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*Original Paper*

# The Application of Generative Artificial Intelligence in Chinese Higher Education: Opportunities, Risks, and Countermeasures

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***Abstract***

*The rapid development of generative artificial intelligence, with low cost barriers to use, has accelerated its integration with higher education and is affecting the talent cultivation planning of universities. It has put forward new requirements for higher education practitioners, indicating that higher education will become a cradle for guiding and cultivating new talents. In this context, the article explores the essence and role positioning of generative artificial intelligence in the field of higher education. From short-term impact to long-term impact, it explains the current situation and crisis of the application of generative artificial intelligence in the field of higher education. Drawing on existing domestic and international experience, the article proposes a talent positioning for cultivating the "three in one" role based on the current situation of higher education and the potential development of generative artificial intelligence in the future. It constructs an educational ecosystem with generative artificial intelligence as a bridge and schools, society, and families as the core, providing reference for promoting high-quality development of higher education in China and cultivating new talents in the era of artificial intelligence.*

***Keywords***

*generative artificial intelligence, Higher education, Trinity*

The rapid development of generative artificial intelligence technologies represented by ChatGPT, KIMI, DOUBAO, DeepSeek, etc. has brought considerable impact to various industries. The rapid progress and promotion of technology are accelerating, and the corresponding inherent production modes are also undergoing drastic changes. Artificial intelligence is quietly changing the layout and future

development trends of various industries. The rise of a new round of new industries and the elimination of outdated production methods in the old era are also becoming faster. In these waves, the new round of high-end talents that are in line with the trend of the times will inevitably be the pioneers who embrace artificial intelligence.The development and promotion of emerging technologies in China often achieve the fastest dissemination and use in universities, and the impact on education at the top of universities is characterized by rapid development. As a result, higher requirements are put forward for matching teaching, with low barriers to entry for the use of artificial intelligence, high universality, and low cost.Unlike the slow promotion of technology in the past, its rapid development has brought a fierce impact on education in the field of universities. It is rapidly reshaping the educational ecosystem of universities. In the face of the opportunities and challenges brought by generative artificial intelligence technology, it is necessary for China to combine the characteristics of the new era, explore the changes in higher education models under the background of artificial intelligence in the new era, establish a new round of teaching rules, talent cultivation and assessment, cultivate new talents that adapt to the era of artificial intelligence, and make transition and planning for the transition to the era of comprehensive artificial intelligence.

## 1. The Essence of Generative Artificial Intelligence and the Role Positioning of Higher Education

As a breakthrough technology in the field of artificial intelligence, the core of Generative Artificial Intelligence (GenAI) lies in using large language models and deep learning algorithms to simulate the creative thinking process of humans, automatically generating various types of content such as text, images, videos, audio, etc. Through a large amount of data feeding and training, continuously adjusting and optimizing its generated results, it is changing the possibility of human-computer interaction.

### *1.1 The Essence of Generative Artificial Intelligence*

Generative artificial intelligence essentially trains large-scale datasets, learns the essential laws and probability distributions of data, and imitates human thinking processes to autonomously generate new content with certain logic and coherence. The content generated by GenAI is determined by the quality of collected data and the selection trend of software engineers. To a certain extent, strong personal and regional colors, the breadth of data, and the depth and debugging of algorithms will affect the output of data results. This is manifested in the fact that the dialogue results of the model are not unique, the use of a large number of user groups, and the collection of massive data provide a lot of references for AI to continue learning. Various free AI tools that have emerged in China further promote this process. Generative artificial intelligence is currently not equivalent to human intelligence, but rather demonstrates the collective wisdom of human beings in making choices in different situations. It is a type of human judgment and does not possess human innovation consciousness, independent consciousness, emotions, etc.

The emergence of GenAI can be applied to various aspects of the education system and is suitable for various scenarios.

*1.2 Role Positioning of Higher Education*

In China, higher education has improved the scope, difficulty, and depth of knowledge taught compared to basic education. The learning of knowledge points has higher requirements for learners, as higher education management is not as strict as basic education. The overall atmosphere is relaxed, and learners are more free, with an increase in available time on the surface.

There are three mainstream viewpoints:

① Artificial intelligence is a new type of technological tool

A new type of tool created by humans, an extension of the human body and senses, purely instrumental.

② The integration of humans and artificial intelligence

Humans and artificial intelligence form a new individual

③ Teacher, artificial intelligence, and student trinity

Breaking away from human centered thinking, artificial intelligence objects become subjects, forming a three subject model, which is positioned as the "trinity" in the article. The identities of the three entities switch to adapt to environmental changes in different situations.

## 2. The Development Entry Point of Generative Artificial Intelligence in the Field of Higher Education

At present, in China, free artificial intelligence apps are rapidly developing, and low-cost artificial intelligence technology is driving its rapid development. In higher education, it has begun to take shape. How to objectively understand its application in the field of higher education is beneficial for the management of higher education and the planning of long-term talent cultivation. The short-term and long-term impact of generative artificial intelligence application on higher education management is an important issue that needs to be continuously observed and timely regulated.

*2.1 Short term Impact: A Colorful Teaching Classroom*

The short-term effects of generative artificial intelligence in higher education mainly manifest in the innovation of teaching materials and methods in the classroom, the comprehensive flowering of teaching discussions, and the fact that students' viewpoints are not limited to limited material backgrounds. More information can be referenced from the background or results provided by artificial intelligence. In specific questions, it can be clearly perceived that students' answers are considered comprehensively. Specifically, as a teaching aid or reference book, GenAI is conducive to the preparation of materials before classroom teaching, classroom discussions, and the retrieval of materials involved in the classroom. However, to a certain extent, stricter requirements have been put forward for relevant university teaching practitioners, and teachers in higher education need to further expand their knowledge and understand the application of artificial intelligence. Similarly, it has become extremely difficult to assess students.

*2.2 Long Term impact: Harmonious Coexistence of the "Trinity"*

The long-term impact of generative artificial intelligence in universities is mainly reflected in

promoting the reconstruction of the education talent training system and the reconstruction of talent assessment and evaluation indicators. The mainstream three perspectives coexist, with the trinity as the core, becoming mainstream in the field of higher education. The three main relationships of teachers, artificial intelligence, and students coexist and influence each other. The specific empowering effect is shown in Figure 1.

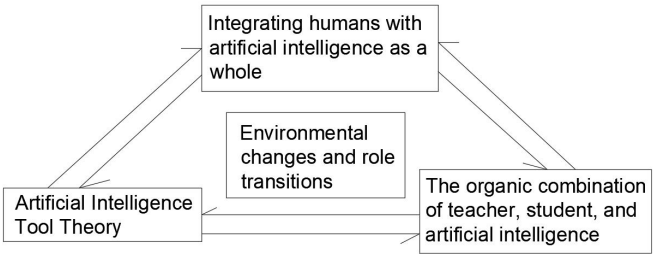


**Figure 1. Role Conversion**

## 3. The Risks Faced by the Application of Generative Artificial Intelligence in the Field of Higher Education

Generative artificial intelligence provides a new direction for the reform and development of higher education, by empowering a series of teaching processes such as teaching, learning, evaluation, research, and management, and promoting changes in the entire teaching ecosystem of universities. During the process, the application of artificial intelligence technology inevitably involves both visible risks and hidden crises.

### *3.1 Reliability Risk of Intelligent Technology*

At present, artificial intelligence technology is developing rapidly, and the overall skeleton construction speed is also very fast. The content filling is also very fast, depending on the preferences of artificial intelligence program editors. When setting up the program, there may be algorithm bias, and the generated results have biased colors. The algorithm is opaque, resulting in some results being inexplicable and some generated content being difficult to judge, especially in the field of university use. In addition, there is a risk of data security and privacy leakage. The sensitive information unconsciously input by the interaction subject may be leaked out by the program through interaction, which will have a certain impact on individuals. Secondly, the issue of intellectual property rights has emerged, and the ownership of the content generated by GenAI is not clear enough. In the education industry, extensive use can lead to some students resorting to plagiarism in the later stages, which is prone to copyright disputes without verification. In addition, some niche viewpoints may be covered by big data training, making it difficult for new viewpoints to enter the perspective of college students.

### *3.2 The Risks of Educational and Teaching Concepts*

Compared to the basic education stage, college students have more flexible thinking. With the advancement of generative artificial intelligence technology, there is a possibility of role exchange

between teachers, artificial intelligence, and students in the college education ecosystem. Teachers can use artificial intelligence to assist in data collection, lesson preparation, etc. Artificial intelligence can act as a tool. When the cross-border knowledge exceeds the knowledge field mastered by teachers, artificial intelligence plays the role of teachers. At this time, teachers play the role of students. In the teacher's proficient field, the collected data can be corrected for its correctness through interactive dialogue, accelerating the learning and development of artificial intelligence. At this time, artificial intelligence plays the role of students. Students play more of the role of learners and have an additional option for learning. They can rely on the interactive feedback of artificial intelligence to promote their own development, which inevitably breeds a mentality that classroom listening is useless. Some students rely too much on artificial intelligence and lack a certain foundation to distinguish the authenticity of knowledge. In addition, there is a large amount of content impact, making it relatively easy to obtain content, further exacerbating their dependence on artificial intelligence. In the long run, they will lose their independent thinking ability. Some students, by making good use of artificial intelligence in the classroom environment, can combine their own perspectives to produce high-quality thinking and speech, which can become the role of teachers.

## 4. Countermeasures for the Application of Generative Artificial Intelligence in Higher Education

In Chinese higher education, it is an open education system where learners no longer have strict requirements. Students can explore unfamiliar fields and their favorite areas through generative artificial intelligence, making knowledge acquisition more convenient and efficient. In addition to traditional classroom acquisition, teachers can also use artificial intelligence to assist in learning. As a result, some students with poor self-discipline may excessively rely on artificial intelligence and use it indiscriminately in classroom discussions, using the knowledge searched by artificial intelligence to directly participate in classroom discussions, which may increase the difficulty of classroom supervision and talent exploration to a certain extent. Some introverted students may intensify their introversion, with the focus of interactive dialogue becoming artificial intelligence, lacking necessary real-life interpersonal communication training. Outgoing and outgoing students are more advantageous in the development of generative artificial intelligence.

Based on this, the main countermeasures applied in the field of higher education are as follows:

① Correctly guide students to understand generative artificial intelligence

② Establish a more comprehensive assessment and evaluation mechanism

③ Necessary supervision and establishment of multi-faceted interpersonal care.

## 5. Conclusion

Generative artificial intelligence has a low threshold for use and is widely used, bringing significant vitality and vigor to higher education. Higher education is facing more risky challenges and opportunities. Higher requirements have been put forward for educators. University educators need to

view the transmission of knowledge with a boundary breaking perspective, and the content of knowledge transmission should move towards a more complex and diverse synthesis. They need to fully utilize the relevant knowledge points retrieved by artificial intelligence, strengthen their own knowledge accumulation, convey the correct concept of using generative artificial intelligence, possess the necessary ability to distinguish artificial intelligence, guide students to use artificial intelligence correctly and reasonably, and cultivate a new talent with the "trinity". Looking ahead to the future, the penetration of generative artificial intelligence into various industries is not only a model for schools and families to cultivate talents and adapt them to society, but also a new type of composite talents to switch identities in various environments.

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