

# The Strategic Value of Vocational Education in the Era of New Quality Productive Forces

Hongyun Guo<sup>1</sup> & Bao Liu<sup>2</sup>

<sup>1</sup> School of Jewelry, Shen Zhen City Polytechnic, China

<sup>2</sup> Automotive and Transportation Engineering, Shenzhen Polytechnic University, China

Correspondence: Bao Liu, Automotive and Transportation Engineering, Shenzhen Polytechnic University, 518033, Shenzhen, Guangdong, China. E-mail: liubao@szpu.edu.cn

Received: November 16, 2025; Accepted: November 24, 2025; Published: November 25, 2025

## Abstract

China's proposal of the concept of *New Quality Productive Forces* (NQPF) underscores the growing importance of scientific innovation, industrial upgrading, and high-caliber human capital in driving high-quality development. Against this backdrop, this study investigates the strategic value of vocational education in supporting and shaping the formation of New Quality Productive Forces. It argues that vocational education has moved beyond its conventional function of cultivating operationally skilled workers and has become an essential institutional force that links technological innovation with industrial application, promotes intelligent and green transformation across sectors, and enhances governance modernization.

Despite its rising strategic importance, vocational education still confronts several deep-rooted structural challenges, including persistent mismatches between talent supply and emerging industrial demands, pronounced regional disparities in educational quality, insufficient industrial experience among teachers, lagging curriculum renewal mechanisms, and fragmented governance structures. To overcome these constraints, the paper proposes an integrated reform framework that emphasizes system-level restructuring, more substantive industry–education integration, the development of dual-qualified teaching teams, accelerated digital and intelligent curriculum transformation, and modernized governance mechanisms.

The analysis concludes that vocational education serves not only as a foundational support system for New Quality Productive Forces but also as a critical strategic driver of China's modernization. By aligning talent cultivation with technological trajectories and industrial evolution, vocational education holds the potential to significantly enhance innovation capacity, industrial competitiveness, and inclusive social development.

**Keywords:** New Quality Productive Forces, vocational education, skilled talent, industrial upgrading, innovation ecosystem, education modernization

## 1. Introduction

The rapid advancement of global science and technology has profoundly reshaped modes of production, industrial structures, and labor demands. Since the Fourth Industrial Revolution, technologies such as artificial intelligence, big data, industrial Internet, new materials, biotechnology, and green energy have accelerated the transformation toward intelligence, digitalization, and sustainability. These shifts have not only altered the foundations of economic growth but also triggered a worldwide reevaluation of how human capital should be cultivated for the future. Against this backdrop, China introduced the concept of New Quality Productive Forces (NQPF), which has become a central analytical lens in understanding national development under the new technological paradigm.

NQPF highlights the fundamental role of scientific innovation, the strategic function of emerging and future industries, and the critical importance of talent structures adapted to high-quality development. Unlike traditional productive forces rooted in labor, land, and capital, NQPF emphasizes high technological intensity, application-driven innovation, digital–intelligent integration, and green transformation. More importantly, it underscores the increasing significance of technically skilled talent—workers capable of bridging digital technologies and industrial production, applying innovation in real workplace scenarios, and supporting technological diffusion across sectors. As a result, the cultivation of high-quality skilled talent is no longer a supplementary element of the economy but a central driver of China's modernization.

International scholarship has long recognized the pivotal role of vocational education and training (VET) in promoting industrial competitiveness and enhancing workforce skills (Billett, 2016; Rauner & Maclean, 2008). OECD and UNESCO reports consistently show that VET systems contribute to productivity, employment, social equity, and sustainable development, especially during periods of technological disruption. However, the existing literature still exhibits several gaps. First, mainstream research has largely focused on VET's economic and social functions, yet insufficient attention has been paid to how vocational education interacts with emerging productive forces shaped by digitalization and intelligent technologies.

Second, while cross-national studies analyze VET governance, curriculum reforms, and school–enterprise partnerships, few studies examine how VET systems can strategically respond to paradigmatic shifts in productive forces under a national development framework such as China's NQPF. Third, the theoretical integration of productive forces theory and vocational education development remains underexplored in both Chinese and international academic communities.

Addressing these gaps, this study positions vocational education within China's evolving landscape of NQPF and investigates how VET functions as a strategic force that not only adapts to but also enables the formation of new productive structures. Specifically, it argues that vocational education serves multiple overlapping functions: (1) as the foundational mechanism for training high-quality skilled workers required by new industries; (2) as the intermediary in bridging scientific innovation with industrial application; (3) as a driver of industrial upgrading and the modernization of supply and value chains; (4) as a critical mechanism for promoting social mobility and expanding the middle-income group; and (5) as a key contributor to governance modernization through technology-enabled public service and administrative systems.

Furthermore, this study proposes that the strategic value of vocational education in the context of NQPF arises from its inherent characteristics: strong alignment with industrial demands, high adaptability to technological change, emphasis on practical and applied learning, and institutional flexibility enabling school–enterprise integration. At the same time, it acknowledges significant challenges that may impede VET's full potential, including misalignment between talent supply and industrial demand, uneven regional development, lagging curriculum reform, teacher shortages in industrial expertise, and governance fragmentation.

Therefore, the primary objective of this paper is to provide a comprehensive analysis of vocational education's strategic value under NQPF, identify structural constraints, and propose a set of reform pathways aligned with future-oriented development goals. The contribution of this study is threefold:

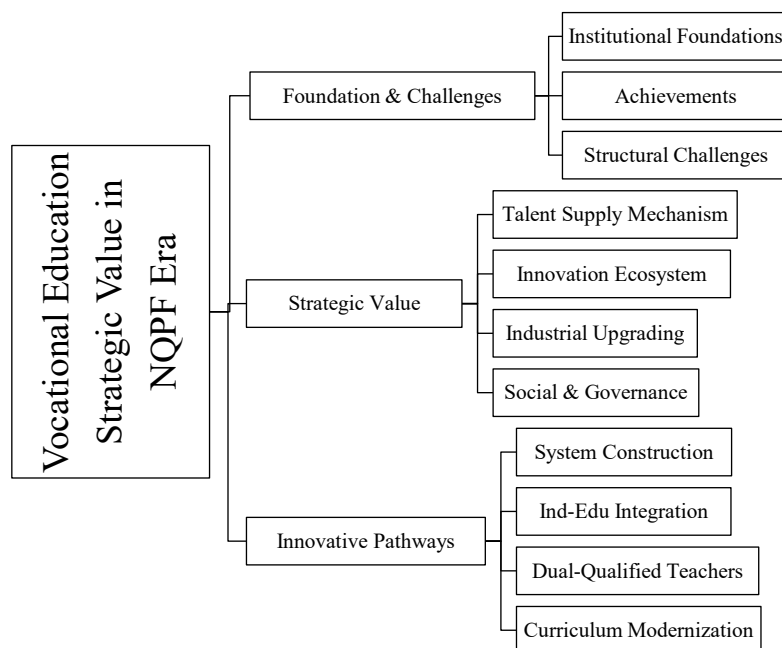


Figure 1. Structural Diagram of the Foundations, Strategic Value, and Development Pathways of Vocational Education under NQPF

**Theoretical Contribution:** It integrates the emerging NQPF framework with the field of vocational education, enriching the analytical lens for understanding human capital development in the digital–intelligent era.

**Policy Contribution:** It provides a systematic interpretation of how vocational education can support industrial upgrading, innovation diffusion, and governance modernization.

**Practical Contribution:** It offers actionable strategies for building a modern VET system capable of responding to challenges brought by technological disruptions.

The remainder of this paper is organized as follows. Section 2 reviews the foundational conditions and key challenges of vocational education in the new era. Section 3 elaborates on the strategic value of vocational education under NQPF. Section 4 proposes an integrated development pathway for constructing a modern VET system aligned with NQPF. Section 5 concludes with theoretical insights and policy implications.

## **2. Foundations and Structural Challenges of Vocational Education in the New Era**

The development of vocational education in China has entered a critical historical stage, propelled by national strategies such as building an education power, a manufacturing power, and a skilled nation. The emergence of New Quality Productive Forces (NQPF) has further elevated expectations for vocational education, positioning it as a strategic institutional pillar rather than a supplementary educational track. This section examines both the foundational strengths and structural challenges of vocational education in China within the context of industrial transformation and human capital restructuring.

### *2.1 Institutional Foundations and Policy Advantages*

#### 2.1.1 Elevated National Strategic Positioning

Over the past decade, China has consistently upgraded the role of vocational education within its national development agenda. Key policy documents—including the National Vocational Education Reform Implementation Plan, the revised Vocational Education Law, and the Education Modernization 2035 plan—have affirmed vocational education as a type of education equal in status to general education. Furthermore, vocational education is framed as a crucial engine for high-quality development, industrial restructuring, and labor force modernization.

This strategic repositioning has fundamentally reshaped public perceptions, policy expectations, and institutional trajectories of vocational education. Unlike earlier eras in which VET was treated as a marginal or compensatory system, it is now embedded within the core architecture of China's modernization strategy.

#### 2.1.2 Formation of a Modern Vocational Education System

China has made substantial progress in constructing a vertically and horizontally integrated modern vocational education system. Vertically, the system spans secondary vocational programs, higher vocational colleges, application-oriented bachelor's programs, and pilot professional degree programs at the postgraduate level. Horizontally, the system incorporates industry-oriented professional clusters, training centers, industry–college partnerships, and integrated training platforms.

This emerging structural coherence has strengthened the capacity of vocational education to serve diverse industries, respond to technological changes, and support regional development strategies.

#### 2.1.3 Strong Industrial Demand Driven by Economic Transformation

China's industrial upgrading—particularly in advanced manufacturing, digital economy, artificial intelligence, new energy vehicles, and green industries—has accelerated demand for high-quality skilled labor. The Ministry of Human Resources and Social Security (MOHRSS) estimates that the talent shortages in key sectors will continue to widen in the coming decade, especially among mid- to high-level technicians, equipment operators, and intelligent manufacturing specialists.

The structural shift toward NQPF—characterized by higher technological intensity, more complex production systems, and rapid innovation cycles—has magnified the need for skilled workers who can adapt to emerging technologies, solve practical engineering problems, and participate in process optimization. Vocational education is uniquely positioned to supply such talent.

### *2.2 Development Achievements of Vocational Education*

#### 2.2.1 Expansion in Scale and Improvement in Educational Pathways

China's vocational education system now serves tens of millions of students, with increasing permeability, mobility, and recognition. The introduction of the “Vocational Education College Entrance Examination” has expanded

pathways for upward academic mobility, while the rapid growth of vocational bachelor's programs has enhanced the attractiveness and legitimacy of vocational education.

As a result, vocational education has gradually shed its long-standing stigma associated with low status and limited opportunities.

### 2.2.2 Institutionalization of Industry–Education Integration

Industry–education integration has transitioned from policy encouragement to systematic implementation. Thousands of industry–college cooperative projects, industrial academies, and sector-based skill centers have been established nationwide. The adoption of modern apprenticeship systems has significantly improved workplace-based learning and enhanced the relevance of talent cultivation.

These developments have promoted multi-actor governance and strengthened the alignment between vocational programs and industrial demand.

### 2.2.3 Advancement in Digital Transformation

Digitalization initiatives—such as smart labs, virtual simulation technology, digital learning platforms, and online course ecosystems—have elevated VET's institutional capacity. Many vocational colleges have introduced intelligent manufacturing training centers, industrial Internet platforms, and digital-twin learning environments, enabling students to interact with real-world industrial technologies.

Such progress positions vocational education at the forefront of digital transformation across China's education system.

### 2.2.4 Increased International Influence

China has expanded international capacity-building programs, Belt and Road VET cooperation, and cross-border training initiatives. Chinese VET teams' outstanding performance in the WorldSkills competitions has raised the global profile of China's skills development model.

## 2.3 *Structural Contradictions and Deep-Seated Challenges*

Despite notable progress, vocational education still faces structural and systemic constraints that may hinder its ability to support the formation of NQPF.

### 2.3.1 Talent Supply–Demand Mismatch

A significant gap remains between the skills produced by vocational institutions and the competencies demanded by emerging industries. This mismatch manifests in three ways:

1. Shortage of high-level technical talent despite the expansion of VET enrollment;
2. Poor alignment between curricula and the rapid pace of technological evolution;
3. Insufficient supply of cross-disciplinary and digital-skilled workers needed for intelligent and green production.

The mismatch reduces the efficiency of industrial upgrading and undermines the development of NQPF.

### 2.3.2 Regional disparities in VET quality and resources

Vocational education development is heavily uneven across regions. Eastern China enjoys well-developed industrial ecosystems, robust fiscal capacity, and strong industry–education linkages. In contrast, central and western regions often face:

Limited industrial support, Weak school–enterprise cooperation, Shortages in equipment and facilities, Constraints in recruiting and retaining qualified teachers.

Such regional disparities impede the establishment of a unified national skilled talent market.

### 2.3.3 Inadequate teacher industrial experience

A persistent bottleneck is the insufficient industrial experience among VET teachers. Many instructors lack up-to-date engineering practice, exposure to industrial processes, or participation in technological innovation projects. Barriers remain for professionals from industry to enter teaching roles due to institutional constraints.

Without a high-quality “dual-qualified” teaching workforce, the alignment between education and industry will remain suboptimal.

#### 2.3.4 Slow modernization of curricula and qualifications

Curriculum reform often lags behind technological change. Traditional knowledge-heavy frameworks continue to dominate coursework, while emerging domains—such as intelligent manufacturing, digital operations, data analytics, industrial automation, and green technologies—are not sufficiently represented.

Additionally, qualifications frameworks, micro-credential systems, and modular competency standards remain underdeveloped.

#### 2.3.5 Fragmented governance and lack of multi-actor coordination

Vocational education governance involves multiple actors—government departments, industry associations, enterprises, and educational institutions—but coordination remains insufficient. Common issues include:

Weak incentives for enterprises to participate in training;

Limited involvement of industry associations;

Unequal distribution of responsibilities and resources;

Quality assurance systems that prioritize administrative indicators over competency outcomes.

Fragmentation leads to inefficiencies and hinders systemic innovation.

#### 2.4 Institutional Roots of Current Challenges

Many of the problems discussed above have deep institutional origins:

Historical bias against vocational education has shaped long-standing societal perceptions and influenced student choices.

Insufficient incentives limit enterprises' willingness to participate in high-cost, long-term training.

Resource allocation mechanisms often favor academic education over VET.

Technological iteration cycles outpace curriculum renewal mechanisms.

Governance frameworks lack the tools required for digital-era management.

These institutional roots demonstrate that the transformation of vocational education requires systemic, rather than incremental, reform.

### 3. The Strategic Value of Vocational Education under New Quality Productive Forces

The emergence of New Quality Productive Forces (NQPF) marks a fundamental reconfiguration of the technological foundation and developmental logic of the contemporary economy. As China moves toward innovation-driven, digitally integrated, and green development trajectories, vocational education is becoming a strategic institutional force that shapes the supply and transformation of human capital, the application of technological innovation, and the upgrading of industrial structures. This section systematically elaborates the multidimensional strategic value of vocational education within the NQPF framework.

#### 3.1 Vocational Education as the Core Mechanism for Supplying Technically Skilled Talent

##### 3.1.1 Rising demand for high-quality skilled labor under NQPF

NQPF is characterized by high technological intensity, deep human-machine integration, and rapid innovation cycles. Emerging industries—such as intelligent manufacturing, robotics, industrial Internet, digital services, and clean energy—require workers capable of operating complex technologies, solving engineering problems, and adapting to continuously evolving processes. This shift has caused a dramatic surge in demand for mid- to high-level technicians and hybrid-skilled workers.

Vocational education, with its emphasis on practical competencies, workplace-based learning, and industry alignment, is uniquely positioned to respond to this structural demand. Unlike general education, VET produces talent with strong operational, technical, and experiential knowledge, which is crucial for bridging technological innovation and industrial application.

##### 3.1.2 Enhancing Adaptability to Technological Iteration

Because NQPF evolves through rapid technological cycles, industries require talent who can learn quickly, update skills continuously, and operate within dynamic technological environments. Vocational education—with its flexible curriculum structure, modular training systems, and close industry partnerships—can regularly revise course content and embed emerging technologies into instruction. This agility makes VET a key mechanism for supporting economic systems undergoing rapid technological transition.

### *3.2 Vocational Education as a Structural Component of the National Innovation Ecosystem*

#### *3.2.1 Bridging Technological Innovation and Industrial Application*

Innovation alone does not create productivity; its value is realized when new technologies are adapted, optimized, and embedded into industrial production. This “last mile” of innovation—engineering, process design, quality assurance, equipment integration, and industrialization—requires highly trained technical talent. Vocational education plays a pivotal role in providing this talent.

While universities typically generate basic research and advanced scientific discoveries, vocational institutions supply the technicians who translate those discoveries into manufacturable, scalable, and marketable products. In this sense, vocational education strengthens the connectivity between the innovation chain and the industrial chain.

#### *3.2.2 Practice-Oriented Innovation and Applied Research*

Vocational institutions often operate in close proximity to industries, which grants them natural advantages in practice-driven innovation. Technical skills competitions, master workshops, applied technology centers, and school–enterprise innovation platforms enable VET institutions to conduct process improvement, incremental technological innovation, and enterprise-level R&D support.

These innovations—though often incremental—are critical for industrial efficiency and competitiveness. They contribute to the continuous upgrading of production processes and the optimization of value chains.

#### *3.2.3 Integration of Talent Chain, Innovation Chain, and Industrial Chain*

NQPF emphasizes the synergistic development of talent, technology, and industry. Vocational education provides the institutional infrastructure that binds these elements together through: joint talent training programs with enterprises; shared laboratories and training centers; enterprise-led curriculum development; collaborative innovation projects; integrated governance frameworks.

This triadic synergy enhances the absorptive capacity of industries and accelerates technology diffusion.

### *3.3 Vocational Education as a Driver of Industrial Upgrading and Modern Industrial Systems*

#### *3.3.1 Supporting Strategic Emerging Industries*

Vocational education provides essential human capital for industries such as new energy vehicles, integrated circuits, aerospace equipment, biomanufacturing, digital logistics, and smart agriculture. These industries rely heavily on technicians who can operate sophisticated equipment, maintain intelligent systems, manage data-driven processes, and ensure production reliability.

Without a robust supply of skilled workers, the industrial ambitions associated with NQPF would be difficult to realize.

#### *3.3.2 Facilitating Intelligent Transformation and Green Upgrading of Traditional Industries*

Traditional sectors—manufacturing, construction, logistics, and transportation—are undergoing rapid digitalization and environmental restructuring. Their transformation requires substantial numbers of workers trained in: intelligent equipment maintenance, automation systems, digital quality control, low-carbon and green production, safety and environmental compliance.

Vocational education is positioned to deliver this talent at scale and with high relevance.

#### *3.3.3 Enhancing the Resilience and Competitiveness of Industrial Chains*

Resilient industrial chains depend not only on high-end R&D but also on stable and competent operational capabilities across upstream, midstream, and downstream segments. Skilled labor ensures that industries can withstand disruptions, maintain quality standards, and respond flexibly to technological and market changes.

Vocational education, therefore, contributes directly to the stability and competitiveness of regional and national industrial ecosystems.

### *3.4 Vocational Education as a Mechanism for Social Equity and Upward Mobility*

#### *3.4.1 Expanding Equitable Access to High-Quality Human Capital Development*

VET provides pathways for millions of young people—particularly those from rural, low-income, or non-academic backgrounds—to acquire skills that lead to meaningful employment and social participation. This inclusiveness aligns with international evidence showing that vocational systems can significantly reduce youth unemployment and improve long-term earnings.

### 3.4.2 Supporting the Growth of the Middle-Income Group

Skilled workers in emerging industries often receive salaries above regional averages, thereby contributing to the expansion of the middle-income segment. As China seeks to increase the size and stability of this group, vocational education becomes central to achieving employment-driven distribution and reducing structural inequalities.

### 3.4.3 Contributing to Rural Revitalization and Regional Development

VET institutions have deep local embeddedness, providing training, technology consulting, and capacity-building for local enterprises. They support agricultural modernization, rural digitalization, and county-level industrial upgrading, thus playing a strategic role in balancing regional development.

## 3.5 Vocational Education as a Foundation for Governance Modernization

### 3.5.1 Technical Talent for Digital Governance Systems

Digital public services, smart-city management, cybersecurity, and environmental monitoring require a workforce with strong digital literacy and technical skills. VET institutions help cultivate the technicians necessary for operating and maintaining these systems.

### 3.5.2 Enhancing Governance Capacity in Sectors Such as Public Health, Environmental Protection, and Safety Management

Climate change, and industrial safety demands highlight the need for well-trained technicians in monitoring, emergency response, equipment maintenance, and quality assurance. Vocational education directly contributes to these governance capacities.

## 3.6 Vocational Education as a Vehicle for Building a Modern Labor Culture

NQPF not only reshapes industries but also redefines human labor. In the new economy, work is increasingly characterized by knowledge intensity, creativity, and digital competence. Vocational education advances this cultural transformation by: fostering craftsmanship and excellence; cultivating pride in skilled labor; encouraging innovation-oriented work ethics; integrating labor education with technological literacy. Such cultural shifts provide the motivational foundation for NQPF.

## 4. Innovative Development Pathways for Vocational Education under New Quality Productive Forces

The emergence of New Quality Productive Forces (NQPF) requires vocational education to undergo systemic transformation. As industries become increasingly digitalized, intelligent, and green, traditional vocational education models—characterized by fragmented governance, outdated curricula, and limited school–enterprise collaboration—can no longer meet evolving talent demands. This section proposes an integrated reform framework that aligns vocational education with the structural, technological, and governance requirements of NQPF, grounded in both Chinese institutional realities and international experience.

### 4.1 Building a Modernized Vocational Education System Aligned with NQPF

#### 4.1.1 Establishing a Coherent, Diversified, and Upwardly Mobile Education Structure

To meet the skill upgrading needs of emerging industries, China must build a seamless and diversified vocational education ecosystem. Key dimensions include: Vertical integration: Strengthening pathways that connect secondary VET, higher VET, vocational bachelor programs, and pilot professional master's degrees in applied fields.

Horizontal diversification: Expanding flexible learning routes through micro-credentials, modular training, and lifelong learning systems.

Inter-system permeability: Promoting credit transfer, academic recognition, and cross-institutional learning to break rigid boundaries between general and vocational education.

Such structural integration mirrors global best practices found in dual systems (Germany), hybrid competence-based systems (Netherlands), and modular lifelong learning models (Singapore).

#### 4.1.2 Industry-Oriented Program Clusters and Supply Chain Alignment

China's vocational education should transition from a school-centered program architecture to an industry- and supply chain-oriented framework. Program clusters should be restructured around key sectors such as: Intelligent manufacturing; Digital economy; New energy vehicles; Green technologies; Marine engineering; Integrated circuits and semiconductor processes.

This transformation demands dynamic adjustment mechanisms, in which program development follows industrial planning, sector forecasts, and technological roadmaps.

#### 4.1.3 Future-Oriented and Anticipatory Program Design

Beyond meeting current labor-market needs, China must establish programs anticipating future talent demands associated with: Artificial General Intelligence (AGI) applications; Cyber-physical systems integration; Robotics–human collaborative work; Climate transition and low-carbon technologies; Bio-intelligent manufacturing.

VET institutions should therefore evolve from skills training providers into frontline contributors to national strategic industries.

#### 4.2 Deepening Industry–Education Integration and Building School–Enterprise Community of Shared Interests

Industry–education integration is the cornerstone of vocational education’s ability to serve NQPF. Existing collaboration mechanisms often remain superficial; profound reform must shift the paradigm from “cooperation” to co-construction, co-governance, and co-benefit.

##### 4.2.1 Institutionalizing Long-Term School–Enterprise Collaborative Mechanisms

Government agencies should establish a robust policy ecosystem that incentivizes enterprise participation through tax benefits, training subsidies, recognition mechanisms, and regulatory support. Enterprises should be included at all stages: Professional planning and curriculum development; Work-integrated learning design; Infrastructure and equipment sharing; Talent assessment and quality assurance.

##### 4.2.2 Expanding and Upgrading Industrial Academies

Industrial academies should evolve into multifunctional innovation hubs with the following capacities: Authentic industrial learning environments that replicate production scenarios; Joint R&D and technology transformation platforms shared by schools and enterprises; Full-time and part-time industry expert teaching teams; Project-based learning and innovation-driven pedagogy; Sector-wide standard-setting and skill certification functions.

This model aligns with global trends such as German competence centers and Australian TAFE-industry partnerships.

#### 4.3 Strengthening the Dual-Qualified (“Dual-Teacher”) Workforce

##### 4.3.1 Redesigning Competency-Based Teacher Qualification Frameworks

A teacher qualification system aligned with NQPF must emphasize: Engineering experience; Technological innovation capacity; Digital competency; Industry-recognized certifications; Teaching and instructional design skills.

Evaluation standards should shift from academic credentials toward competency and contribution.

##### 4.3.2 Institutionalizing Enterprise Practice and Rotation Mechanisms

Teachers should undertake mandatory enterprise practice every 2–3 years, lasting no less than 3–6 months. This aligns with European models where VET teachers must maintain active professional practice to retain certification.

##### 4.3.3 Attracting Industry Experts into Teaching Roles

Mechanisms may include: Dual appointment systems; Flexible employment contracts; Industry salary benchmarking; Fast-track credential recognition for skilled personnel.

This system bridges “school knowledge” and “shop-floor knowledge,” enhancing vocational education’s relevance and quality.

#### 4.4 Modernizing Curriculum Systems through Digitalization, Intelligence, and Green Transformation

##### 4.4.1 Digital Skill Integration Across Programs

All vocational programs should embed digital literacy and sector-specific digital skills, such as:

Data analytics

Industrial Internet applications

Human–machine interface (HMI) operation

Algorithmic thinking

Digital twin applications

#### 4.4.2 Intelligent Manufacturing and Future-Industry Curriculum Development

Curricula should align with intelligent production systems, including modules in:

Robotics operation

Intelligent equipment debugging

Automated production line management

Smart testing and quality assurance

Cyber-physical systems engineering

#### 4.4.3 Building a Comprehensive Green Skills Curriculum System

Green transformation requires specialized knowledge in:

Clean-energy system operation

Green manufacturing processes

Environmental monitoring

Carbon management and energy optimization

Sustainable production practices

China's "dual carbon" goals (carbon peak and carbon neutrality) make this curriculum domain indispensable.

### 5. Conclusion and Implications

The emergence of New Quality Productive Forces (NQPF) signifies a fundamental shift in the technological basis and developmental logic of China's economic and social transformation. In this context, vocational education assumes a renewed strategic role as technological innovation, digital-intelligent integration, and green transformation redefine the nature of labor demand. This study demonstrates that vocational education is not simply a channel for skills training but an essential institutional mechanism that supports the formation, diffusion, and consolidation of NQPF. Its practical orientation, close alignment with industrial needs, and emphasis on applied technological competence enable vocational education to bridge scientific innovation and industrial utilization while contributing to the modernization of public governance systems.

From a developmental perspective, vocational education serves multiple interlocking functions within the NQPF ecosystem. It provides the technical workforce necessary for intelligent manufacturing, digital operations, and green industrial upgrading; enhances the resilience and efficiency of industrial chains by linking talent cultivation with technology adoption; and promotes social inclusion by offering upward mobility pathways and contributing to regional development. These interconnected roles highlight vocational education as a foundational driver in China's transition toward high-quality and innovation-led development.

Nevertheless, several structural constraints continue to hinder its full strategic potential. Talent cultivation remains insufficiently aligned with emerging industrial requirements; regional disparities limit the formation of a unified national skills system; teacher professionalization is weakened by the shortage of industry-experienced instructors; curriculum reform lags behind rapid technological evolution; and governance mechanisms remain fragmented. Addressing these challenges requires systemic and coordinated reforms rather than incremental improvements.

In response, this study outlines an integrated reform agenda consistent with the development logic of NQPF. Key priorities include strengthening the interconnection among education, industry, and innovation systems; deepening industry-education cooperation through stable institutional mechanisms; fostering dual-qualified teachers with both pedagogical and industrial expertise; accelerating curriculum digitalization and the integration of intelligent and green technologies; and advancing governance modernization through data-driven management and competency-based quality assurance.

Overall, the findings underscore the indispensable strategic value of vocational education in supporting China's long-term modernization. By aligning talent development with technological trajectories and industrial restructuring, vocational education can reinforce innovation capacity, enhance industrial competitiveness, and promote inclusive and sustainable development. Future research should further examine sector-specific skill demands under NQPF, explore comparative insights from international VET reforms, and investigate the micro-level mechanisms through which vocational education contributes to innovation productivity and industrial upgrading.

## References

- [1] National Medium- and Long-Term Education Reform and Development Plan (2010–2020). (2010, July 29). Government of the People's Republic of China. Retrieved January 20, 2025, from [https://www.gov.cn/jrzq/2010-07/29/content\\_1667143.htm](https://www.gov.cn/jrzq/2010-07/29/content_1667143.htm)
- [2] Ministry of Education of the People's Republic of China. (2024, October 16). *Striving to write a new chapter in building a leading education power in the new era*. Retrieved January 20, 2025, from [http://www.moe.gov.cn/jyb\\_sy/sy\\_jyyw/202410/t20241016\\_1157564.html](http://www.moe.gov.cn/jyb_sy/sy_jyyw/202410/t20241016_1157564.html)
- [3] Xi, J. (2014, June 24). Important instructions on accelerating the development of vocational education. *People's Daily*, p. 1.
- [4] Xu, X., Yang, S., & Sun, T. (2025). Can industry–education integration in higher vocational education promote the formation of New Quality Productive Forces? Evidence from the Yangtze River Delta urban agglomeration. *Vocational and Technical Education*, 46(31), 48–55.
- [5] Wang, H., & Hou, L. (2025). Dynamic forecasting and influencing factors of China's new quality productive force level. *Journal of South-Central University for Nationalities (Humanities and Social Sciences)*, 1–13.
- [6] Tu, K., & Li, S. (2025). Integration of science and education in vocational education and the innovative development of new quality productive forces. *Theory and Practice of Education*, 45(30), 18–24.
- [7] Tan, J., & Ding, H. (2025). Constructing a high-quality higher vocational talent cultivation system in the new era. *Jiangsu Higher Education*, (10), 109–115.
- [8] Song, Y., Tong, Y., & Xu, Y. (2025). Professional layout models of vocational universities under new quality productive forces. *Modern Educational Management*, (10), 88–99.
- [9] Yu, X., & Liu, Q. (2025). The internal logic and pathways of vocational education empowering new quality productive forces. *Modern Educational Management*, (10), 100–109.
- [10] Du, N. (2025). Digital transformation of vocational education and its empowerment to new quality productive forces. *Theory and Practice of Education*, 45(24), 20–25.
- [11] Yu, Y. (2025). Bidirectional drive between new quality productive forces and vocational education development. *Journal of Higher Education Management*, 19(05), 125.
- [12] Dong, Y., Ou, Y., Wu, P., & Liu, W. (2025). A construction pathway of China's integrative vocational education system under new quality productive forces. *Theory and Practice of Education*, 45(21), 21–25.
- [13] Zhao, S. (2025). Underlying logic of vocational–general education integration. *Vocational and Technical Education*, 46(21), 15–20.
- [14] Xiao, Q. (2025). Coordinated innovation of “Five Metals” in vocational education. *Vocational and Technical Education*, 46(20), 12–17.
- [15] Xiao, H., & He, A. (2025). Curriculum reform in higher vocational colleges and the development of new-quality skills. *VET Forum*, 41(06), 64–73.
- [16] Guo, M., & Wu, F. (2025). Engineering innovation talent cultivation in vocational universities under new quality productive forces. *Higher Engineering Education Research*, (S1), 47–52.
- [17] Sun, J., Liu, W., Yang, D., & Bi, M. (2025). Cultivation model for multi-competent innovative talent. *Higher Engineering Education Research*, (S1), 218–223.
- [18] Zhou, H., & Yu, J. (2025). Co-constructive logic of new quality productive forces and China's educational modernization. *China Distance Education*, 45(06), 49–61.
- [19] Fu, H., Huang, Y., Liu, C., Chen, L., & Ding, C. (2025). Evaluation standards for vocational education practical teaching aimed at new quality productive forces. *VET Forum*, 41(04), 55–61.
- [20] Sun, Y., & Kuang, Y. (2025). Mechanisms and effects of higher vocational education promoting new quality productive forces. *Journal of Higher Education Management*, 19(03), 109–124.
- [21] Zhou, J., Liu, Z., & Tong, W. (2025). Pathways for the high-quality development of vocational undergraduate education. *Education and Vocation*, (07), 5–13.

**Copyrights**

Copyright for this article is retained by the author(s), with first publication rights granted to the journal.

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).