The Demand and Dilemma of China's Vocational Education Reform in the Age of Artificial Intelligence

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ABSTRACT
With the coming of the era of artificial intelligence, the development of vocational education in China is facing a series of new opportunities and challenges. This paper analyzes the realistic demand of vocational education reform and the dilemma of its own development from the four aspects of the wisdom of vocational education, economic development, policy guarantee and the reconstruction of information ecology. Based on this, some recommendations will be given on the path of vocational education reform against the background of artificial intelligence.

Keywords: artificial intelligence, vocational education, reform

I. INTRODUCTION

The rapid development of artificial intelligence will profoundly change human life and change the world. Driven by new theories including mobile Internet, supercomputing and the strong demand for economic and social development, the development of artificial intelligence presents new features such as deep learning, cross-border integration, human-machine coordination, group intelligence and open-mindedness, and autonomous manipulation [1]. As the core driving force of a new round of industrial change, artificial intelligence has injected new momentum into the new economic development under the structural reform of the supply side of China, and has brought about profound changes in people's thinking mode and way of life. In recent years, the Chinese government attaches great importance to vocational education, which is most closely linked to socio-economic development, actively promotes the informationization of vocational education, uses artificial intelligence to reform teaching methods and personnel training models, builds a new intelligent vocational education system, and enhances the ability of information technology to lead the innovation and development of vocational education.

II. THE REALISTIC DEMAND OF VOCATIONAL EDUCATION REFORM AGAINST THE BACKGROUND OF ARTIFICIAL INTELLIGENCE

Artificial intelligence has had a revolutionary impact on the traditional educational concept. The structure of vocational education is constantly adjusted, the contradiction between the quality of labor force and market demand, the contradiction between learning method and self-worth realization, etc. has promoted the development of vocational education to intelligence and intelligence. At present, China is in the new period of education information 2.0 and industry 4.0. A new round of scientific and technological revolution and industrial change is accelerating in the world. "The Belt and Road Initiative", "Made in China 2025" artificial intelligence and other major national strategies, and new economic models characterized by new technologies, new industries require education, especially vocational education training industry, industry urgently needed technical skills, intelligent talent, with higher innovation and entrepreneurial capabilities and cross-border integration capabilities, to promote intelligent development, to help economic transformation and upgrading.

A. The appeal of the wisdom of vocational education

"Intelligent education is based on the Internet, big data and other information technology, to create a smart teaching environment, the transformation of educational methods, content and means, pay attention to the network of education, personalized and intelligent a new type of education" [2]. As "a high learning experience, high content adaptation and high teaching efficiency education behavior provided by a school, region or country, intellectual education is regarded as a high-end form of educational information development." [3] Therefore, the intellectualization of vocational education is not only digital, but also emphasizes that information technology promotes the transformation of teaching mode and method of vocational education, changes the way of thinking, creates a common learning community in value, and cultivates innovative and intelligent talents. The

wisdom of vocational education is the inevitable choice for the development of vocational education information. At present, China's vocational education information level is steadily improving, investment continues to increase, all kinds of intelligent information technology applied to education and teaching, practical training, measurement and evaluation and other fields. Gradually maturely, it is trying to build an information and intelligent modern vocational education ecosystem. In the new period, many regions and vocational colleges in China actively enhance the intelligence level of the existing information system, actively create intelligent campus, intelligent community, and realize the wisdom of organizational management, the wisdom of resource environment and the wisdom of service evaluation.

B. Economic development demand

The emerging economy of the era of artificial intelligence needs high-skilled and intelligent talents. Vocational education in the era of artificial intelligence using Internet, big data and other emerging technologies, create new products, new business, promote the innovation of vocational education model, forming a new normal of economic development with the Internet as the infrastructure and artificial intelligence as the means to achieve. The era of artificial intelligence is a new aspect supported by modern science and technology. The operation of all walks of life and the mastery of knowledge and technology requirements have reached a higher level, the corresponding educational needs have been improved, the market environment is eager to be innovative, personalized high-skilled intelligent talents. Vocational education should cope with the rising demand of labor force in the industry, based on the application of artificial intelligence, improve the skill training level to meet the new social labor demand. Modern enterprises produce Internet technology, directly connected with intelligent equipment, through data analysis and application, to promote the transformation of scientific and technological achievements into productivity. Labor-intensive enterprises who have not adapted to modern industries, industrial development, need to upgrade to the network intelligence. Also, vocational colleges and universities curriculum model, professional settings, practical training and teacher structure have made corresponding adjustments and innovations, not only to promote the wisdom of vocational education, intelligence, but also to promote industrial upgrading and industrial transformation.

C. Policy guarantee

The state guarantees the development of vocational education in the era of artificial intelligence from the macro level. 2016 is the new year of artificial intelligence in China, and in 2017 China promulgated the *New Generation Artificial Intelligence Development Plan*, which puts forward "the systematic planning and layout of the development of artificial intelligence at the national strategic level", which indicates the full arrival of the era of artificial intelligence in China and provides a good macro-policy environment for the development of vocational education in China. Artificial intelligence has brought new content in line with the spirit of the times to vocational education, actively integrated information technology, integrated vocational education resources, improved the level of public services, and influenced and changed the original educational ecology. Relying closely on the information sharing platform, break through the space-time limit, so that learners self-select, more humane and intelligent. Many vocational colleges in China have opened the action plan of smart campus, and some large and medium-sized cities are also actively formulating and implementing the development plan of smart cities, and raising the level of wisdom in the protection of good policies.

D. Information ecology reconstruction demand

The transformation of vocational education in the era of artificial intelligence is the reconstruction of the information-based ecosystem of vocational education. According to the *National Information Development 2006-2020* [4], China is in an orderly manner to promote the digital education to intelligent education of the leap of upgrading and innovation. Under the urging of the emerging intelligent information technology, the technological transformation has brought the innovation reform of the vocational education system, breaking the existing rules and regulations, reforming the traditional education model, and re-engineering the new process of education business. In the field of vocational education innovative application improve the education and teaching business of various disciplines, build all kinds of intelligent training departments, training institutions, cover through the system of higher vocational colleges, promote the orderly development of intelligent education ecology, for all types of users to provide the most suitable, the most intelligent vocational education resources and services, complete the reconstruction of the vocational education information ecosystem.

III. THE CURRENT REAL DILEMMA OF VOCATIONAL EDUCATION DEVELOPMENT

The impact of AI on all walks of life is revolutionary and unstable. It may bring new development opportunities and uncertain challenges, such as changing employment structure, affecting government management, threatening economic security, affecting law and social management, social stability and even global governance. At present, artificial intelligence and "mass entrepreneurship,

innovation" wave is sweeping, vocational schools are not only the battlefield of artificial intelligence applications, but also the training of innovative technology talent "dream factory" [5]. Vocational education in the era of artificial intelligence is developing rapidly, and its influence is wide and deep, which has a great impact on the external environment of vocational education and its own.

A. *The external environment development dilemma*

"According to UNESCO projections, by 2020, human intelligence will replace 2 billion jobs" [6], and those skills with low technology and repetitiveness will be replaced by intelligent machines and digital devices, and industrial robots will be used in large areas. Smart equipment replaces the labor force, can reduce labor costs, and has an efficient, easy to operate and other competitive advantages. The traditional vocational education training model is difficult to adapt to the needs of the industries and industries, artificial intelligence impact vocational education jobs, shake the job base on which it is attached, and pose a threat to the survival and positioning of vocational education. Therefore, according to the job characteristics and demand of vocational education in the intelligent age, it is the development direction of vocational education under the new situation to enhance the knowledge structure and professional skills of professional talents.

B. *Self-development dilemma*

In recent years, the application and promotion of artificial intelligence in the field of vocational education is the current development trend of vocational education. China attaches great importance to the development of information technology and intelligence, and all kinds of vocational colleges at all levels have made significant improvements in the construction of information infrastructure, campus information management and other aspects. However, the integration of information technology and vocational education is not close enough, showing low efficiency of information management and low level of scientific decision-making. The dilemma of vocational education's own development under the background of artificial intelligence is as follows:

The new curriculum reform of vocational colleges advocates the construction of smart classroom, the formulation of personalized learning plan, and the focus on the effect of classroom implementation. But at present, the actual curriculum teaching is still teacher centered, emphasizing knowledge inculcation, unity and planning, which is far from the individualized teaching advocated by the education reform. The renewal of teaching methods and ideas is slow, which makes it difficult to stimulate students' internal learning motivation and weak innovative thinking, which makes personalized education impossible. In recent years, four

levels of education platforms, namely, the central, provincial, municipal and county levels, have been gradually established, and the hierarchical design of curriculum and teaching has been gradually improved. However, in the process of implementation, there are problems such as poor communication between platforms at all levels, and the content of resources at all levels is not systematic and cohesive, resulting in disordered superposition and repeated waste of resources, such as "Excellent Courses" The project enriches the curriculum resources, but the quality is not high. Online courses and teaching take traditional subjects and chapters as units to build systematic online education content and provide users with specialized knowledge choices. However, due to time constraints, most of the educated are accustomed to fragmented learning, poor coherence and integrity, and lack of systematic learning of courses and teaching system.

With the advent of the era of artificial intelligence, many vocational colleges have positioned the "future classroom" and "smart classroom" as the future direction of development, and made various attempts and reforms, such as mixed teaching, flipping classroom, multi-screen teaching, etc., but "managers and teachers' understanding of wisdom education stays more in the 'smart classroom, multimedia and traditional teaching", teaching concepts and thinking still solidified, and not because of the participation of new technologies and substantive changes. [7] Lack of deep understanding of multimedia network architecture and intelligent learning platform, and lack of understanding and mastery of management evaluation and interactive communication modules, although a large amount of human and financial resources to purchase a large number of well-equipped multimedia equipment and intelligent service equipment, but not fully effective use, greatly limiting the development potential of intelligent education.

The traditional teaching of user dilemma takes group education as the basic unit, and teachers and learners as the learning community, forming a strong group binding force in the process of management and learning interaction, and promoting the common progress of both sides. In the age of information education, learners freely grasp the learning time and progress, encounter problems may not be solved in time and get feedback, cannot be face-to-face communication. Therefore, based on the artificial intelligence network learning platform, learners need high self-control, high learning ability to adapt to this new way of learning.

The traditional evaluation method of evaluation dilemma depends on experience and observation, while the intelligent evaluation is based on a kind of developmental evaluation of learning process, which is based on the collected learning data. In the environment

of artificial intelligence and digital information, the evaluation of education effect is actually affected by many factors and limitations. In the process of the integration of information technology and vocational education, many intelligent technologies are applied to the teaching practice, it is difficult to implement qualitative and quantitative intelligence evaluation, such as interactive communication and deep learning evaluation.

IV. CONCLUSION AND RECOMMENDATION

A. Conclusion

Artificial intelligence has brought about the innovation of thinking mode, changed the way people recognize, think and solve problems, and increasingly rely on the collaborative innovation of people and intelligent networks. Vocational education in the context of artificial intelligence around the overall economic and social development, actively serve the country's major development strategy, increase the virtual reality, cloud computing and other new technology applications, reflect the school-enterprise cooperation, knowledge and practice of unity and other characteristics of education, to promote integration, integration to promote innovation, innovation to promote development. The reform of vocational education under the background of artificial intelligence will accelerate the modernization and intelligent process of vocational education, and show the new characteristics of integration, innovation, cross-border and life-longization. Fusion of artificial intelligence technology science applied to the current vocational education, in the shortest possible time to integrate and reorganize a large number of knowledge information, the formation of a scientific technical skills knowledge system, for vocational education resources, enterprise resources, industrial resources, social resources and other potentially linked resources integration provides the possibility. In order to promote the intelligent development of vocational education, on the basis of the cooperative development of existing cooperation model, group model, production and education integration model. A smart education supply platform will be established, as well as a normal intelligent classroom and a big data intelligent education ecosystem, which provides high-skill and intelligent talent support for China's emerging economic development.

B. Recommendation

One of the major advantages of the integration of artificial intelligence and vocational education is that it can significantly improve the overall level and integration level of vocational education resources, and through the integrated construction of artificial intelligence and information, it can not only greatly increase the capacity of vocational education resources, but also promote the reasonable and fair allocation of high-quality vocational education resources, and enhance the level and quality of vocational education. To integrate and configure vocational education resources in different regions, different types and levels, artificial intelligence must build an ecosystem of deep integration of artificial intelligence and vocational education in the whole society, so as to create conditions for artificial intelligence to link all kinds of vocational education resources. In this process, the government, schools, industries, enterprises must assume the corresponding responsibilities and play their due role.

First of all, the government should strengthen the top-level design, improve the policy system, gather financial resources, and fully support the construction of "artificial intelligence and vocational education". In recent years, the central government has promulgated a series of policies and measures aimed at promoting the construction of artificial intelligence and the integration of artificial intelligence and education, but on the whole, the overall and systematic development policy of artificial intelligence in China needs to be further enhanced, especially the lack of special policies for the integration of artificial intelligence and vocational education, which to a certain extent has caused the lack of artificial intelligence construction in the field of vocational education. Therefore, it is necessary for the government to strengthen the top-level design, further improve the relevant policy measures, and at the same time increase investment in funds, attract more scientific research institutions and enterprises to jointly invest in intelligent vocational education construction, for the integration of artificial intelligence and vocational education to provide more adequate policy protection, institutional security and material security.

Secondly, schools should keep up with the development trend of the times, adjust the center of gravity of school construction, and put intelligent education in a more prominent position. If vocational schools want to further promote the integration of artificial intelligence and vocational education, they should fully realize the important value, significance and role of intelligent education construction in promoting educational equity, enhancing the connotation of running schools, serving national strategies, keep up with the development trend of the times, adjust the center of gravity of school construction, take intelligent campus construction and intelligent education construction as the strategic direction of school construction and development, and promote the integration of artificial intelligence and vocational education with maximum enthusiasm. Third, industry organizations should strengthen the industry, industry dynamic monitoring and analysis research, for the construction of intelligent vocational education to

provide information services and advice, advice. In the era of artificial intelligence, industry organizations should improve the sensitivity of cutting-edge technology dynamics and industrial development dynamics, strengthen the research on the interaction between artificial intelligence and industry and industry, and timely release research reports to provide more adequate information services and advice and suggestions for the deep integration of artificial intelligence and vocational education.

Finally, enterprises should deepen organizational change, promote technological upgrading, and actively participate in the construction of intelligent vocational education. The vast number of enterprises should earnestly deepen the transformation of production mode, organizational model and business model, promote technological upgrading, fully apply the development results of artificial intelligence technology, and enhance the competitiveness of the enterprise market. At the same time, enterprises should actively participate in the construction of intelligent vocational education, and vocational schools to establish a "artificial intelligence-based" development community, relying on the joint efforts of multiple subjects to promote their own artificial intelligence construction, while providing vocational schools with more artificial intelligence-related resources.

Against the background of artificial intelligence, the intelligent development of vocational education is the high-end form of the development of vocational education information. The model change of vocational education under the background of industrial intelligence is not a one-off, but a process of continuous exploration and perfection, not only to actively think about the development of technological advantages, to avoid technical disadvantages. Vocational education in the era of artificial intelligence should return to education itself, supplemented by appropriate technical means, so that vocational education and intelligent technology can truly complement each other.

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