is necessary for data analysis and application. This can protect personal privacy while still allowing for analysis and decision-making.

Finally, there is a need for a method to evaluate and validate its effectiveness. This requires cooperation with educational institutions, evaluation institutions, and other institutions to verify the effectiveness of artificial intelligence education through empirical research. Collaborate with educational and evaluation

institutions to design empirical studies to evaluate the effectiveness of artificial intelligence applications in the field of education. This requires determining the scope, objectives, and specific methods of the study. By collecting and analyzing data, understand the application effect of artificial intelligence in education. This can include students' academic performance, participation, and other relevant indicators, as well as feedback and suggestions from teachers. Evaluate the application effect of artificial intelligence in the field of education through empirical research results. This requires in-depth analysis and interpretation of the data, as well as conclusions and recommendations.

Share the results of empirical research with relevant institutions and education professionals. This can help them better understand the application effect of artificial intelligence in the field of education and provide suggestions for improving and perfecting the technology.

In short, the application of artificial intelligence in the field of education is a field full of challenges and opportunities. By addressing key issues and taking effective measures, the widespread application of artificial intelligence in the field of education can be achieved, resulting in better educational outcomes and higher educational equity.

5. Conclusion

This article reviews the application of artificial intelligence in education and teaching, and finds that significant achievements have been made in the application of artificial intelligence in education and teaching, but there are still some shortcomings and great potential for future development. With the continuous progress of technology and the expansion of application scope, the application of artificial intelligence in education and teaching will become increasingly widespread, injecting new impetus into the development of education. In the future, teaching will be more personalized, providing more precise teaching content and methods based on the learning characteristics and needs of each student. AI will be more closely integrated with human teachers to complete teaching tasks together, leveraging the advantages of artificial intelligence in data analysis and personalized teaching, while retaining the experience of human teachers and humanized teaching methods. AI will play a greater role in evaluation, not only in evaluating students' learning outcomes, but also in comprehensively evaluating their learning process and attitudes. Through AI technology, high-quality educational resources can be shared on a larger scale, helping more students obtain high-quality education.

References

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