The Path of Empowering High Quality Development of Vocational Education with Generative Artificial Intelligence

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Abstract: With the rapid development of science and technology in our country, digital technologies represented by generative artificial intelligence have begun to be widely applied in the field of education, providing opportunities for innovative talent cultivation methods. Vocational education, as a battlefield for cultivating composite high-quality applied technology talents, should make reasonable use of generative artificial intelligence to promote innovation in teaching methods and talent cultivation models, and promote the development of education towards "modernization" and "intelligence". Therefore, this article will focus on generative artificial intelligence and vocational education, exploring the practical difficulties of applying generative artificial intelligence to vocational education, the practical foundation of applying generative artificial intelligence to vocational education, etc. Through the integration analysis of the two, an application path will be proposed, aiming to provide effective reform experience reference and practical support for vocational education teachers, and achieve comprehensive development of students.

Keywords: generative artificial intelligence; Vocational education; digital transformation

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Introduction

The report of the 20th National Congress of the Communist Party of China clearly pointed out that "education, science and technology, and talent" are the fundamental and strategic support for the comprehensive construction of a socialist modernized country. At the same time, the Third Plenum of the 20th Central Committee of the Communist Party of China once again emphasized the need to deeply implement the strategies of rejuvenating the country through science and education, strengthening the country through talent, and promoting innovation driven development, and comprehensively promote the integrated reform of the education, science, technology, and talent system and mechanism. Therefore, under the requirements and impetus of the times, educational entities represented by vocational education should actively utilize digital technology to promote the transformation of China's education system towards high-quality development. However, currently, some vocational education institutions still face issues with the use of digital technology, including insufficient funding to introduce advanced digital technologies, inadequate teacher professional ethics, and difficulty in effectively utilizing generative artificial intelligence to improve classroom quality. Therefore, the article proposes a corresponding solution path based on the problem, which is the deep integration of generative artificial intelligence and vocational education classrooms, endowing vocational education with new momentum, promoting the high-quality development of vocational education and the comprehensive development of students.

1.The practical foundation of applying generative artificial intelligence to vocational education

1.1 Policy support

The Third Plenum of the 20th Central Committee of the Communist Party of China and the report of the 20th National Congress both clearly pointed out the promoting and facilitating role of digital technology represented by generative artificial intelligence in vocational education. In addition, the country has issued multiple laws and regulations to provide sufficient legal support and policy direction for the use of generative artificial intelligence in vocational education. For example, in 2021, the "Opinions on Promoting the High Quality Development of Modern Vocational Education" was promulgated, which clearly stated that artificial intelligence technology should be used reasonably to optimize resource allocation and improve the quality of classroom development. In addition, there is also the "Outline of the Plan for Building an Education Strong Country", which clearly proposes to promote the

strategy of "building a large-scale model of artificial intelligence education" and promote the deep application of artificial intelligence in the field of education. In addition to national policies and regulations, each region also issues local policies based on its own actual situation. For example, in 2023, Guangdong Province released the "Implementation Plan for Digital Transformation of Vocational Education". With the support of policies, Guangdong Vocational Education College began to transform towards intelligence and digitization. At the same time, Zhejiang Province launched the "Digital Reform Pilot for Vocational Education". In this pilot activity, a virtual training platform and intelligent teaching tools driven by artificial intelligence jointly built by Chinese enterprises and schools made their debut, providing rich resources and tool support for future vocational education. Therefore, the combination of national laws and local regulations has jointly promoted the use of generative artificial intelligence in vocational and technical education, laying a solid legal and policy foundation for the utilization of artificial intelligence.

1.2 National development needs

With the deepening trend of globalization and the acceleration of digital reform, China's current economic development increasingly relies on the power of talent, and the demand for composite high-quality talents in every industry is showing explosive exponential growth. In the context of digitalization, composite high-quality talents not only refer to those who can comprehensively use the knowledge content learned in the classroom to solve problems, but also those who can apply digital technology and have a composite thinking mode. This type of composite high-quality talent is in line with the actual needs of national development. In 2022, the Ministry of Human Resources and Social Security issued the "2022 Fourth Quarter National Ranking of the Top 100 Jobs with the Most Shortage", which clearly pointed out that there is a serious shortage of technical talents in intelligent manufacturing, information technology, and new energy represented by digital technology. Therefore, it is necessary to strengthen the integration of generative artificial intelligence and vocational education, break through the limitations of traditional vocational education models, create knowledge application scenarios for students, and effectively stimulate their innovative thinking and improve their ability to use digital technology. It can form a virtuous cycle of talent supply and industrial demand, providing a continuous supply of high-quality talents for the construction and development of socialism in China.

1.3 Technological development

With the progress of our country's economy, the development of various digital technologies has also entered the right track. Traditional generative artificial intelligence could only generate text and image content, but with technological support, it has been able to generate targeted educational content based on the actual situation of vocational education For example, teachers can reasonably use generative artificial intelligence to analyze the learning situation of students in their class, and based on this, generate personalized learning paths for students, effectively driving their personalized growth. At the same time, generative artificial intelligence can create realistic virtual situations for students, enhancing their learning experience in highly realistic operational scenarios and effectively improving their learning efficiency Therefore, from the breadth of application of artificial intelligence, it can be seen that generative artificial intelligence technology has become mature and has a place in the field of education. The development of technology has laid a good foundation for the application of generative artificial intelligence in vocational education.

2.The practical dilemma of applying generative artificial intelligence to vocational education

2.1 Insufficient professional competence of teachers

The application of generative artificial intelligence in vocational education is a new opportunity and challenge for some teachers, which is reflected in the following two aspects: on the one hand, teachers have not realized the importance of applying generative artificial intelligence in vocational education. Some teachers only regard artificial intelligence as an educational tool and focus on exploring the key role of generative artificial intelligence in students'

future employment. This has led to a lack of innovation and reform in teachers' education models based on the characteristics of generative artificial intelligence, with structured courses still being rigid and a low degree of integration between disciplines and digital technology; On the other hand, teachers lack understanding of the use of generative artificial intelligence, making it difficult to effectively innovate classroom content using AI. Some teachers even waste classroom time learning AI, seriously affecting the quality and efficiency of classroom development.

2.2 Structural contradiction with traditional teaching content

In the current era of scientific and technological development, various types of artificial intelligence have begun to be widely applied in various production fields. Therefore, some traditional vocational education content is no longer suitable for the current classroom. As a result, there is a structural contradiction between the empowerment of artificial intelligence in vocational education and traditional teaching content. Students find it difficult to effectively balance the relationship between the two in the process of classroom learning. The problem of structural contradictions with traditional teaching content can also lead to a mismatch between vocational college talents and market demand. Teachers use generative artificial intelligence to teach traditional vocational education content, and although students can recognize the role of generative artificial intelligence, they have not mastered the practical application methods, resulting in a disadvantage in future market employment competition.

3.Important Measures for Empowering High Quality Development of Vocational Education with Generative Artificial Intelligence

3.1 Accelerate the construction of a high-quality education teacher team

As the main body of education, teachers play the role of designing classroom content and guiding students' learning. In order to effectively improve the quality and efficiency of the application of generative artificial intelligence in vocational education, schools must accelerate the construction of intelligent education teacher teams and effectively play the role of teachers.

On the one hand, schools need to establish a hierarchical training system. School teachers can be divided into old teachers and new teachers based on age differences. Old teachers have a slower acceptance of new technologies due to age and cognitive limitations, but they have rich teaching experience; New teachers can quickly accept various emerging things and apply them to teaching classrooms, but they lack certain educational experience. Therefore, schools should construct a hierarchical training system for intelligent literacy based on the age characteristics and teaching methods of different teachers. Invite experts and scholars in relevant fields to conduct training courses at the school. At the same time, for old teachers with poor acceptance ability, schools should carry out gradual theoretical guidance activities. Through practical teaching case analysis, old teachers can recognize the positive role of generative artificial intelligence in promoting the high-quality development of vocational education. In addition, schools can hold teacher mentoring activities, allowing new teachers to form pairs of assistance with old teachers. Old teachers can impart teaching experience to new teachers, while new teachers can help old teachers master the use of generative artificial intelligence step by step; For new teachers with strong acceptance ability, the school directly explains the use of advanced generative artificial intelligence to new teachers, allowing them to improve the use of generative artificial intelligence through training courses.

On the other hand, schools need to develop an integrated library of intelligent teaching tools based on generative artificial intelligence. Provide personalized artificial intelligence teaching tools for teachers based on their teaching disciplines, and enable teachers to correctly master the use of teaching tools through dedicated teaching. At the same time, apply the relevant content of generative artificial intelligence to classroom teaching, achieve high-quality preparation, teaching, and evaluation feedback processes, and promote the improvement of students' literacy.

3.2 Improve educational content

In response to the structural conflict between traditional teaching content and generative artificial intelligence, teachers should construct talent training content that meets the requirements of the new era. On the one hand, teachers need to use generative artificial intelligence to collect the actual demand for composite talents in the current market, and use this as a basis to improve educational content. For example, for students in the medical field, the industry requires medical students to be able to comprehensively utilize digital technology for surgical operations. Therefore, teachers should improve the use and operation of digital technology in teaching content to effectively enhance students' core competitiveness; On the other hand, teachers need to use generative artificial intelligence to empower the cultivation of professional spirit. In the current era, the "Great Nation Craftsmanship Spirit" has always been an important spiritual orientation for technical students. Therefore, in the process of improving educational content, teachers should use generative artificial intelligence to collect representative figures of China's Great Nation Craftsmanship Spirit for students, so that students can not only learn technical content in their professional fields in the classroom, but also develop good professional ethics, enhance students' sense of identity with professional ethics, and improve their professional ethics.

3.3 Innovative teaching methods

The main channel for generative empowerment in vocational education is innovative teaching methods, which stimulate students' interest and initiative in participating in the classroom through innovative theoretical teaching and practical activities, effectively improving teaching quality and efficiency.

On the one hand, we need to innovate theoretical teaching methods. Before the classroom starts, teachers can use generative artificial intelligence to intelligently generate outlines, practical cases, and test questions related to teaching content based on the learning situation and cognitive level of students in the class. At the same time, generative artificial intelligence can monitor students' classroom learning situation in real time and dynamically adjust the teaching outline and theoretical course content. At the same time, teachers also need to develop personalized learning plans based on different students' learning situations. Generative artificial intelligence uploads different learning plans to online teaching platforms, and students can preview according to the learning path provided by the teacher during the pre class preview stage. In the process of classroom theory teaching, generative AI can intelligently collect Internet resources, and present theoretical content to students in visual forms such as videos and pictures, so that students can better understand theoretical content. In addition, teachers need to improve the theoretical knowledge evaluation process. If generative artificial intelligence can be used to quickly evaluate students' paper and pencil tests and homework situations, and convert students' homework errors into data tables, teachers can use generative artificial intelligence to identify the problems that students in this class have in the learning process and effectively adjust future teaching plans. In addition, teachers can also use generative artificial intelligence to generate test questions, ensuring that the test content covers most of the teaching content and ensuring the fairness and effectiveness of the test.

On the other hand, innovative practical teaching methods. The ultimate goal of vocational education is to cultivate technical talents, who need to have strong practical abilities. Therefore, teachers should use generative artificial intelligence to create real practical situations for students, so that they can improve their practical and knowledge application abilities in learning. Firstly, teachers utilize VR and AR technologies in generative artificial intelligence to create an immersive skill training environment. For example, for students majoring in mechanical and electrical engineering, teachers require students to master the knowledge of machine tool repair. Before that, teachers can collect VR videos of machine tool repair on the Internet and import them into students' intelligent devices. During the classroom, teachers require students to wear VR glasses, identify problems with the machine tool in real situations, and use the knowledge learned to repair them. In this process, teachers should play their role as guides, observe students' practical situations, and help students solve problems as soon as possible if they encounter time

bottlenecks. Secondly, teachers should use artificial intelligence speech recognition to carry out practical activities. For early childhood education majors, teachers should make reasonable use of generative artificial intelligence to help students quickly enter the state of practical activities, let artificial intelligence play the role of children and students play the role of teachers, and communicate and interact with each other. Generative artificial intelligence can quickly recognize students' speech content and convert it into answers. In such question and answer communication and interaction, it can truly simulate the actual scene of early childhood education. Students can experience the actual needs of children through generative artificial intelligence, discover their shortcomings in practical operations, clarify learning goals, and improve their professional abilities. Thirdly, teachers should use generative artificial intelligence to build a platform for school enterprise cooperation. Students from vocational and technical colleges usually need to intern in enterprises. During the internship, students can upload their feelings and experiences to the online teaching platform, laying the foundation for adjusting their learning direction in the future. Enterprises can use the online teaching platform to express their actual needs for talents and the current situation of artificial intelligence utilization in enterprises. Schools and students can screen and adjust positions according to the actual situation of enterprises, in order to choose suitable enterprise environments and better improve their practical abilities.

4.Summarystraints

In summary, generative artificial intelligence drives the high-quality development of vocational education and can inject a continuous stream of high-quality composite talents into China's socialist construction. In the context of current technological maturity, policy support, and market development needs, applying generative artificial intelligence to vocational education is a teaching strategy that teachers must implement. This article mainly focuses on improving teachers' professional competence, perfecting educational content, and innovating teaching methods, actively promoting the integration of technology and vocational education, and fully leveraging the effective role of generative artificial intelligence in vocational education. In the future, with the continuous development of generative artificial intelligence technology, teachers also need to change the strategy of applying generative artificial intelligence to vocational education, injecting momentum into the high-quality development of vocational education.

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