

Research on the Current Situation and Influencing Factors of Industry-Education Integration in Higher Vocational Education

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Abstract: Industry-education integration can boost the high-quality development of higher vocational education. Driven and supported by relevant policies, industry-education integration has achieved remarkable results with continuously expanded scale and scope of school-enterprise cooperation. Nevertheless, dilemmas including insufficient integration depth and mismatches between talent training and corporate demands persist. From three dimensions of institutional supply, school-enterprise relations and college governance, this paper systematically analyzes the key factors affecting the quality of industry-education integration, so as to provide useful references for the transformation of industry-education integration.

Keywords: Higher vocational education; Industry-education integration; School-enterprise cooperation; Talent training quality; Influencing factors

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1. Introduction

The essential feature that distinguishes vocational education from general education lies in industry-education integration, which also serves as the fundamental school-running path for higher vocational education. In 2017, the General Office of the State Council issued *Several Opinions on Deepening Industry-Education Integration*, elevating industry-education integration to a national institutional arrangement. In 2022, the newly revised *Vocational Education Law* formally established industry-education integration as the basic school-running mode of vocational education. Strong policy promotion has rapidly expanded the scale of industry-education integration from partial pilot projects to full-scale implementation. However, scale expansion does not bring all benefits. Problems of “superficial cooperation without in-depth integration” and “shallow integration” still exist. Based on the above background, this paper focuses on two core questions: What practical dilemmas does the quality of current industry-education integration face? Which factors restrict the depth of integration?

2. Current situation of industry-education integration quality in higher vocational education

2.1. Coexistence of expanded school-enterprise coverage and insufficient in-depth integration

At present, all higher vocational colleges have responded to relevant requirements and established school-enterprise cooperation organizations. The number and scope of cooperative enterprises have witnessed obvious growth, covering enterprises of various ownership types and sizes. In terms of cooperation forms, both sides have jointly built internship and training bases and promoted multiple parallel models ^[1,2]. Nationwide, higher vocational colleges have established a total of 12,000 order-based classes and 2,000 industrial colleges. In addition, industrial enterprises have shown higher enthusiasm and deeper participation in specialty construction and curriculum development. However, the expansion of cooperation fields has not brought synchronous deepening of integration. Less than 35% of colleges have reached a high level of participation in the formulation of talent training programs ^[3]. Most school-enterprise cooperation remains superficial, with enterprises lacking in-depth participation in core education links such as talent training program formulation and curriculum system reconstruction. Cooperation involving mixed-ownership school-running and shared R&D platforms based on property rights is extremely rare, accounting for less than 15%. To a certain extent, industry-education integration is still in a state of “superficial connection without real integration” ^[4].

2.2. Structural mismatch between talent training and corporate demands

The fundamental goal of industry-education integration is to improve the suitability of talent training. An analysis of practical effects shows that graduates from higher vocational colleges have a large gap in ability structure compared with corporate expectations. A follow-up survey of 500 employing enterprises reveals that 62% believe the comprehensive abilities of graduates in the past three years fail to match post requirements ^[5]. All employing enterprises report that graduates are weak in operational skills, professional literacy and adaptability. 45% of graduates still require post-skill training half a year after employment, and the employment rate of graduates with matching majors is less than 57%. This mismatch is prominent in emerging technology sectors. Enterprises favor compound talents with cross-post mobility and continuous learning awareness, while students trained by most colleges only master single skills ^[6]. Around 70% of college professional courses still focus on traditional techniques, and courses covering industrial robots, digital twins and other new technologies account for less than 20% ^[7]. The root cause of this mismatch lies in the rapid technological iteration of industries with short update cycles, while curriculum content fails to keep pace with industrial changes. Corporate employment demands adjust dynamically, yet college training programs remain relatively fixed. A time lag between slow education progress and fast industrial development adversely affects the improvement of industry-education integration quality ^[8].

2.3. Unbalanced regional development and uneven integration quality

The quality of industry-education integration varies significantly across different regions and colleges. The average score of industry-education integration depth for higher vocational colleges in eastern coastal areas is 78.6 points, while that of central and western regions stands at 53.2 points, showing a wide gap. Relying on industrial cluster advantages, eastern coastal regions take the lead in both depth and breadth of industry-education integration, and have formed replicable and promotable experience in industrial college construction and modern apprenticeship promotion. Some colleges in central and western regions suffer from insufficient

industrial resources, so school-enterprise cooperation cannot break away from formalities. Differentiation also exists among colleges: well-funded colleges have obvious advantages in capital investment and enterprise attraction, while ordinary colleges fail to attract high-quality enterprises, leading to shallow cooperation. Against this backdrop, resources are gradually concentrated on top-tier colleges, widening the quality gap between colleges and creating structural contradictions in the overall improvement of industry-education integration quality^[9].

3. Key factors restricting the quality of industry-education integration in higher vocational education

3.1. Insufficient effectiveness of institutional supply

The quality of industry-education integration is affected by policy and institutional factors, which constitute basic variables. Although a national policy framework has been established, deficiencies exist in policy implementation. First, incentive mechanisms lack practical effects. Current policies offer weak tax incentives and financial subsidies for enterprise participation in talent training. Enterprises bear upfront input costs yet face long return cycles. When net gains fail to cover investment costs, their willingness to participate drops sharply. Second, evaluation systems have biased guidance. Existing quality evaluation systems overemphasize procedural indicators such as the number of signed agreements while ignoring outcome indicators like improved talent training quality. This makes integration only exist on paper. Third, mechanisms for benefit sharing and risk allocation remain incomplete. Current institutions lack clear arrangements for intellectual property ownership and student internship safety, bringing many uncertainties to cooperation. Moreover, industry-education integration involves multiple departments, including education and industry authorities. Policies are formulated under separate vertical management systems without sound inter-departmental coordination mechanisms, greatly weakening the combined effect of relevant policies. Shortcomings in institutional supply also manifest in policy implementation at the grassroots level. Some local supporting policies lag, and implementation rules lack specificity, leaving colleges and enterprises without clear operational guidelines during practice^[10].

3.2. Structural mismatch of school and enterprise cooperation motivations

If schools and enterprises hold highly consistent cooperation motivations, the integration depth and sustainability will reach a high level. Colleges pursue educational value and long-term social benefits, while enterprises prioritize economic benefits and immediate returns. Such logical differences hinder the deepening of industry-education integration. From the corporate perspective, their participation motivations are pragmatic and diversified: to stabilize human resources and ease labor shortages, to obtain policy dividends and relieve capital pressure, and to build corporate image and social reputation^[11]. When enterprises adopt low-cost, quick-return participation modes such as student internships and equipment donations, cooperation remains superficial, while in-depth participation in curriculum development and teacher training takes a secondary position. From the college perspective, although colleges possess certain R&D capabilities, they are not indispensable to enterprises, putting colleges in an awkward position with weak discourse power in cooperation. In addition, college teaching schedules conflict with corporate production rhythms, creating obstacles to internship arrangement. The mismatch between schools and enterprises also lies in target expectations and operation rhythms, forming structural barriers to in-depth integration^[12]. In-depth

analysis reveals that the essence of this mismatch is the absence of a value closed loop for industry-education integration. Enterprises' input and gains cannot be calculated transparently without clear accounting and return mechanisms. The training outcomes of colleges cannot directly meet corporate human resource demands without effective quality feedback channels. The lack of both mechanisms makes both sides feel their input outweighs gains, threatening the sustainability of cooperation. To address this problem, a school-enterprise community of interests can be built with balanced cost-sharing and benefit-sharing mechanisms to achieve win-win cooperation^[13].

3.3. Lagging internal governance capacity of higher vocational colleges

The improvement of industry-education integration quality relies on colleges' internal teaching organizations, so colleges' own governance capacity is a major influencing factor. First, teachers have incomplete competency structures. Industry-education integration requires teachers to possess solid theoretical foundations and rich practical experience, yet many teachers lack frontline corporate work experience and cannot provide practical guidance for students^[14]. Meanwhile, institutional restrictions make teachers' corporate practice programs formalistic. In addition, research achievements still carry heavy weight in professional title evaluation, while industry-education integration outcomes, including teaching reform and corporate services, are marginalized, reducing teachers' willingness to participate. Second, conflicts exist between institutional inertia and institutional innovation. Higher vocational colleges have long adopted a teaching model centered on disciplinary knowledge teaching, which creates structural contradictions with project-based teaching and work-study alternation advocated by industry-education integration. The teaching management systems required for integration demand high flexibility and flexible credit replacement rules, yet most colleges still adopt frameworks borrowed from general higher education. New organizational forms such as industrial colleges face institutional barriers in personnel management and asset ownership, and colleges lack sufficient innovation capacity to match the in-depth demands of industry-education integration^[15].

In addition, the level of information construction varies widely among higher vocational colleges, hindering refined industry-education integration management. Although schools and enterprises conduct all-round cooperation in curriculum resource sharing, collaborative teaching and dynamic quality monitoring, information exchange remains inefficient without real-time monitoring and adjustment mechanisms for integration operation. Colleges' internal quality assurance systems fail to incorporate core industry-education integration indicators into regular supervision, making it impossible to detect and correct deviations in a timely manner during integration, which restricts continuous improvement and efficiency growth.

4. Conclusion

In summary, industry-education integration is in a critical transition stage from scale expansion to quality improvement. This paper's analysis shows that despite continuous expansion of integration scale, the prominent problem of "superficial integration without real coordination" persists, with obvious quality gaps across regions and colleges. Insufficient effective institutional supply, structural mismatch of school-enterprise cooperation motivations and lagging internal college governance severely restrict the improvement of integration quality, and the three factors interact and reinforce each other. To lift the quality of industry-education integration, we shall improve coordinated policy mechanisms, enhance targeted incentives to transform school-enterprise relations from resource exchange to value co-creation, and boost colleges'

organizational transformation and teachers' practical capabilities. In short, relying on institutional guarantees, strengthening coordination among all stakeholders and focusing on internal governance can form joint forces to promote the high-quality development of industry-education integration.

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References

- [1] Zhu D, Shi X, 2021, From Hierarchy to Typology: A Hundred Years of Vocational Education Development in China. *Journal of Southwest University (Social Sciences Edition)*, 47(2): 103–117, 228.
- [2] Diao Y, 2022, Research on the Development Characteristics and High-Quality Development Countermeasures of Higher Education in the Popularization Stage of Henan Province. *Journal of Henan University (Social Sciences Edition)*, 62(3): 105–109, 155.
- [3] Wang D, 2021, Research on Coordinated Development of Higher Vocational Education and Regional Economy in Henan Province, thesis, Henan University.
- [4] Ministry of Education, 2017, Reply of the Ministry of Education to Suggestion No. 5360 of the 5th Session of the 12th National People's Congress. Ministry of Education.
- [5] Ministry of Education, Ministry of Finance, 2019, Circular of the Ministry of Education and Ministry of Finance on Issuing the List of Construction Institutions for the Program of Building High-Level Vocational Schools and Majors with Chinese Characteristics. Ministry of Education.
- [6] Guo C, 2024, Research on the Construction of Quality Evaluation System for Industry-Education Integration in Vocational Education. *Journal of Heilongjiang College of Teacher Development*, 43(3): 96–99.
- [7] Jiang Z, 2018, Construction of Quality Evaluation System for Vocational Education Industry-Education Integration. *Vocational Education Forum*, (5): 34–39.
- [8] Guo G, Yang W, Chen P, 2024, Value Orientation, Construction Methods and Indicator Connotation of Quality Evaluation Index System for Industry-Education Integration in Higher Vocational Colleges. *Vocational and Technical Education*, 45(10): 36–43.
- [9] Li T, Xu L, 2022, Research on Construction of Quality Evaluation System for Vocational Education Industry-Education Integration. *Education and Vocation*, (4): 21–27.
- [10] Lü L, Tong G, 2020, Research on Quality Evaluation System for Industry-Education Integration Under the Background of the Double High Program. *Vocational and Technical Education*, 41(30): 31–36.
- [11] Zhu Z, 2025, Research on Implementation Path of Government-School-Industry-Enterprise Co-Construction of Industry-Education Integration Training Bases Under the New Double High Program. *Science and Technology Wind*, (23): 155–157.

- [12] Gu Q, 2025, Research on Innovation of Industry-Education Integration Mode in Higher Vocational Colleges Under the Construction of New Double High Program. *Journal of Educational Research*, (25): 20–22.
- [13] Guan L, 2025, From Double High to New Double High: Connotation, Development Logic and Implementation Path. *Vocational and Technical*, (5): 9–15.
- [14] Wang J, 2025, Connotation and Implementation Path of the Second Phase Double High Program Under the Knowledge Production Model. *Contemporary Vocational Education*, (3): 12–19.
- [15] Qi Z, Ren X, 2025, Value Demand, Internal Logic and Practical Direction of the Second Phase Double High Program Under the Background of Building a Powerful Country Through Education. *Contemporary Vocational Education*, (3): 4–11.

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