

Research on Industry-education Integration and Talents Cultivation of Vocational Education Empowering New Quality Productive Forces

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Abstract: New quality productive forces are an important impetus for high-quality development. Talents are the primary resource, and the development of new quality productive forces require a large number of high-quality technical and skilled talents. Vocational education is required to provide strong support for talent cultivation. This article first explains the basic connotation of new quality productive forces, and then analyzes the internal logic of the dual drive between new quality productive forces and vocational education development, as well as the talents supply and demand mechanism of vocational education and new quality productive forces. On this basis, a system of industry-education integration and talent cultivation is constructed to empower new quality productive forces through vocational education. Vocational colleges should meet the requirements of developing new quality productive forces, improve the accuracy of talent supply and cultivation quality, carry out high-quality construction of the industry-education integration community, and improve the integrated system of talent cultivation. Therefore, the impetus for vocational education to empower the development of new quality productive forces can be enhanced, providing strong talent support for high-quality development.

Keywords: Vocational Education; New Quality Productive Forces; Industry-education Integration; Talent Cultivation; System

1. Introduction

New quality productive forces are an important driving force for high-quality development.

New quality productive forces are a new concept, which has important guiding significance for promoting Chinese path to modernization and high-quality development of education, and provides an important theoretical basis for the strategy of strengthening the country through science and technology, education and its implementation. Cultivating talents is the core mission of education. Talents are the primary resource for developing new quality productive forces and the most decisive force driving technological innovation and application. Therefore, in order to develop new quality productive forces, it is not only necessary to cultivate scientific and technological innovation talents, but also to cultivate a large number of high-quality technical and skilled talents with strong application abilities. The latter requires vocational education to provide strong support for talent cultivation. The industry-education integration is the core model of vocational education, which is an organic connection point between the industry chain, talent chain, innovation chain, and education chain. The industry-education integration is an important measure to promote the virtuous cycle and integrated development of education, technology, and talent. It points out the goals and directions for improving the development ability of vocational education to serve new quality productive forces and carrying out talent cultivation. Therefore, understanding the basic connotation of new quality productive forces, analyzing the logical mechanism between vocational education and the development of new quality productive forces, exploring the practical path of industry education integration and talent cultivation, and proposing implementation measures have important theoretical value and practical

significance.

2. The Basic Connotation of New Quality Productive Forces

New quality productive forces are a modern form of productive forces that is mainly led and supported by emerging and disruptive technologies, promoting high-quality development. It is also the practical result of scientific breakthroughs and technological changes driving deep industrial transformation and upgrading[1]. The "new quality" of new quality productive forces can be understood as "innovation and quality excellence". It takes technological innovation as the primary driving force, and is born from the "three factors" (revolutionary breakthroughs in technology, innovative allocation of production factors, and deep transformation and upgrading of industries). The "three new" (new industries, new kinetic energy, and new models) are the core elements, and the "three high" (high -technology, high-efficiency, and high-quality) are the main characteristics. Through the leapfrog optimization of the "three elements" (workers, labor materials, and labor objects) combination, significant improvement in total factor productivity is achieved.

New quality productive forces are the driving force for high-quality development, and high-quality development is the fundamental point of new quality productive forces. At present, the main ways to develop new quality productive forces include: cultivating urgently needed talents with high quality and transporting more high-quality workers; Timely application of technological innovation achievements and construction of a modern industrial system; Strengthening emerging industries and cultivating future industries, transforming and upgrading traditional industries, breaking away from traditional economic growth methods and traditional productive forces development paths; Vigorously promoting the digital economy and green development, comprehensively deepening reforms to form new types of production relations, etc.

3. The Intrinsic Logic of Bidirectional Driving Force between New Quality Productive Forces and Vocational Education Development

Education, as a subsystem of society, has a close relationship with social productive forces [2]. The level of productive forces directly determines the level of education. Productive forces are the ultimate factor in the development of education, and education promotes the development of productive forces by cultivating talents and providing high-quality labor force. Vocational education is an important component of education, so new quality productive forces and the development of vocational education promote each other, and there is an inherent logical relationship between the two, which is driven in both directions.

3.1 New Quality Productive Forces Promote the Development and Innovation of Vocational Education

At present, it is in a new stage of technological revolution. Advanced technologies such as artificial intelligence, big data, blockchain, cloud computing, and the Internet of Things have triggered deep industrial transformation and rapid transformation and upgrading. Many technology industries are showing a trend of rapid and intensive breakthroughs, and have a profound impact on the development of society, economy, education, and other fields. New quality productive forces are advanced productive forces that is born from the above process, with technological innovation as the core, and promotes high-quality development of the social economy. It will have a systematic and structural impact on the development of education.

The new quality productive forces promote the improvement and transformation of the concept of vocational education talent cultivation. The emergence and popularization of digital technology make information acquisition fast and easy. The vocational education concept dominated by knowledge teaching and skill cultivation gradually shift towards personalized, differentiated, and all-round education. Secondly, new quality productive forces promote the optimization and adjustment of talent cultivation goals, shifting towards cultivating high-quality composite talents and applied innovative talents with multiple technical skills; Once again, new quality productive forces promote the dynamic integration of vocational education with new trends in technological

development, optimize the setting of disciplines and professional groups, adjust the curriculum system and teaching content; New quality productive forces promote the transformation of education and teaching methods. New technologies such as artificial intelligence, big data, and virtual reality make education and learning more spatiotemporal, informal, and ubiquitous, forming a learning ecosystem that can be learned anytime and anywhere; Finally, the new quality productive forces also promote the deepening of governance strategies and measures in vocational education.

3.2 Vocational Education Promotes the Formation and Development of New Quality Productive Forces

Workers, means of labor, and objects of labor constitute the three major elements of productive forces, with workers being the first of the three. On the one hand, technological innovation is the primary driving force for the formation and development of new quality productive forces. The key to technological innovation lies in talent, and high-quality education provides core support for cultivating innovative talents. On the other hand, timely application of technological innovation achievements is an important way to develop new quality productive forces.

Therefore, in addition to innovative talents, the development of new quality productive forces also requires a large number of high-quality technical and skilled talents with strong application capabilities. This requires vocational education to provide talent cultivation support, specifically apply innovative achievements to industrial enterprises, and transform advanced technologies into new quality productive forces. Therefore, through high-quality education, vocational colleges can cultivate high-quality technical and skilled talents, enhance the comprehensive quality of workers in the era of new quality productive forces, enhance the application technical skills of labor materials and production tools in new quality productive forces, improve the efficiency and efficiency of processing labor objects in new quality productive forces, and further strengthen the cognitive updating and technological innovation of workers towards labor objects and labor materials, forming a

virtuous cycle, thereby promoting the full release of development efficiency in new quality productive forces and promoting high-quality economic and social development. In the past decade, vocational education in China has trained approximately 61 million technical and skilled talents, providing human resource support for productive forces improvement and socio-economic development; Looking ahead to the new stage, with the development of new quality productive forces, higher requirements have been put forward for talent cultivation. Vocational education provides high-quality human resources supply to help accelerate the formation and development of new quality productive forces.

4. The Supply and Demand Mechanism of Vocational Education and New Quality Productive Forces on Talents

Vocational education and new quality productive forces are the supply and demand sides of technical and skilled talents, respectively. On the demand side, developing new quality productive forces requires vocational education to dynamically improve the quality of talent supply; On the supply side, high-quality vocational education provides high-quality technical and skilled personnel protection for new quality productive forces.

4.1 The Development of New Quality Productive Forces Poses New Demands for Vocational Education Talent Cultivation

Human beings are the most decisive force in productive forces, and the first resource for developing new quality productive forces are talents. Vocational education is required to increase talent cultivation efforts in accordance with the specific requirements of modern industrial system construction. As an advanced productive force that conforms to the new development concept, the development of new quality productive forces requires a large number of high-quality technical and skilled talents who can adapt to the rapid development of technology and have strong application capabilities. This puts higher demands on the quality of vocational education skills and technical talent cultivation. At present, the formation and development of new quality productive forces are becoming increasingly urgent, requiring vocational colleges to accelerate the supply of high-quality human

resources, with application-oriented talents as the main focus, focusing on new growth engines such as digital economy, low altitude economy, green economy, biological manufacturing, and commercial aerospace. Targeting eight fields such as new generation information technology, new energy, new materials, high-end equipment, new energy vehicles, green environmental protection, civil aviation, shipbuilding and marine engineering equipment, adhering to the principle of combining morality and technology, cultivating and delivering high-quality technical and skilled talents for the development of new quality productive forces, emphasizing the enhancement of core abilities such as new technology research and integration, new technology application and application skills, continuous growth and lifelong learning, and enhancing the craftsmanship spirit, sustainable development concept, and awareness of a community with a shared future for mankind of talents.

4.2 Vocational Education Provides High-Quality Technical and Skilled Talents to New Quality Productive Forces

High quality technical and skilled personnel are an important force in forming and developing new quality productive forces. Scientific and technological progress requires the drive of innovative talents, while the application of new technological systems requires strong support from high-quality technical and skilled talents. Only when advanced science and technology are transformed into advanced production tools can the means of production be transformed into new quality productive forces, and this transformation process must be completed by high-quality producers. The advantage of productive forces can only be fully reflected through the use of high-quality technical and skilled personnel. Compared to research-oriented universities that focus on cultivating academic and innovative talents, higher vocational education undergraduate and vocational colleges, as well as secondary vocational colleges, should cultivate talents that adapt to the development of new quality productive forces based on the multi-level needs of modern industrial system construction, and accelerate the formation of a composite, digital, and innovative talent team and human

resource pool covering engineering, technology, and skills fields.

At the same time, vocational colleges accelerate the exploration and development of master's level vocational education, cultivate applied research and technology development talents, and timely explore doctoral level vocational education and cultivate high-level applied innovation talents. By optimizing the type positioning, constructing a well-structured and reasonable talent cultivation level system, developing vocational education with high quality in all aspects, timely delivering high-quality workers for the development of new quality productive forces, fully unleashing the efficiency of new quality productive forces, and providing strong support for vigorously promoting the construction of modern industrial systems.

5. Industry-Education Integration and Talent cultivation System for Empowering New Quality Productive Forces through Vocational Education

Talents are the primary resource for developing new quality productive forces, and talent cultivation is a key link in developing new quality productive forces. Vocational education is the core support for cultivating technical and skilled talents. Improve the quality and skills of workers, cultivate new quality talents that are suitable for the development of modern technology and social productive forces, and meet the needs of new quality productive forces[3]. Vocational colleges should improve the accuracy of talent supply and cultivation quality, enhance the ability to serve the development of new quality productive forces, and improve the integrated talent cultivation system from the dimensions of direction goals, platform mechanisms, and development layout.

5.1 Direction Goal: Adapt to the Development Needs of New Quality Productive Forces, Improve the Accuracy of Talent Supply and the Quality of Cultivation

Firstly, dynamically optimize the disciplinary and professional settings and talent supply structure. For a modern industrial system, a large number of high-quality technical and highly skilled talents are needed to provide frontline support in production services and

operation management positions. However, the modern vocational education system is not perfect enough, which hinders the systematic training channels for technical and skilled talents, and the phenomenon of talent cultivation not adapting to the needs of industries is prominent [4]. To face the transformation of traditional industries, the growth of emerging industries, and the cultivation of future industries, based on the demand of new quality productive forces for talents under the new opportunities of industrial upgrading, dynamic optimization of vocational education disciplines, dynamic adjustment of professional catalogs and structures, and timely addition of urgently needed majors to support the construction of modern industrial systems; Focusing on the trend of high-end, green, and intelligent development, focusing on key industry clusters, timely adjusting professional layout, optimizing talent supply structure, promoting the upgrading and iteration of talent technical skills, actively responding to industrial changes, and strengthening collaborative talent cultivation.

Secondly, enhance the coupling between talent supply and the development of new quality productive forces. Improve the dynamic updating mechanism of vocational education, establish a system for predicting and regularly releasing talent demand, and ensure that talent supply closely aligns with the requirements and development trends of the industrial chain layout; Strengthen the implementation of supporting policies for industry-education integration, promote the joint development of professional construction and talent cultivation programs by schools and enterprises, jointly build professional and curriculum systems, jointly compile core curriculum textbooks, and share teaching tasks, especially practical courses. Through the full process of practical joint cultivation of talents, promote the coordinated development of industry and education, correct the mismatch between talent supply and demand, improve the accuracy of talent supply, effectively improve the compatibility between talent supply and industrial enterprise demand, and enhance the coupling of vocational education with the development of new quality productive forces. Thirdly, adapting to the development needs of new quality productive forces and coordinating

efforts to improve the quality of talent cultivation. At present, China has established a large-scale vocational education system and opened a large number of vocational colleges, but there are problems of mismatch and adaptation between vocational education at different levels and the actual needs of industrial enterprises to varying degrees. The educational positioning is unclear, disconnected from the needs of industry enterprises, and the degree of matching between major settings and talent cultivation with the industry is not high [5]. Therefore, vocational education should face the construction of a modern industrial system, closely meet the development needs of new quality productive forces, coordinate efforts, and take multiple measures to improve the talent cultivation system, build the industry-education integration community, build a digital vocational education teaching model, and focus on improving the quality of talent cultivation, thereby enhancing the ability of vocational education to serve the development of new quality productive forces.

5.2 Platform Mechanism: Carry out a High-Quality Construction of the Industry-Education Integration Community, Enhancing the Development Capacity of Serving New Quality Productive Forces

To develop new quality productive forces, it is necessary to timely apply scientific and technological innovation achievements to specific industries and industrial chains [6]. Industry is the main foothold of new quality productive forces, and colleges should focus on high-quality development of industries, promote industry-education integration, and break away from the inherent scope of talent cultivation. The focus should be gradually shifted from the supply side of industry and education integration bases, colleges, majors, courses, etc., to the industrial chain layout and industrial system construction in the era of new quality productive forces; The construction of the industry-education integration community needs to shoulder the mission of developing new quality productive forces, deeply integrating the development needs of new quality productive forces into the entire process of building the industry-education integration community. The industry-education integration community fully highlights the

satisfaction of the needs of industry enterprises and is a new organizational form that supports the high-quality development of the industry [7].

Firstly, improve the organizational structure and operational mechanism of the industry-education integration community. Led by the core entities of the industrial chain, all can aim to build the industry-education integration community, coordinate the resources of upstream and downstream enterprises and vocational colleges in the industrial chain, improve the operational mechanism of the community, enhance the organizational structure of the community, and optimize the path for promoting construction. During the construction process, efforts should be made to effectively solve existing problems such as low operational efficiency, high management costs, and disputes over property rights in industry-education integration. All members should participate in the formulation of the constitution of industry-education integration and the design of the organizational structure, forming a sound, standardized, and dynamically adjusted operating mechanism. To promote the pilot, demonstration, and standard construction of city level industry education consortia and industry-education integration communities, all should focus on key areas, research and explore together with local governments, departments, and industries, enhance our ability to serve the overall economic and social development, and enable the cultivation of high skilled talents and great country craftsmen to gain practical experience [8].

Secondly, enhance the new momentum of community construction and industry-education integration. On the one hand, it can enhance the new momentum of building the industry-education integration community. In the past, industry-education integration was mainly driven by government departments and mainly adopted a public resource consumption driven model. In the stage of developing new quality productive forces, the construction of a new type of industry education integration community is mainly driven by the education and industry ends, and the driving force comes from the collaborative endogenous power of the two ends, thereby breaking away from the consumption driven mode of public resources and obtaining knowledge and technology

spillover effects of cross regional and cross category collaboration and heterogeneous production elements. Through the deep participation and collaborative construction of industry leading enterprises and high-level universities, integrating the high-quality resources of all members of the community, promoting the connection and coupling of technological innovation and application upstream, midstream, and downstream, achieving high-quality cooperation between industry, academia, and research, and driving other industries to carry out the construction of the industry-education integration community. On the other hand, deepening institutional reform promotes open education and enhances industry-education integration. The education department should further delegate power, encourage vocational education to open up to society and operate independently, and provide policy guidance, funding, digital construction and other support, so that vocational colleges, especially "double high" colleges, can step out of the wall, out of the campus, into society, and into enterprises, enhance the depth of industry education integration and school enterprise cooperation, and improve the effectiveness of industry university research cooperation. Therefore, in accordance with the requirements of developing new quality productive forces, in the process of promoting a virtuous cycle of "education technology talent", it can stimulate the vitality of the elements of new quality productive forces and fully realize the comprehensive value of professional knowledge, technology, and skills. Thirdly, enhance the dual functions of the community and improve the quality of output. In the past, industry-education integration was mostly limited to vocational colleges at the school level, while the new type of the industry-education integration community has expanded its breadth and depth in terms of participating entities, regional space, resource integration, and collaborative operation. It requires "double high" colleges, vocational undergraduate colleges, and high-quality applied universities to concentrate advantageous resources, collaborate with industrial enterprises to gather high-quality resources, and carry out community construction with the development needs of new quality productive forces as the main line, focusing on enhancing the dual functions of

talent cultivation and technological application innovation. Firstly, build a high-quality platform, industrial college, and practical cultivation and internship base for transforming scientific and technological achievements, collaborate to cultivate urgently needed talents to support the development of new quality productive forces, and achieve substantial results in industry-education integration, industrial college, and school enterprise co construction of majors (groups) and courses. Secondly, substantial progress has been made in areas such as the transformation of scientific and technological achievements, important technological breakthroughs, technology promotion and application, construction of demonstration zones for collaborative innovation of industry education integration, and layout of new quality productive forces industrial chains, with a focus on improving the quality of output results.

5.3 Development Layout: Improve the Integrated Talent Cultivation System

A comprehensive education concept should be established, adhere to a global perspective, and uphold a systematic concept. Talent cultivation to support the development of new quality productive forces are a systematic project that starts from basic education, orderly connects and integrates various stages of learning. All cannot focus on one aspect but should coordinate efforts.

Firstly, improve the multi-level system of vocational education. Facing the transformation of traditional industries, the growth of emerging industries, and the cultivation of future industries, the system should anchor the specific needs of developing new quality productive forces for technical and skilled talents, establish a multi-level vocational education system that adapts to the requirements of multi-level talent cultivation, accelerate the formation of a talent cultivation structure that integrates and connects the "medium high undergraduate research" stages, focus on building a solid foundation for vocational education at the college and undergraduate levels, cultivate a soil for talent cultivation, and strive to improve the quality of talent cultivation; At the same time, actively exploring the development of vocational education at the master's and even doctoral

levels, in order to cultivate innovative talents in technology research and application, and to make long-term planning and layout for the talent echelon construction of new quality productive forces development.

Secondly, breaking down academic barriers and building an integrated cultivation model. Taking institutional innovation as a breakthrough point, deepening education system reform, and coordinating basic education, vocational education, and higher education. To support the cultivation of new quality productive forces, an integrated cultivation model should be scientifically designed for talent selection, curriculum system, teaching mode, quality evaluation, and other aspects. At different stages of talent cultivation, relying on government led employment and entrepreneurship systems, industry enterprise led internship and practice systems, and school led curriculum and teaching systems, education can gradually break down barriers between different stages of education, develop and implement personalized and differentiated talent cultivation plans, deepen industry education integration and science education collaboration, and thus form an educational ecosystem that adapts to the development of new quality productive forces.

Thirdly, establish a long-term mechanism for the integration of coursework and majors, as well as the intersection of disciplines. Firstly, establish a long-term mechanism for integrating coursework and majors. Promote the coordinated development of basic education, vocational education, and higher education, explore the connection between the curriculum of basic education, vocational education, and higher education majors, and establish a long-term mechanism for the integration of curriculum and majors around the aspects of cultivation objectives and positioning, cultivation content and curriculum design, cultivation environment and conditions. Secondly, explore the cultivation paradigm of interdisciplinary integration. The basic characteristics of the development stage of new quality productive forces are interdisciplinary, knowledge integration, and technology integration. Through interdisciplinary, cross disciplinary, and interconnected methods, it promotes the integration of various stages and disciplines,

and cultivates students with comprehensive qualities of interdisciplinary knowledge and technology integration innovation; At the same time, in response to personalized development needs, courses are set up, teaching and evaluation methods are optimized, and the concept of "tailored teaching" is gradually implemented to support students in achieving personalized growth and differentiated development.

6. Conclusion

Talents are the primary resource, and the development of new quality productive forces requires a large number of high-quality technical and skilled talents, and vocational education needs to provide stronger talent support. In the new era, facing the urgent requirement of developing new quality productive forces, vocational education still faces practical challenges. We should accelerate the promotion of education reform, create favorable conditions and explore innovative paths for the construction of an education strong country. Vocational colleges should take multiple measures in accordance with the specific requirements of developing new quality productive forces for talent cultivation, including direction goals, platform mechanisms, and development layout, to improve the accuracy of talent supply and cultivation quality, enhance the ability to serve the development of new quality productive forces, and improve the integrated talent cultivation system. Therefore, enhancing the driving force of vocational education to empower the development of new quality productive forces, providing high-quality human resource guarantees, and promoting high-quality economic and social development.

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