

# Challenges of Artificial Intelligence (AI) in Education

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**Abstract.** With the continuous development of artificial intelligence (AI) technology, AI technology has been widely used in many industry fields, also in the field of education, while the application of AI in the field of education also faces many challenges. This paper gives the in-depth analysis of the impact of AI technology in the field of education in order to promote the in-depth application of it in the field of education.

**Keywords:** Artificial Intelligence (AI), application, challenge.

## 1. Introduction

The rapid development of artificial intelligence (AI) technology in recent years has had a profound and positive impact on various fields. In the field of education, AI technology has realized a relatively accurate grasp of the learning situation of students, and can give appropriate learning advice and suggestions for the actual learning situation of different students, so that students can be more targeted learning. In addition, the application of AI has also changed the learning methods and improved the efficiency of learning, for example, through intelligent recognition technology, it can be realized by scanning the questions to get the answer (including the process of solving the problem, the idea and the application of knowledge). Another example is that it can analyze students' test papers, homework, exercises, etc., to find out the weakness of students' learning, and then give targeted learning advice and suggestions, and give the corresponding exercises to consolidate knowledge. The application of AI promotes teaching reform and improves teaching level, but it should also be noted that the application is also facing great challenges, thus the study of coping strategies for the field of education becomes very necessary.

## 2. Application of AI in Education

AI is autonomous learning through algorithms and other technologies, and solving practical problems based on the knowledge learned. It is important to note that AI can continuously learn and construct new knowledge and technology. AI technology is based on the development of traditional knowledge learning theory, which not only contains the basic knowledge of learning theory, but also contains big data, cloud computing and other technical disciplines. AI technology is constantly updating, including expert systems, machine learning, pattern recognition and so on. AI technology has influenced a lot on the field of education, such as tailor-made learning plans for each student and intelligent tutoring systems. In addition, with the continuous improvement and development, our national scientific and technological innovation planning has also made it clear that based on big data analysis of AI research and its technological development and application, it should gradually form a demonstration of the application in the office, medical and other industries. It can be seen that the development and application of AI technology will be conducive to the development of education.

## 3. Challenges Faced by AI Applications in the Field of Education

In this paper the challenges faced mainly refer to the risks and problems of the application of AI in the field of education. Currently there are relatively few studies about the potential risks and problems of AI application in education, which leads to a relatively large impact on the education when risks are encountered. Therefore it is particularly important to analyze these risks and problems and develop effective coping strategies.

First of all, the most important risk is the leakage of information. As AI technology is more closely associated with big data, cloud technology and other technologies, the essence is to simulate the human brain through algorithms, and both data and algorithms are the keys to realizing the system in the theoretical system of AI. The practical application of it in education depends on data a lot, and the biggest security risk in collecting, storing and processing these data is the leakage of information. For example, due to human reasons or the outflow of data from the education industry can lead to the problem of data and information leakage, which in turn poses a risk to its application. If AI utilizes mobile terminals to collect data, then the mobile information network platform also has the risk of information leakage.

Secondly, the application of AI in education requires the use of the network, then this will have the potential risk of network attacks. Although network informationization has brought a lot of convenience to people's lives, it also faces the risk of network attack or virus infection. The network risk faced by AI in education mainly refers to the interception of data and information in the transmission process, or the network has been attacked by illegal attacks, such as malicious attacks on the network, resulting in network paralysis. Intelligent applications that use AI means to attack the education field have also been increasing in recent years, and their destructiveness is a Challenges in Applying Artificial Iso increasing, so they need more attention.

Thirdly, there may be erroneous, false and other harmful data in the intelligent applications in the field of education. This part of the data is relatively harmful, not only to the students, but also may affect students' values, and thus affect the future development of them. Removing these harmful data requires relatively high resources and costs, so the effect of controlling false and erroneous data is not very satisfactory, which is a problem that needs to be focused on.

Fourthly, the training of artificial intelligence systems relies on large datasets. If these datasets contain biased or unequal information, AI may replicate or even amplify this bias when making judgments, leading to unfair outcomes. For example, in student ability assessment, if the training data is biased towards a specific type of student group, it may have adverse effects on other groups.

Fifthly, It's just a lack of adaptability in teaching. Current artificial intelligence systems often struggle to capture the subtle emotional communication and immediate reactions of human teachers, and inflexible teaching methods may limit students' creativity and critical thinking development.

Sixthly, It's about the allocation of educational resources. Although AI has the potential to narrow the gap in educational resources, the differences in technology penetration and acceptance may actually lead to a new digital divide, where the gap in educational opportunities between technologically advanced and underdeveloped regions widens.

Seventhly, It's a matter of shaping values. Education is not only about imparting knowledge, but also plays a role in transmitting values. Ensuring that students develop the correct moral values and sense of social responsibility in the context of excessive reliance on AI teaching is a major challenge.

#### **4. Coping strategies for Intelligent Educational Applications in the Face of Risk**

In view of the above risks in intelligent education applications, it is recommended to take the following measures:

First, in the environment where intelligent education applications operate, establish a perfect and sound network security system to prevent network attacks.

Secondly, for the risks and hidden dangers existing in intelligent education applications, the corresponding vulnerability management mechanism and risk prevention and control mechanism should be constructed, and the defense system in the field of education should be constructed through AI technology in order to ensure the safe operation of intelligent education applications. For example, intelligent systems can be utilized to ensure the confidentiality and integrity of data, while strengthening network system security.

Thirdly, it is necessary to build a perfect legal system to protect the data security in data mining, data analysis and other operations, to ensure the standardization and legality of intelligent educational applications, and resolutely put an end to all kinds of illegal behavior.

Fourthly, Enhance transparency and interpretability. Develop more transparent and interpretable AI algorithms that enable users to understand and trust the decision-making process of the system, reducing the occurrence of biases and misunderstandings.

Fifthly, Enhance the technical literacy of educators. Train teachers to master necessary AI skills, enabling them to effectively integrate technology in daily teaching, leverage the advantages of AI, and avoid excessive dependence.

Sixthly, Promote inclusive education technology. Relevant units should increase investment in infrastructure construction, especially in remote and rural areas, to ensure that every child has equal access to high-quality educational resources.

Seventhly, Emphasis should be placed on the core values of humanistic education. Incorporate more content about ethics, cultural diversity, and social responsibility into the education system, guiding students to enjoy the convenience brought by technology while cultivating well-rounded individuals.

## 5. Conclusion

In conclusion, the study of the challenges faced by the application of intelligent education and its countermeasures is conducive to the prevention and avoidance of risks in the application of intelligent education, which in turn promotes the application and development of artificial intelligence technology in the field of education. Artificial intelligence undoubtedly brings revolutionary opportunities to education, but in embracing this technology, we must be acutely aware of the challenges it brings. By taking the above measures, we can maximize the positive role of AI in education while avoiding potential risks, and move towards a more inclusive, just, and efficient education system. In the future, the relationship between education and AI will become even closer, and the deep integration of the two will be a key driving force for educational innovation.

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