

The challenges and countermeasures of curriculum development of basic education in the era of artificial intelligence-- educational transformation based on ChatGPT

Lei CHEN

Philippine Christian University, Manila 0900, Philippines

Abstract: The rise of ChatGPT era will bring great changes to human production and life, and also pose a major challenge to the implementation and reform of basic education curriculum. This will lead to an all-round reform of basic education curriculum theory, basic education curriculum system and basic education curriculum practice. This paper comprehensively analyzes the impact of ChatGPT on the basic education curriculum and the challenges faced in the educational transformation from a systematic perspective. The technical characteristics of ChatGPT and its advantages in enabling basic education curriculum construction are deeply studied. At the same time, the challenges facing the construction of digital educational resources are analyzed in detail. The paper also puts forward some suggestions on basic education knowledge system, curriculum implementation, teaching methods, teachers and students' digital literacy and so on.

Key words: ChatGPT; education reform; basic education; curriculum

1 Introduction

Technologies represented by strong artificial intelligence (such as ChatGPT) have reverberated far beyond our expectations in education. This is a process of gradual evolution from quantitative change to qualitative change, and the development speed of the whole process is exponential growth, constantly accelerating. What does the emergence of ChatGPT mean for basic education? In the age of artificial intelligence, what new challenges will the field of basic education curriculum face? How to reform the basic education curriculum to meet these challenges? These problems are not only the current problems, but also the key issues related to the development of basic education. Therefore, this article will explore these three topics in depth and analyze the challenges and changes that the ChatGPT-based AI era will bring to the basic education curriculum.

2 What does the appearance of ChatGPT mean for the development of basic education curriculum

ChatGPT is a support for basic education curricula, based on the ability to integrate natural language processing and generation to provide immediate, personalized support for students and educators. It can not only provide a more

reasonable basic education curriculum support system, but also meet the needs of different groups of education scenarios, because of its revolutionary characteristics.

2.1 ChatGPT can provide more basic education curriculum support system

The educational support system of ChatGPT technology can help teachers manage their classrooms more effectively, improve student learning efficiency, and provide more interactive learning experiences. At the same time, these systems can help teachers understand students' real-time learning needs and provide more resources to support students' learning. For example, teachers can integrate ChatGPT as an intelligent teaching assistant that can answer students' questions, explain difficult concepts, and provide personalized learning recommendations. This helps students better understand the course content and provides real-time support. Intelligent Learning Profiles: ChatGPT-based systems can analyze students' learning history and performance to develop a personalized learning path for them [1]. This includes recommending specific learning resources, exercises, and projects to meet the unique needs of each student.

2.2 ChatGPT will meet more basic education curriculum application scenarios

With its powerful language parsing, context correlation and text generation capabilities, ChatGPT has a wide range of auxiliary capabilities and application values in the field of text processing and generation. In the field of basic education curriculum, ChatGPT can build intelligent education scenarios and provide strong support for teaching in the stages of teaching preparation and teaching development. For example, during online learning and after-school problem solving, ChatGPT intelligently recommends appropriate learning resources, including textbooks, videos, articles, and online courses, based on the subject interests, levels, and learning styles of students in basic education. When it comes to homework intelligence, students can use ChatGPT to get help with homework, including questions, homework suggestions and study strategies. ChatGPT is also able to provide immediate tutoring and feedback to help students solve problems in their studies. This helps to strengthen the understanding of knowledge, prevent the emergence of learning disabilities, and encourage students to better grasp the content of the course.

2.3 ChatGPT makes it possible to change the basic education curriculum

With the continuous development of science and technology, it is particularly important to improve the teaching methods of basic education courses. Traditional teaching methods can no longer fully meet the needs of today's society. As a technology based on natural language processing, ChatGPT can help teachers understand students' questions and ideas in a more intuitive way, while capturing students' personalized learning needs and providing accurate answers in an automated manner to guide students' learning. In addition, ChatGPT technology can also help teachers manage the classroom more conveniently, control the behavior of students effectively, and improve the teaching effect. In teaching practice, a large number of low-level and repetitive tasks often occupy the precious time and energy of teachers and students, and it is difficult to have enough time to engage in higher-order cognitive activities [2]. ChatGPT's application can automate some inefficient and repetitive tasks, saving time and energy for teachers and students.

3 The challenges of basic education curriculum development in the ChatGPT era

3.1 The challenges to basic education theory

The capabilities of ChatGPT make personalized learning more feasible. Through dialogue with students, it is possible to understand individual learning needs, interests and levels, providing tailored learning support for each student. It is undeniable that this is in line with the idea of individualized learning theory that emphasizes adjusting teaching methods and contents according to students' individual characteristics. The problem of "addiction" caused by long-term intensive use of artificial intelligence may make students more and more distant from the real world, and their emotions with the real world are more and more diluted, resulting in mental illness due to reduced interpersonal interaction [3]. From this point on,

basic education curriculum practitioners need to be smarter in integrating technology to maintain a balance between classroom and social environments that encourage practical interaction and collaboration.

3.2 The challenges to the curriculum system of realistic basic education

The rapid development of technology may cause the basic education curriculum system to fail to keep pace with the times, making it difficult for schools and educational institutions to integrate new technologies and realize their full potential in education. Curriculum construction of basic education is a process of systematic selection, integration and construction of practical activities based on the goal of cultivating talents, developing students' all-round literacy and the interests of school subjects with the participation of schools, teachers, students and subject experts. From the perspective of the value orientation of the basic education curriculum construction, its goal is to solve the real curriculum problems that are not conducive to or even hinder the development of students. The intervention of ChatGPT undoubtedly makes the issue more complicated and acute. While ChatGPT can provide a personalized learning experience within the scope of the course, it remains a challenge to balance personalized learning with the need to ensure that students acquire the necessary and broad knowledge.

3.3 The challenges to educational practice

In the implementation of basic education curriculum, the use of language models such as ChatGPT may bring some negative effects, especially when it comes to teacher-student relationship and social interaction [4]. Excessive reliance on ChatGPT may affect the actual interaction between students and educators, as well as the social interaction between students. ChatGPT is based on algorithms and models and does not provide the emotional support of a human educator. At a time when students need emotional care and support, machines may not be able to effectively meet this need. Machine-based interaction also fails to provide a real social environment, which may affect the development of students' social skills. In the implementation of traditional basic education curriculum, students can develop social skills through interaction with educators and classmates, while machines may not be able to provide exactly the same experience, which requires educators to balance the use of technology to encourage actual face-to-face communication and cooperation to promote good teacher-student relations and social interaction between students.

4 Countermeasures for the curriculum development of basic education in the ChatGPT era

4.1 Comprehensively reflect on the current basic education theory and knowledge system from the aspects of knowledge, learning, teaching and curriculum

First of all, we should examine the current knowledge system. The source of the current knowledge system of basic education is limited, and the source of the knowledge system is single due to political, cultural, language and other factors [5]. We should use ChatGPT to break such limitations, contact more knowledge sources, and ensure that the knowledge system we are exposed to is not limited to specific cultural or social groups. It's a diversity of views and experiences. Secondly, we should also pay attention to social justice and multiculturalism, integrate the educational theory of social justice curriculum, and promote students' social responsibility and awareness of inequality issues, which can ensure that the curriculum and teaching content reflect multiculturalism, respect and tolerance of various cultural backgrounds. Secondly, the combination of practice and theory should be further promoted to ensure that the knowledge system is combined with practical learning practice to promote students' practical ability and problem-solving ability.

4.2 Reshape the teaching system and education ecology of basic education curriculum

The first step should be to introduce personalized learning methods, adjust the content and pace of instruction according to students' interests, abilities and learning styles. Use technology tools and data analytics to support educational personalization and ensure that each student is able to learn at a pace that works for them. Secondly, we should break the

barriers between disciplines and promote interdisciplinary teaching. By bringing together different disciplines, students are helped to better understand the relevance of knowledge and develop interdisciplinary thinking skills. It is also necessary to focus on practical application in course design and teaching, and encourage students to apply their knowledge to practical problems [6]. It emphasizes problem-solving, innovation and practice, and cultivates students' practical ability. Make full use of digital technology, including online education platform, virtual laboratory, multimedia resources, etc., to improve the teaching effect.

4.3 Accelerate the promotion of digital literacy of teachers and students in basic education

First, we should provide professional digital literacy training and organize specialized training courses covering digital tools, platforms and technologies that basic education teachers may use in their teaching. These training contents can include online course design, digital assessment methods, virtual teaching tools, etc. At the same time, provide teachers with practical opportunities to apply digital technologies in a real teaching environment, which can be achieved through group collaborative projects, experimental classes, or the sharing of digital teaching resources. Second, establish a digital education professional community where teachers can exchange experiences, share success stories and solve problems [7]. Such communities can be achieved through online platforms, seminars, or research groups to ensure that teachers have sufficient technical support. Third, establish a digital education resource library to collect and sort out various digital teaching resources, tools and cases for teachers to consult and apply at any time.

Conflicts of interest

The author declares no conflicts of interest regarding the publication of this paper.

References

- [1] Jiang L. 2023. Ai-driven education reform: the impact and prospects of ChatGPT/GPT. *Journal of East China Normal University (Educational Sciences)*, 41(07): 143-150.
- [2] Zhong BL, Shang JJ, Wang JH, et al. 2023. ChatGPT's challenge to education. *Journal of Chongqing Higher Education Research*, 11(3): 3-25.
- [3] Zhu LC. 2023. Reflections on the transformation of physical education curriculum teaching under ChatGPT: Opportunities, Challenges, and Strategies. *Sports Technology Literature Bulletin*, 31(08): 138-142.
- [4] Guo L, Chen XH, et al. 2023. ChatGPT assisted computer course teaching in higher vocational colleges. *Journal of Fujian Computer*, 99-103.
- [5] Yu H, Zhang WL. 2023. Discussion on the reform of education and teaching based on ChatGPT technology. *Journal of Continuing education research*, 33-39.
- [6] Xuan J, Wu Q. 2023. Reform and development of foreign language teaching under the integration of ChatGPT technology. *Journal of Current English*, 13-16.
- [7] Tao JW, Yu ZP, Pi HF. 2023. A brief analysis of the impact of artificial intelligence represented by ChatGPT on medical education. *Journal of Mathematical Medicine and Pharmacology*, 36(6): 475-480.