



Research on the Intelligentization of Education Management Based on ChatGPT Model

Na Qin(✉)

Henan Vocational College of Agriculture, Henan 451450, China
qnlingkong@126.com

Abstract. In order to innovate teachers' teaching process, this paper puts forward the research of intelligent education management based on ChatGPT model. Based on the current situation of education management in senior high schools and the application of Internet technology in education, this paper studies the ways and means to realize the intelligent management mode of senior high school education. ChatGPT, as a language processing tool, can not only answer users' questions, but also complete some tasks set by users, and even continuously optimize tasks. ChatGPT has powerful functions, but at the same time, it is accompanied by shortcomings that need to be improved urgently: insufficient accuracy in answering questions, data pollution, ethics and safety issues and the risk of knowledge plagiarism. There are both opportunities and challenges in applying ChatGPT in the process of promoting school education reform. The appearance of ChatGPT gives teachers the opportunity to reflect on the value of human-teacher existence, and puts forward higher requirements for teachers.

Keywords: ChatGPT · Artificial intelligence · Teacher application · Educational reform

1 Introduction

The student-oriented education reform advocates students' all-round development. The traditional "score-based" education and teaching model, whether in "teaching" or "management", can not adapt to the development of the current information age. With the support of emerging technologies such as the Internet and big data, the concept of educational intelligence is changing the traditional "rigid" teaching management model. With the help of the Internet, big data and other information technologies, smart education, smart schools and other smart concepts have gradually attracted the attention of the education sector, especially in the teaching management of primary and secondary schools [1]. In essence, the reform of formal education has promoted the development of educational intelligence, as shown in Fig. 1. Since the concept of artificial intelligence was put forward at Dartmouth Conference in 1956, it has experienced three waves in the development of more than 60 years: "Turing test", a pioneer of artificial intelligence, opened the first wave of artificial intelligence, but it entered a low tide in the 1970s due to the limitation of computing power; In the 1980s, with the development of machine

learning, neural network and other technologies, artificial intelligence technology rose again. For example, “Deep Blue” defeated the world chess masters, but it was limited to the data volume and experimental environment, and it entered a low tide again around 2000. Since 2006, artificial intelligence has entered the third wave. The development of deep learning technology and the improvement of computer computing power have made a qualitative leap in artificial intelligence technology, and artificial intelligence has really entered daily life. Among them, AlphaGo’s victory over Go master Li Shishi in 2016 became a milestone in this process; Nowadays, with the appearance of ChatGPT, artificial intelligence has achieved the stage results from quantitative change to qualitative change, and once again ushered in a development climax [2]. With the maturity of technology and the support of policies, artificial intelligence technology began to change various industries and gradually penetrated into the field of education. In the field of education, it has gone through three stages: first, in the machine learning stage, artificial intelligence technology realizes automatic storage and calculation, such as MOOC portraits, and carries out academic portraits and predicts learning according to learners’ learning data, but artificial intelligence at this stage does not have the ability to identify; Second, in the deep learning stage, it has visual and auditory perception functions, such as classroom student behavior analysis, to perceive the emotions and voices of middle school students, but artificial intelligence in this stage does not have creative ability; Third, the general model stage has the functions of understanding and creation, such as the application of artificial intelligence products represented by ChatGPT in teaching [3].

ChatGPT, which is trained by human feedback reinforcement learning technology, can remember the user’s dialogue information and understand the context, thus generating a faster and more accurate dialogue. This has greatly improved the user experience of the interactive dialogue mode, and its excellent natural language processing capabilities such as text summarization and language translation have also attracted wide attention from all walks of life. Compared with search engines and intelligent chat bots, which can only search existing web pages through keywords to provide mechanical answers, ChatGPT breaks the limitations of existing indexing, retrieval and ranking modes, can accurately understand the semantics and intentions of questions, provide clear quasi-artificial feedback, and can correct answers according to user feedback (See Table 1).

2 Opportunities of ChatGPT Application in Education

2.1 Promote the Digital Transformation of Education

Under the background of digital transformation, the emergence and rapid popularity of ChatGPT products confirm the importance and urgency of digital transformation of education, and will also force the digital transformation of education. Firstly, a large amount of high-quality resources is a prerequisite for digitizing education. ChatGPT helps schools manage, allocate, and utilize educational resources more effectively, achieving reanalysis and optimization of educational resources, and providing better educational resources for teachers and students. Secondly, it is recommended to demonstrate the goal of resource optimization. The emergence of ChatGPT type artificial intelligence products

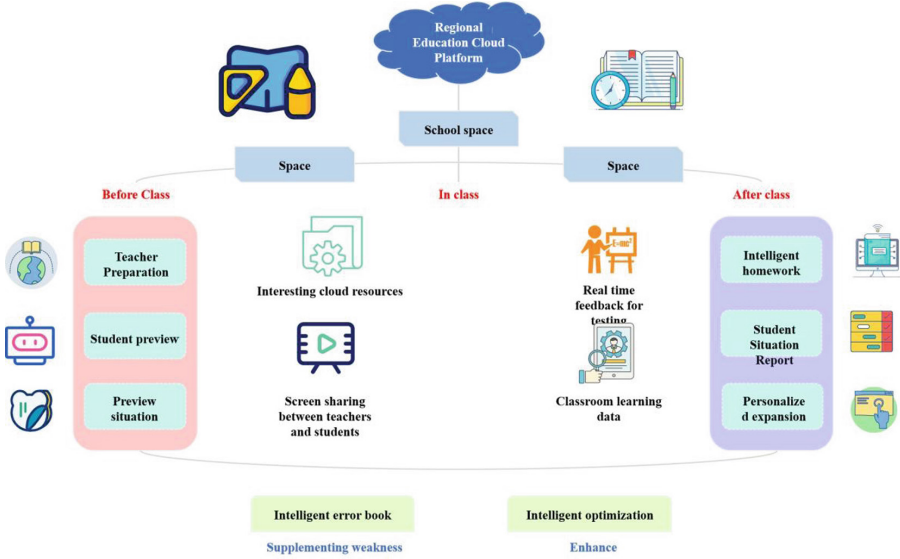


Fig. 1. Smart education framework

Table 1. Comparison between traditional educational chat robot and ChatGPT

	Traditional educational chat robot	ChatGPT
Retrieval mode	Keyword-based retrieval	Large-scale corpus-based learn
Response quality	Answer question machine	Quasi-artificial feedback
Solution range	Limited solvable problems	The range of questions that can be answered is significantly expanded.
Degree of understanding	Context understanding is not supported.	Have the ability to understand the context
Iterative ability	Cannot iterate according to user feedback.	Can be iteratively optimized based on user feedback.

has forced education to establish a modern education ecosystem that can be integrated with artificial intelligence technology to cope with the impact and challenges brought by artificial intelligence products [4, 5]. The digital transformation of education is the only way to modernize education. The appearance of ChatGPT helps to accelerate the process of digital transformation, establish a more perfect education system, including educational environment, educational ideas and teaching methods, select more suitable digital equipment, platforms and resources, promote the application of technology in teaching, and facilitate effective teaching.

2.2 Promote Personalized Autonomous Learning

More than 2,000 years ago, Confucius put forward the educational concept of teaching students in accordance with their aptitude and teaching them without distinction. However, due to the limitation of the actual class size, teachers can't take care of all students and students can't receive timely feedback. ChatGPT, as a dialogue text generation tool, adopts dialogue teaching method to help students get inspiration and learning in conversation, so that students can communicate and learn with "private learning consultants" more intuitively and conveniently, and can give full play to their autonomy. In personalized learning, ChatGPT can provide support for students in the following aspects: first, provide personalized learning programs and learning materials according to students' different learning levels; Second, assist reading and writing to help students better understand and master the teaching content; Third, generate feedback and evaluation results according to the different characteristics of students; Fourth, according to students' feedback in the learning process, we can understand students' learning situation and learning bottlenecks, so as to provide students with more accurate learning suggestions and guidance [6]. ChatGPT, if used properly, can realize the individualization and autonomy of students' learning and accelerate the shift to learner-centered learning [7].

3 Ways to Strengthen the Intelligent Management of Senior High Schools

According to the development degree, artificial intelligence can be divided into Artificial Narrow Intelligence (ANI), Artificial General Intelligence (AGI) and Artificial Super Intelligence (ASI). ANI, also known as weak artificial intelligence, refers to the machine showing intelligence in a certain field, such as playing chess, language translation, development prediction and so on. AGI, also known as strong artificial intelligence, means that machines can reach the level of human performance and solve complex problems across fields. At present, the general large model is considered to be close to the level of general artificial intelligence. In order to explore the educational influence of artificial intelligence in the era of general big model, this study compares the educational application of artificial intelligence technology in different stages (see Table 2). It can be seen that machine learning has realized "being able to store and calculate", deep learning has realized "being able to see and listen", and the general large model has realized "being able to understand and create" [8, 9].

4 ChatGPT Products in the Application Value of Teachers' Teaching and Cases

Under the background of the deep integration of national information technology and classroom, teachers' application ability of information technology has been significantly improved. Teachers can use information technology for information collection, pre-class preparation, classroom demonstration, teachers' teaching and research, supporting students' learning, etc. Especially, the emergence of artificial intelligence and big data has improved the application level of teachers' information technology and significantly

Table 2. Comparison of educational application of different artificial intelligence technologies

	machine learning	Deep learning	General large model
Technical characteristics	General algorithm	General architecture	General model
Degree of intelligence	Automation of manually defined rules	Automatic machine identification	Machine white motion generation
Functional characteristics	Can store and calculate.	Can see and listen	Can understand and create.
data type	Click on the statistics such as feng and questionnaire.	Text, picture and video. Phonetic class	Text class. Picture class. Video class. Speech class, 3D model class
Applicable territorial city	Narrow field. Single subject, partial study section	Narrow collar city. Single subject, partial study section	Wide collar city. Whole subject, whole period of study
Application scenario	Analysis of learning style. Learn the construction of two images. Learning to predict success, etc.	Analysis of classroom teaching behavior. Emotional analysis. Intelligent marking. Personalized resource recommendation, etc.	Lesson plan editor. Courseware creation. Intelligent problem. Program coding. Intelligent learning software. Intelligent teaching assistants, etc.

improved the teaching quality and efficiency. ChatGPT, as an artificial intelligence model, integrates many functions, which not only has the inherent characteristics of information technology products, but also has the unique functions of ChatGPT, and is expected to become an effective tool to promote teaching. Then, the potential application value of ChatGPT model in educational products for teachers is sorted out. ChatGPT can assist teachers in teaching and provide teaching support for students in the teaching process. Before class, ChatGPT can facilitate the integration and generation of resources in the teaching process, and generate the required resources according to the needs of teachers. First, teachers can consult materials and obtain existing resources, such as teaching cases and teaching resources; Second, help teachers design course materials according to students' learning situation, such as teaching plans, innovative teaching activities in the course plan, multimedia resources needed for teaching, etc. Third, help teachers complete the design of classroom and after-class test questions; Fourth, it can be used as a translation software to assist the use of cross-language resources. In class, ChatGPT can assist teachers to provide teaching support for students. First, students use ChatGPT to conduct personalized learning under the guidance of teachers and provide real-time feedback for students. Second, it can analyze students' learning situation, understand students' learning situation through analyzing students, and then provide appropriate feedback; Third, the intelligent and accurate analysis of the classroom, such as teachers' verbal and nonverbal behaviors, can help teachers improve their teaching through the analysis and evaluation of teachers. After class, ChatGPT can improve teachers' work

efficiency and reduce the burden. First, ChatGPT can assist teachers in correcting students' homework, thus saving teachers' time and energy and improving the accuracy and scientificity of evaluation; Second, assisting teachers in teacher training, artificial intelligence helps to support the construction of teachers and provide more personalized training resources according to teachers' level; Third, ChatGPT can help teachers complete repetitive and tedious daily work, such as writing lesson plans, work plans, work summaries and work reports [10].

5 Conclusion

At present, the construction of smart campus is still in the exploratory stage. Many senior high schools have many shortcomings in the construction of intelligent management, mainly focusing on network foundation, hardware facilities, data interaction and management concepts. In order to make the smart campus play a real role, it is necessary to focus on the changes from the above aspects and promote the full coverage of the smart campus. The appearance of ChatGPT is only the tip of the iceberg of artificial intelligence technology, and the follow-up development remains to be seen, but there is no doubt that technology can not only facilitate people's lives, but also give birth to great potential and stimulate people's creativity. The integration of artificial intelligence and education is the only way to modern education, and the digital transformation of education is inevitable. The future is bound to be an era of man-machine cooperation. Front-line teachers should constantly improve their own skills and enhance their ability to cope with all risks and challenges in order to be rock-solid in education.

References

1. Wu, X. (2021). Research on intelligent tourism management model based on big data. *Journal of Physics: Conference Series*, 1992(2), 022189 (5pp).
2. Liu, Y., Jiang, F., Wang, Y., Ouyang, L., & Zhang, B. (2021). Research on design of intelligent background differential model for training target monitoring. *Complexity*, 2021(1), 1-12.
3. Shi, L., Ding, X., Li, M., & Liu, Y. (2021). Research on the capability maturity evaluation of intelligent manufacturing based on firefly algorithm, sparrow search algorithm, and bp neural network. *Complexity*, 2021(3), 1-26.
4. Liu, Y., Wang, Z., Pan, Y., & Zuo, Y. (2021). Research on intelligent monitoring and early warning of electric power safety based on artificial intelligence technology. *Journal of Physics: Conference Series*, 1748(5), 052046 (5pp).
5. Liu, L., & Tsai, S. B. (2021). Intelligent recognition and teaching of english fuzzy texts based on fuzzy computing and big data. *Wireless Communications and Mobile Computing*, 2021(1), 1-10.
6. Lin, X., Zhou, K., Mo, L., & Li, H. (2021). Intelligent energy management strategy based on an improved reinforcement learning algorithm with exploration factor for a plug-in phev. *IEEE Transactions on Intelligent Transportation Systems*, PP(99), 1-11.
7. Shao, T., & Zhou, J. (2021). Brief overview of intelligent education. *Journal of Contemporary Educational Research*, 5(8), 187-192.
8. Anjali, P., Harshita, N., Akash, M., Vinith, P., & Reddy, G. (2021). Vmate – intelligent e-learning management system for educational institutions. *IOP Conference Series Materials Science and Engineering*, 1042(1), 012011.

9. Xu, Q., Liang, Y., Wang, D., & Luo, B. (2021). Hyperspectral image classification based on se-res2net and multi-scale spatial spectral fusion attention mechanism. *Journal of Computer-Aided Design & Computer Graphics*, 33(11), 1726-1734.
10. Mao, J., Han, J. Y., & Cui, T. J. (2021). Development and assessment of improved global pressure and temperature series models. *IEEE Access*, PP(99), 1-1.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

