Analysis on the Strategies of Promoting College Educational Reform in the Era of Artificial Intelligence

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Abstract: With the rapid development of artificial intelligence(AI), it has a profound impact in many fields of society. Under the background of the new era, the organic integration of AI and college education and teaching opens up a new space for intelligent and individualized college education and teaching. To promote the integration of higher education and modern technology and improve the its "educational power", it is necessary to focus on the relationship between AI and college education and teaching, objectively and carefully analyze the confusion and challenges they are facing, and base on the reality. By the reform of teaching methods of college teachers and the reform of learning methods of college students, we can mobilize the enthusiasm of "two subjects" and promote the reform of college education to achieve solid effects.

1.   Introduction

In recent years, with the rapid development of AI (Artificial Intelligence), it has been gradually integrated into all aspects of society, which causes profound changes in economy, society, life and education. Countries around the world pay close attention and attach great importance to it. Many countries have upgraded AI to a national strategy and issued relevant policies and plans. In October 2016, The Office of Science and Technology Policy(OSTP) issued two important reports, 《Preparing for the Future of Artificial Intelligence》[1] and 《The National Artificial Intelligence Research and Development Strategic Plan》[2], which have provided corresponding suggestions for the future development of AI. China has also incorporated AI into its national development strategy and published the Three-year Implementation Plan for "Internet+" AI. General Secretary Xi Jinping pointed out in the report of the 19th National Congress that we should vigorously promote the development of the Internet, big data and A1[3]; On July 8, 2017, the Chinese government issued the Development Plan for the New Generation of AI[4], which has pointed out the major tasks of developing AI in China; At the national two sessions in 2018, many deputies gave suggestions on A1; The State Council Government Work Report 2018 pointed out that it is necessary to strengthen the development and application of the new generation A1[5].

At the beginning of the 21st century, foreign countries have conducted in-depth research on the application of AI in education. In 1956, McCarthy, the father of AI, put forward the term "AI" at Dartmouth Conference. After that, AI has been gradually integrated with education through continuous development. Ozbey et al.[6] analyzed the influence of AI technology on students' learning factors and put forward optimization methods for affecting students' learning process; Luckin et al.[7] stated in the book, 《Intelligence UnLeashed An Argument for AL in Education》, that the development of AI will help to deal with problems in education; Barnes et al.[8] studied the application of AI in computer teaching and pointed out that AI is a more efficient means to promote computer science learning and teaching. In recent years, Chinese experts and scholars have conducted extensive and in-depth research on the application of AI in the field of education. Wen Zhiming et al.[9] proposed that educational AI is a new field formed by the

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combination of AI and learning science; Cai Lianyu et al.[10] proposed that the ideal integration of AI and education is the generation of intelligent education 2.0; Yang Xianmin et al.[11] proposed that AI can solve three levels of educational problems, namely, compensatory education for special people, alternative education for regular business, and adaptive education for serving personality development; He also pointed out the future development path of educational AI; Liang Yingli et al.[12] believed that the four major application forms of AI in the field of education include intelligent tutor system, automated evaluation system, educational games and educational robots. She analyzed five typical characteristics of educational applications in AI: intelligence, automation, individualization, synergy, and diversification.

Through literature review, this paper studies the application of AI in education at home and abroad, finds out the shortcomings of the its application in education, and improves the shortcoming of "cramming" teaching. This can promote the reform of education and teaching in colleges and promote the comprehensive development of teachers and students.

2.   An Overview of AI

AI is an interdisciplinary subject that simulates human abilities and intelligent behaviors[13]. It involves computer science, cybernetics, information theory, neurophysiology, linguistics, psychology and other fields. AI and learning science are combined to form the educational artificial intelligence(EAI), and its core is teaching model, domain knowledge model and learner model[14]. It is the deep development of the integration of AI and education. Its main goal is "to obtain precise and clear forms of educational, psychological and social knowledge, often implicit, through calculating"[15]. As an important branch of computer science, AI is to use computers to achieve intelligence and produces a new kind of intelligent machine that can respond in a similar way to human intelligence. Its essence is the process of simulating people's thought and consciousness, which is a higher-level application of computers. It is very important for the development of the society and has gradually become an integral part of our life.

At present, AI has a broad effect on people's life and work and other fields. In particular, with the rapid development of big data, block chains and supercomputers, AI has begun to influence education. The application of new technology has brought about a new educational revolution, which is also a favorable chance to promote the teaching reform in colleges. In addition, the injection of new technology will inevitably produce new educational concepts and teaching methods. With the active application of AI in learning counseling, online Q&A and teaching evaluation, AI has taken the first step.

3.   Advantages of AI in College Education and Teaching

3.1 Improving the Efficiency of College Education and Teaching

AI is a technology that imitates people's thinking mode, and can be used in education and teaching to reduce the working pressure and workload of schools' staff. Using the functions of AI, such as big data analysis ability, recording ability and so on, we can improve the efficiency and quality of work. Using the functions of computer science, we can simplify the work-flow and difficulty, improve the efficiency and quality of work, so as to comprehensively improve the methods and effects of daily office work, and effectively support and promote college education and teaching.

3.2 Promoting College Classroom Education and Teaching

The content module, teacher module, student module and expert module in the AI system can be applied in education and teaching to optimize classroom teaching and promote its quality and efficiency. The core is that the AI system can help teachers choose suitable teaching contents and teaching methods with the help of each module, recommend reasonable learning contents to students, and analyze the use of student modules. This enables teachers to grasp the learning situation of students and assist teachers to make teaching plans according to the analysis results.

3.3 Effectively Managing College Students' Behaviors

In college education and teaching, AI can optimize students' management behaviors, and the management of students' behavior is mainly the management of learning behavior. After students use the module to learn, the module can accurately record learning information, comprehensively analyze the information, find out weaknesses in learning, and propose targeted measures to meet students' knowledge needs and improve their learning quality. This can also improve the initiative and enthusiasm of learning, promote the management of students' behaviors, and reflect the value of AI in education and teaching.

4.   Challenges of College Education and Teaching in the Era of AI

4.1 Immaturity of Intelligent Technology in College Education

AI technology is still in the development stage, some products are not intelligent enough. Compared with the achievements in computational intelligence and perceptual intelligence, the development of cognitive intelligence is still immature. Perceptual cognitive intelligence is the advanced stage and the future direction of AI development, which is a sudden change from perceptual intelligence to cognitive intelligence, so as to realize the intelligent equipment to think and distinguish like human beings and narrow the gap with human beings.

4.2 Low Support of AI for Education

The combination of AI technology and education is not sufficiently flexible, and comprehensive practical application and in-depth and solid scientific research are relatively lacking[16]. AI technology is rarely used in education, and the integration of AI and education is the trend of future educational development. The use of AI can promote students' self-learning and individualized learning. Meanwhile, automatic correction, automatic translation, intelligent tutor and other technologies can reduce the teaching burden of teachers, so that teachers are willing to apply AI to teaching.

4.3 Poor Sharing of Intelligent Data in College Education

The era of AI is full of huge data. However, there is no communication between most of the data, so users cannot make accurate judgments through data integration, and various data becomes a burden instead. The openness and sharing of data enables learners to accurately locate and improve the trust between college teachers and students. After obtaining data, they can improve data and self-adjustment according to their own situation.

5.   The Strategy of Promoting College Educational Reform in the Era of AI

5.1 Reform of College Education and Teaching Mode

In the process of college education in the era of AI, knowledge of all subjects can be developed based on intelligent devices. In the teaching process, teachers will also focus on training students' thinking and expanding their comprehensive ability, instead of focusing on basic knowledge points. The teaching forms are mainly based on discussion, experiment and inspiration. Of course, the medium teachers use in the teaching process will also change accordingly. For instance, with the help of intelligent terminals, virtual reality and other devices, it will help to motivate students' enthusiasm to participate in the classroom, to make individualized teaching plans based on students' learning, and to point out the direction of innovative development of higher education.

On the one hand, we should promote the application of image recognition and voice recognition in college education. In the traditional higher education, students mainly listen to the teacher to explain the theoretical knowledge in class, so students can only consult the teacher after class when encountering problems in learning. In the process of college education reform in the era of AI, the teaching form of teachers has changed greatly. Students can make the best of the network platform to learn theoretical knowledge, use the image recognition technology of AI to recognize and

memorize relevant knowledge, make full use of the speech recognition technology of AI, and adopt the form of human-computer interaction. In this way, we can solve students' problems more accurately and timely, and really achieve the goal of improving students' learning level. On the other hand, we should promote the application of virtual reality and computer vision technology in higher education. Most teachers are influenced by the traditional teaching concept of exam-oriented education, students are often in a passive position to accept learning, while teachers have absolute power in classroom teaching. Thus, this not only makes the student's learning process unable to experience the happiness of learning, but also makes the classroom seem dull and boring, which then results in the lacking of enthusiasm and participation of students. Based on this, teachers can combine virtual reality, computer vision and many other technologies with classroom teaching. This will not only help to highlight the main position of students in learning, but also ensure the ideal learning effect.

5.2 Reform of Learning Styles of Colleges Students

In the process of traditional college education, teachers are the absolute leading role in the classroom, while students are more in a passive position. The subjectivity of students' learning has not been fully released, so they are always in a passive state in the process of receiving knowledge. With the advent of the era of AI, college education has gradually integrated this technology. Teachers can recommend valuable learning resources to students at any time through the intelligent teaching platform, and students can also use various mobile devices, such as tablets and smart phones, for independent preview and review. Based on the integration of AI, teachers still need to timely analyze and evaluate students' homework, and help students find out the missing points and fill in the vacancies by correcting their wrong answers. Thus, it not only helps to improve students' learning efficiency, but also improves their abilities of problem analyzing and solving, and promotes their comprehensive ability and quality.

In the process of traditional college education and teaching, the teacher is the absolute leader of the classroom, and students' acquisition of knowledge is only limited to the teacher's classroom teaching. Moreover, traditional higher education generally presents a more unified appearance, that is, teachers speak on the stage and students listen off the stage. This teaching methods that lacks the interaction with students will lead to a one-way flow of knowledge from teachers to students. It is difficult to stimulate students' interest in learning and is more difficult to take care of the learning needs of each student. After the introduction of AI technology, based on the functions of image recognition, speech recognition and virtual reality, the AI technology will will be able to provide idealized teaching results to higher education. Thus, it is necessary to actively promote the organic integration of higher education and teaching with AI technology, which will play a very good role in promoting the reform and development of college education and teaching.

6. Conclusion

This paper conducts the research on the application of AI in the field of college education and teaching, analyzes the shortcomings of AI in the field of education, and puts forward some suggestions. In the traditional college education and teaching, the education model has been fixed: the teacher speaks on the stage, students listen, and students do not become the master of the course. Moreover, many colleges still teach in large classes. "Teacher-centered" teaching model is convenient for teachers to control the classroom, but it kills students' enthusiasm for learning. In order to change this phenomenon, teaching must be innovated.

The trend of future educational development is to be combined with intelligence. How to realize the combination of AI with classroom teaching, the positive interaction between teaching and AI, and the coordinated promotion of teaching and talents training is a practical and urgent issue. The rapid development of AI technology has brought new opportunities for education and teaching. To enable students to learn well, it is necessary to create a free environment, and the classroom can not be limited to the ordinary class to complete the learning; This needs to create a relaxing and active atmosphere, and provide AI to teaching practice, give play to technological advantages, improve

teaching quality, and promote the better development of AI technology. In a word, with the development of biometric technology, adaptive technology and big data technology, it is bound to further promote the integration of AI and education, so that education in the era of AI pays more attention to the growth of students and promotes their comprehensive development.

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