Practical Dilemmas and Practice Paths for the Construction of Innovative Higher Vocational Colleges under the Background of the Development of New-Quality Productivity

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Abstract: The development of new-quality productivity has put forward brand-new requirements for the cultivation of technical and skilled talents. As an important force driving the formation of new-quality productivity, the cultivation of "new professionals" has become the core mission of the times for higher vocational colleges. At present, the talent cultivation of higher vocational colleges faces problems such as low alignment with industrial development and mismatch between talent supply and the competency requirements of new occupations, making it difficult to meet the cultivation needs of "new professionals" under the background of new-quality productivity. With Marxist theory of productivity as the core support, this paper adopts the methods of literature research and theoretical analysis, combines the actual development of vocational education, analyzes the practical dilemmas of higher vocational colleges in cultivating "new professionals", and puts forward specific paths from three dimensions: the transformation of school-running philosophy, the innovation of school-running mode and the construction of innovative colleges. It aims to promote higher vocational colleges to build a cultivation system for "new professionals" through the in-depth integration of educational innovation, scientific and technological innovation and industrial innovation, so as to provide high-quality technical and skilled talent support for the development of new-quality productivity.

Keywords: new-quality productivity; higher vocational colleges; new professionals; integration of industry and education; vocational education innovation

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1.Introduction

New-quality productivity is an advanced form of productivity which is dominated by scientific and technological innovation and deeply integrated with the emerging industry and future industry. Its formation and development rely on the core driving force of scientific and technological innovation and the solid support of innovative talents. Marxist theory of productivity points out that laborers are the most dynamic and creative element among all factors of productivity, and the fundamental driving force for promoting the development of productivity and social progress. Under the background of the in-depth integration of the digital economy and industrial transformation, "new professionals", as new-type laborers engaged in emerging occupations, mastering new technologies, and possessing innovative capabilities and digital literacy, have become the main link connecting all elements of new-quality productivity and also the core goal of talent cultivation in higher vocational colleges.

As a type of education most closely linked to industrial development, vocational education is the main position for cultivating high-quality technical and skilled talents, and undertakes an important mission of talent supply in the cultivation of new-quality productivity. However, the current school-running models and talent cultivation systems of higher vocational colleges in China still bear the imprint of the industrial economy era. The "alignment" between

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vocational education and industrial development and the "matching degree" between talent supply and industrial demand are relatively low. There are obvious gaps between the talents cultivated and the competency requirements of "technicians", "specialists" and "mentors" in new occupations in terms of innovative ability, digital literacy, engineering thinking and other aspects. In this context, higher vocational colleges are in urgent need of taking the new development philosophy as the guide, breaking the practical problems of cultivating "new professionals" by building innovative colleges and implementing systematic model reforms, and earnestly undertaking the era mission of cultivating new-type laborers for the development of new-quality productivity. Based on the era requirements of the development of new-quality productivity and combined with the actual development of higher vocational colleges, this paper explores the paths for the construction of innovative higher vocational colleges and the cultivation of "new professionals", providing theoretical reference and practical ideas for vocational education to serve the development of new-quality productivity.

2.Definition of Core Concepts and Theoretical Support

2.1 Definition of Core Concepts

2.1.1 New-quality Productivity

New-quality productivity is an advanced form of productivity different from traditional productivity. With scientific and technological innovation as the core driving force, the digital economy as an important engine, and emerging industries and future industries as the main carriers, it realizes the efficient allocation of production factors, the digital upgrading of production tools and the intelligent transformation of production methods. It has the characteristics of innovation-dominance, technological advancement and industrial integration, and is an important driving force for promoting the high-quality development of the economy.

2.1.2 New Professionals

"New professionals" are new-type laborers who serve emerging industries, engage in new occupations and work in new positions. Their core characteristics reflect the dual requirements of "novelty" and "quality": at the technical level, they master new technologies, use new production tools, and possess good digital literacy and green skills; at the ability level, they have innovative capabilities, engineering thinking, skill transfer capabilities and lifelong learning capabilities; at the professional quality level, they adapt to digital production methods and possess soft skills such as communication and cooperation, and problem-solving. High-quality technical and skilled talents are an important part of "new professionals" and also the core target of higher vocational colleges in cultivating "new professionals".

2.1.3 Innovative Higher Vocational Colleges

Innovative higher vocational colleges take cultivating innovative "new professionals" adapted to the development of new-quality productivity as the core goal, take the innovation of school-running philosophy, school-running mode, talent cultivation and technical services as the core connotation, and realize the in-depth integration of educational innovation, scientific and technological innovation and industrial innovation. Its core characteristics are: adhering to the people-oriented and digital school-running philosophy, constructing a multi-stakeholder collaborative school-running mode, having an innovation platform for the integration of industry and education, being able to provide talent support and technical services for industrial development, and serving as an important carrier for vocational education to support the development of new-quality productivity.

2.2 Theoretical Support

2.2.1 Marxist Theory of Productivity

Marxist theory of productivity is the core theoretical basis for studying the cultivation of "new professionals" in higher vocational colleges. This theory holds that productivity consists of three major elements: laborers, means of labor and objects of labor, among which laborers are the most dynamic and creative element. The improvement of

laborers' quality and the innovation of skills are the fundamental driving forces for the development of productivity. The development of new-quality productivity is essentially a qualitative leap of all factors of productivity, and the improvement of the quality and ability of "new professionals" as new-type laborers directly determines the speed and quality of the development of new-quality productivity. As the main position for cultivating high-quality technical and skilled talents, the core goal of talent cultivation in higher vocational colleges is to improve laborers' innovative capabilities, digital literacy and professional abilities, promote the adaptation of laborers to new means of labor and objects of labor, thereby promoting the formation and development of new-quality productivity.

2.2.2 Theory of the Integration of Industry and Education

The theory of the integration of industry and education emphasizes the in-depth integration of vocational education and industrial development, and is the core theory for the operation of vocational education. This theory holds that the development of vocational education must rely on and serve the industry, and the demand of industrial development is the fundamental orientation of talent cultivation in vocational education. Under the background of new-quality productivity, the digital and intelligent transformation of industrial structure requires vocational education to break the barriers between schools and enterprises, build a a multi-stakeholder collaborative mechanism for the integration of industry and education, promote enterprises to deeply participate in the whole process of talent cultivation, and realize the accurate matching between talent cultivation and industrial demand. This is also the key path for the construction of innovative higher vocational colleges and the cultivation of "new professionals".

2.2.3 Theory of Lifelong Education

The theory of lifelong education emphasizes that education is a continuous process throughout one's life, and requires educational institutions to provide resources and platforms for lifelong learning for learners. Under the background of new-quality productivity, the speed of technological iteration is accelerating and new occupations are emerging one after another. "New professionals" must possess lifelong learning capabilities to adapt to the needs of career development. As the main position of vocational education, higher vocational colleges should not only cultivate students' professional skills, but also build a lifelong learning system, cultivate students' learning habits and abilities, provide continuous technical support for the career development of "new professionals", which is also the core embodiment of the people-oriented school-running philosophy.

3.Practical Dilemmas of Higher Vocational Colleges in Cultivating "New Professionals" for New-Quality Productivity

3.1 Lagging School-running Philosophy, Unable to Adapt to the Cultivation Requirements of "New Professionals"

On the one hand, some higher vocational colleges still adhere to the traditional school-running philosophy of "employment-oriented", simply equating vocational education with employment education, resulting in the phenomenon of self-"degradation" and "narrowing" in the school-running process. In pursuit of students' immediate employability, they overemphasize the proficiency of a single skill, adopt the training method of cramming-style skill training and mechanical "practice makes perfect", ignoring the construction of students' professional knowledge system and the cultivation of innovative capabilities and engineering thinking. This leads to students' weak skill transfer capabilities, making it difficult for them to adapt to the development needs of new occupations and new positions. On the other hand, the digital school-running philosophy of higher vocational colleges has not been fully established. Most colleges still stay in the "informatization" stage, only paying attention to the use of digital tools, but not integrating the digital philosophy into the whole process of school operation. There are obvious deficiencies in the digital transformation of majors, the digital construction of teaching resources, and the cultivation of teachers' digital literacy, making it difficult to cultivate "new professionals" with good digital literacy.

3.2 Rigid School-running Mode, Insufficient Depth and Breadth of the Integration of Industry and Education

The traditional school-running mode of vocational education is adapted to the cultivation of technical and skilled talents in the industrial economy era, and is difficult to meet the cultivation needs of "new professionals" under the background of new-quality productivity. Although higher vocational colleges have explored a variety of school-running models such as the "dual-system", "work-integrated learning", "modern apprenticeship system" and "school-enterprise co-constructed industrial colleges", their core goal is to realize the school-enterprise "dual-subject" talent cultivation. However, in practice, the integration of industry and education still has the problems of "superficiality" and "formalization". On the one hand, most enterprises participating in the operation of vocational education are educational industry enterprises, while leading enterprises and specialized, sophisticated, distinctive and innovative enterprises that master the core technologies of the industry have low willingness and shallow degree of participation, making it difficult to integrate the enterprise's core technologies, production standards and post requirements into the whole process of talent cultivation. On the other hand, the governance subject of vocational education is relatively single, the collaborative mechanism of multi-stakeholders such as the government, enterprises and industry associations has not been improved, and the substantive operation level of municipal industry-education consortia and cross-regional industry-education integration communities is low, making it difficult to gather industry-education resources and form a joint force for collaborative talent cultivation.

3.3 Weak Innovative Capability of Colleges, Lack of Innovation Platforms for the Cultivation of "New Professionals"

Insufficient innovation capability is a common shortcoming in the development of current higher vocational colleges. In the eyes of enterprises, most higher vocational colleges are only "human resource suppliers", rather than "technology providers" and "innovation partners", and are in the marginal position in the national scientific and technological innovation system. On the one hand, the major setting of higher vocational colleges is still dominated by traditional majors, the professional layout for future industries is lagging behind, and the degree of professional interdisciplinary integration is low, making it difficult to cultivate "new professionals" adapted to the development of future industries. On the other hand, higher vocational colleges lack a sound innovation platform. Teacher development centers still mainly rely on traditional offline training, failing to adapt to the development requirements of the digital age; the construction level of scientific research platforms is low, and technical cooperation with enterprises mostly stays at the level of simple technical services, making it difficult to carry out in-depth innovation activities such as technological research and development and pilot-scale testing and maturation. It is impossible to provide students with real innovative practice scenarios, resulting in the ineffective cultivation of students' innovative capabilities.

4.Path Exploration for Higher Vocational Colleges in Cultivating "New Professionals" for New-Quality Productivity

4.1 Transform the School-running Philosophy and Lay a Solid Conceptual Foundation for the Cultivation of "New Professionals"

The school-running philosophy is the soul of the development of higher vocational colleges. To cultivate "new professionals" adapted to the development of new-quality productivity, it is first necessary to realize the dual transformation of the school-running philosophy: from "employment-oriented" to "people-oriented philosophy", and from "informatization" to "digitalization", so as to serve the personalized cultivation and all-round development of students.

4.1.1 Transform from Employment Orientation to People-oriented Philosophy and Cultivate Students' Comprehensive Quality

Higher vocational colleges should abandon the traditional cognition that "vocational education is employment education", put the cultivation of students' lifelong learning ability and skill transfer ability in the first place, and

build a trinity talent cultivation system of "knowledge + skills + quality". In the process of talent cultivation, avoid overemphasizing the training of a single skill, pay attention to the construction of students' professional knowledge system, organically integrate theoretical knowledge into learning scenarios and teaching projects, and make up for the shortcomings of students' knowledge system. At the same time, integrate learning habits, problem awareness, innovation awareness, engineering thinking, strategic methods and other elements into all links and factors of talent cultivation, enhance students' professional awareness, guide students to establish the concept of lifelong learning, enable them to adapt to the development needs of new occupations and new positions, and grow into "new professionals" keeping pace with the times.

4.1.2 Transform from Informatization to Digital Philosophy and Improve Students' Digital Literacy

Higher vocational colleges should integrate the digital philosophy into the school-running philosophy, write digital tasks into the school constitution, and promote the all-round digital transformation of school-running mode, talent cultivation, teaching reform, teaching staff, technological innovation, social services, international cooperation and other aspects. Through the construction of digital campuses, build a new digital foundation, create new digital scenarios and form new digital spaces, promote the digital transformation of majors and the digital construction of teaching resources and practical training systems. At the same time, restructure the quality and ability structure of teachers in the digital age, improve teachers' digital teaching ability, use digital evaluation to "portrait" students' growth, realize the transformation from standardized cultivation of "one size fits all" to personalized cultivation of "teaching students in accordance with their aptitude", cultivate students' digital operation ability, digital thinking ability and digital innovation ability, and lay a solid foundation for the digital literacy of "new professionals".

4.2 Promote Systematic Model Reform and construct an Industry-education Integration Mechanism for the Cultivation of "New Professionals"

Under the background of new-quality productivity, the transformation of industrial structure forces the innovation of vocational education school-running mode. Guided by the *Opinions on Deepening the Construction and Reform of the Modern Vocational Education System* and the *Opinions on Deepening the Reform of Key Elements of Vocational Education Teaching*, higher vocational colleges should rely on the "two-wing" framework of municipal industry-education consortia and cross-regional industry-education integration communities, implement systematic reforms of the school-running mode, promote the leap-forward development of the vocational education system, achieve a high level of school-running capacity and high quality of industry-education integration, promote the transformation of vocational education talent cultivation from single knowledge imparting to comprehensive ability improvement, construct a multi-stakeholder collaborative industry-education integration mechanism, and realize the accurate matching between talent cultivation and industrial demand.

4.2.1 Promote the Substantive Operation of Municipal Industry-education Consortia and Industry-education Integration Communities

Higher vocational colleges should take the initiative to connect with the development of regional economic and social development and the needs of industrial sectors, promote the substantive operation of municipal industry-education consortia, deepen the "Four Cooperations" between schools and enterprises, advance the construction of the "Five Golds", build a cooperation platform for multi-stakeholders such as the government, enterprises, industry associations and higher vocational colleges, and promote all stakeholders to deeply participate in the operation of vocational education. At the same time, actively integrate into cross-regional industry-education integration communities, give play to the leading role of leading enterprises and high-level universities, connect with the core technologies of the industry and the development trend of the industry, add value and empower the development of the industry, and realize the dual goals of vocational education serving regional development and industrial development.

4.2.2 Construct a New Type of Multi-stakeholder Collaborative Vocational Education School-Running Mode

Higher vocational colleges should take the initiative to seek changes, explore a government-led path of diversified governance subjects, and design a new school-running mode that adapts to the substantive operation of the council and gathers industry-education resources. Under the "two-wing" framework, focus on cultivating "new professionals" who adapt to digital production methods and master new production tools, iterate talent cultivation goals, provide personalized learning paths, and increase the supply of digital learning resources. At the same time, carry out all-round reforms on the talent cultivation mode, teaching mode, curriculum construction mode, teacher training mode and international development mode, provide mode support for multi-stakeholder collaborative talent cultivation, professional digital transformation, teaching digital transformation and the improvement of teachers' digital literacy, attract leading enterprises and specialized, sophisticated, distinctive and innovative enterprises that master the core technologies of the industry to deeply participate in school operation, and integrate the enterprise's production standards, post requirements and core technologies into the whole process of talent cultivation.

4.3 Grasp the Three Fulcrums, Build Innovative Higher Vocational Colleges, and Create an Innovation Platform for the Cultivation of "New Professionals"

Building innovative higher vocational colleges is the core carrier for cultivating "new professionals". From the perspective of implementation and operation, higher vocational colleges should grasp the three fulcrums of "Future Industry College", "New Form Teacher Development Center" and "New Form Scientific Research Platform", open up the last mile of cultivating "new professionals", and improve the innovative capacity and talent cultivation quality of colleges.

4.3.1 Build Future Industry Colleges and Cultivate the Future Professional Competencies of "new professionals"

Future Industry College is the core platform for higher vocational colleges to connect with the development of future industries and cultivate future "new professionals", and its core positioning is a digital integration, innovation and cross-border platform. Higher vocational colleges should focus on one or more future technology fields such as artificial intelligence, new energy, new materials and biomedicine, link new industries, new occupations, new technologies, new professionals and new models, take "industry, learning, research, innovation and application" as the work objects, and promote the interdisciplinary integration of majors. In the construction process, take the innovation of talent cultivation mode, the construction of digital and intelligent majors, the reshaping of modular curriculum system, the construction of open industry-education integration practice centers, the cultivation of teachers' digital literacy, the innovation of teaching organization forms, and the construction of industry-university-research service platforms as the main tasks, cultivate students to master future professional competencies such as digital technology and green skills, cultivate students' soft skills such as creativity, engineering thinking, skill transfer, lifelong learning, communication and cooperation, and enable them to adapt to the development needs of future industries.

4.3.2 Build New Form Teacher Development Center and Improve Teachers' Innovative Teaching Ability

Teachers are the core force in the cultivation of "new professionals". Higher vocational colleges should transform and integrate the physical teacher development centers, build a metaverse for teacher development integrating virtual and real, and provide teachers with diversified, virtual role-based, highly interactive, immersive and real-time services. Connect the real teacher training scenarios, practical training base scenarios, enterprise production scenarios, communication and consultation scenarios with virtual scenarios, create teacher digital humans and expert digital humans, build virtual enterprise practice centers and virtual practical training simulation bases, help teachers decompose and restructure the existing knowledge system, cultivate teachers' innovative capabilities targeting technological transformation, improve teachers' digital teaching ability, industry-education integration ability and scientific research innovation ability, construct a new form teacher development platform oriented to

technological creation, and provide teaching staff support for the cultivation of "new professionals".

4.3.3 Build New Form Scientific Research Platform and Strengthen the Innovative Practice Support for the Cultivation of "New Professionals"

Scientific research platforms are an effective way to promote the integration of industry and education and the integration of science and education, and also an important carrier for cultivating students' innovative capabilities. Higher vocational colleges should focus on regional strategic emerging industries and the forefront of new technologies, establish a four-level platform linkage mechanism of "school - municipal - provincial - national", and improve the mechanism of achievement sharing, risk sharing, evaluation and assessment of the platform. Taking the practical problems of enterprises as the research object, construct a substantive technical research institute with leading talents and innovation teams as the core, interdisciplinary integration of multiple professional fields, and the integration of artificial intelligence and scientific research, carry out activities such as technical customization, testing and inspection, pilot-scale testing and maturation, and industrialization development, serve the needs of small, medium and micro enterprises in equipment transformation and technological research and development, and open up the last mile of technology landing. At the same time, combine scientific research platforms with talent cultivation, provide students with real innovative practice scenarios, let students participate in the technological research and development and project research of enterprises, and cultivate students' innovative capabilities and engineering thinking in practice.

5.Research Conclusions and Prospects

5.1 Research Conclusions

The development of new-quality productivity has put forward brand-new requirements for the talent cultivation of higher vocational colleges, and the cultivation of "new professionals" has become the core mission of the times for higher vocational colleges. Supported by Marxist theory of productivity, the theory of the integration of industry and education and the theory of lifelong education, this paper adopts the methods of literature research and theoretical analysis, analyzes the practical dilemmas of higher vocational colleges in cultivating "new professionals", and puts forward corresponding solutions, drawing the following core conclusions:

First, the core dilemmas of higher vocational colleges in cultivating "new professionals" lie in the lagging school-running philosophy, rigid school-running mode and weak innovative capabilities, which make it difficult to adapt to the quality and ability requirements of new-type laborers by new-quality productivity. This is also the fundamental reason for the low alignment between vocational education and industrial development and the mismatch between talent supply and industrial demand.

Second, transforming the school-running philosophy is the premise for cultivating "new professionals". Higher vocational colleges need to realize the dual transformation from "employment-oriented" to "people-oriented philosophy" and from "informatization" to "digitalization", pay attention to the cultivation of students' comprehensive quality and digital literacy, and serve the personalized and all-round development of students.

Third, promoting systematic model reform is the key to cultivating "new professionals". Higher vocational colleges need to rely on the "two-wing" framework of municipal industry-education consortia and cross-regional industry-education integration communities, construct a multi-stakeholder collaborative industry-education integration mechanism, attract high-quality enterprises to deeply participate in school operation, and realize the accurate matching between talent cultivation and industrial demand.

Fourth, building innovative higher vocational colleges is the core carrier for cultivating "new professionals". Higher vocational colleges need to grasp the three fulcrums of Future Industry College, New Form Teacher Development Center and New Form Scientific Research Platform, create an innovation platform for the cultivation of "new professionals", and improve the innovative capacity and talent cultivation quality of colleges.

In general,the core logic for higher vocational colleges to cultivate"new professionals" under the background of

new-quality productivity is to realize the in-depth integration of educational innovation, scientific and technological innovation and industrial innovation. Through the all-round innovation of school-running philosophy, school-running mode and college construction, build a talent cultivation system adapted to the cultivation of "new professionals", and provide high-quality technical and skilled talent support for the development of new-quality productivity.

5.2 Research Prospects

The development of new-quality productivity is a dynamic process. The continuous emergence of emerging industries and new occupations will put forward continuously updated requirements for the cultivation of "new professionals" in higher vocational colleges. Future research can be carried out from the following two aspects:

On the one hand, empirical research can be carried out, selecting different types of higher vocational colleges as cases, in-depth analyzing their practical paths and effects of building innovative colleges and cultivating "new professionals", summarizing replicable and promotable practical experiences, and providing practical references for the reform and development of higher vocational colleges.

On the other hand, research can be carried out around the competency evaluation system of "new professionals". Combined with the development requirements of new-quality productivity and emerging industries, construct a scientific and systematic competency evaluation index system for "new professionals", provide a basis for the evaluation of talent cultivation quality in higher vocational colleges, and promote the continuous improvement of the cultivation system for "new professionals".

Under the background of new-quality productivity, the reform and development of higher vocational colleges have a long way to go. Higher vocational colleges must always adhere to the guidance of the new development philosophy, take the initiative to connect with the needs of industrial development, continuously promote school-running innovation and talent cultivation innovation, earnestly undertake the era mission of cultivating "new professionals", provide solid talent support for the formation and development of China's new-quality productivity, and promote the high-quality development of vocational education in serving the high-quality development of the economy.

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