

A Study on the Dual-appointment Mechanism for Talents in Vocational Colleges under the Integrated Perspective of “Teaching, Research, and Industry”

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[**Abstract**] Against the backdrop of the integrated “education-science-talent” strategy and deep integration of the four key chains, deepening the dual-appointment reform of school-enterprise talents is a key approach for vocational colleges to strengthen a dual-qualified teaching staff, promote industry-education integration, and empower high-quality development of regional industries. Currently, dual-appointment work in Chinese vocational colleges faces many practical problems, such as disconnection from the coordinated development of education, science and talent, the imbalance between teaching and research, fragmented systems, and barriers to two-way talent flow, making it difficult to meet the core demands of improving vocational education quality and promoting industrial upgrading. This paper takes vocational colleges in Zhejiang Province as a research sample, focusing on practical scenarios of school-enterprise cooperation in emergency safety-related majors. From the perspective of “education-science-talent” coordinated development, it systematically analyzes the current difficulties and deeper causes of the dual-appointment mechanism in schools and enterprises. It proposes optimized paths from five dimensions: stakeholder coordination, system construction, resource integration, evaluation system development and guarantee mechanism improvement, building a three-level (micro-, meso-, and macro-level) collaborative development system. The aim is to tackle pain points like one-way talent flow, fragmented science and education resources, and lack of assessment incentives, establishing a normalized, standardized, and long-term operational dual-appointment operation model. The study provides practical experience and theoretical support for vocational colleges in Zhejiang Province and nationwide in implementing the integrated “education-science-talent” reform and deepening the talent integration of industry and education.

[**Key words**] “education, science, and talent” integration; vocational colleges; school-enterprise dual-appointment; industry-education integration; dual-qualified workforce; two-way talent flow

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1 Introduction

As China’s industrial structure undergoes profound transformation and vocational education reforms are fully deepened, the integrated development of education, science, and talent has become a fundamental and strategic support for advancing modern vocational education and empowering Chinese-style modernization in the new era. Vocational education, as the core carrier for cultivating technically skilled talents, transforming scientific and technological innovations, and upgrading industrial services, carries the important mission of nurturing versatile technical professionals and supporting industrial innovation. The 20th National Congress of the Communist Party of China and the Third Plenary Session of the 20th Central Committee have successively emphasized the need to deepen the coordinated reforms of education, technology, and talent, promote the deep integration of the education

chain, industry chain, innovation chain, and talent chain, improve talent development systems and mechanisms, and establish robust training systems for highly skilled talents and dual-qualified teachers, providing clear guidance for building vocational education talent teams and promoting school-enterprise collaboration.

As a national pilot for vocational education reform, Zhejiang Province has been focusing on integrating industry and education, continuously promoting reforms like two-way talent mobility between vocational colleges and enterprises, sharing resources between schools and companies, and collaborative innovation in science and education. It has gained rich practical experience in areas such as appointing industry experts as professors, dispatching vice presidents of tech, and dual part-time positions between schools and enterprises. Many vocational colleges in the province, leveraging regional industry characteristics, are actively exploring new models for dual-appointment of talent in schools and companies, effectively improving the structure of dual-qualified faculty and the quality of talent training. Emergency safety-oriented vocational colleges such as Zhejiang College of Security Technology leverage regional emergency industry clusters to deepen school-enterprise talent exchanges and have achieved phased outcomes in collaborative education and joint scientific-innovation projects.

However, under the new situation where the “education, science, and talent” integration strategy is fully implemented, there are still many shortcomings and bottlenecks in the current dual-appointment work between higher vocational colleges and enterprises. Research shows that most colleges treat dual-appointment with enterprises as a formality, leading to issues like imbalance between education and research, insufficient collaboration among stakeholders, incomplete institutional systems, lack of evaluation and incentives, and inadequate resource integration. The barriers to the two-way flow of talent haven’t been fully removed, making it difficult to achieve a virtuous cycle of education, technological innovation, talent empowerment, and industrial upgrading. Emergency safety-related majors, in particular, are practical, technical, and public service-oriented, requiring higher standards for teachers’ overall skills, the depth of school-enterprise collaboration, and the effectiveness of science and technology transformation. The traditional shallow dual-appointment model can no longer meet the needs of industrial development. Therefore, from the perspective of “education, science, and talent” integration, systematically reviewing the current challenges in dual-appointment between higher vocational colleges and enterprises and establishing a scientifically sound long-term operating mechanism is of significant theoretical and practical value for promoting the high-quality development of vocational education and supporting regional industrial transformation and upgrading.

2 Existing problems with dual-appointment of talents between schools and enterprises in vocational colleges under the integration of teaching, research, and industry

2.1 Imbalance in main demands, lack of multi-party collaboration

The most prominent problem lies in the misaligned stakeholder demands and insufficient coordination among participants in school-enterprise dual-appointment practices. The development goals of higher vocational colleges, partner companies, innovation platforms, and dual-appointed talents are quite different, and a win-win collaborative development model hasn’t formed yet. For colleges, the primary objective of dual-appointment is to optimize the structure of dual-qualified teachers, improve practical training systems and boost talent cultivation, with priority given to teaching activities. From the enterprise side, the core aim is to leverage the college’s talent and research resources to solve technical problems, upgrade products, and boost market competitiveness, focusing on industrial efficiency and tech commercialization. As for the dual-appointed talents, enterprise part-timers mostly focus on basic teaching tasks and lack motivation for research innovation or tackling technical challenges, while college staff stationed at enterprises focus more on gaining hands-on industry experience and aren’t proactive in supporting technological upgrades or industry innovation.

The differences in demands from various parties have directly led to an imbalance in the dual-appointment work, with a focus on teaching over research, practice over innovation, and individual gains over collaborative development. As a result, education, scientific innovation, and industry services are disconnected and fail to meet

the core requirement for the integrated and coordinated development of teaching, research, and talent. At the same time, the four parties lack a regular coordination mechanism, communication is fragmented, and it's hard to form effective synergy in talent training standards, tackling research projects, and implementing industry services, seriously restricting the overall effectiveness of the dual-appointment system.

2.2 Fragmented institutional system, lack of standardized responsibility management

A solid system is the foundation for the long-term operation of dual-appointment between schools and enterprises. At present, dual-appointment practices in vocational colleges across Zhejiang commonly suffer from outdated regulations, fragmented institutional frameworks and insufficient standardization. Most colleges have formulated their management rules on their own, without input from the government, industry, companies, or research institutes. The top-level planning is incomplete, and supporting details are seriously missing. When it comes to selecting and hiring talents, there isn't a unified standard for qualifications, skill requirements, or hiring procedures. This makes the entry threshold for dual-appointed talents unclear, and some hiring is done arbitrarily or for mere formalities, which makes it hard to ensure that the talent hired has the full range of needed abilities.

In the process of managing job responsibilities, the roles are vaguely defined. There are no differentiated quantitative indicators set for teaching, research, and industry services based on talent types or job attributes, which results in unclear boundaries and mixed priorities for dual-appointed personnel. At the same time, there is no system for job updates or exits, and there's a lack of regular job assessments and dynamic adjustment mechanisms. Some dual-appointed positions become nominal posts featuring "recruitment without management and listing without actual performance". Overall, the incomplete system makes it hard for dual-appointment between universities and enterprises to have standardized, regulated support, making it difficult to run smoothly and effectively over the long term.

2.3 Science and education resources are fragmented, and the benefits of integration and sharing are rather limited

A major bottleneck holding back the improvement and efficiency of dual-appointment programs between schools and companies is that resources are siloed and collaboration isn't strong enough. In traditional partnerships, vocational colleges and the companies or innovation platforms they work with often operate separately, trapped in a fragmented "isolated operation" mode, which makes it hard to complement each other's resources or create value together.

On the one hand, vocational colleges have plenty of teaching, talent, and research resources that could help companies with training, theoretical support, and R&D challenges. But under current collaboration models, it's difficult for schools to align their top resources with the actual needs of companies for technological upgrades and industry innovation, so these resources end up being underused.

On the other hand, companies have top-notch resources like frontline industry scenarios, practical equipment, technical experience, and industry projects. But these resources can't be effectively turned into teaching materials, training resources, or research resources for schools, making it hard to support curriculum reform, hands-on teaching, and students' practical skills development. At the same time, schools and companies haven't set up a solid system to mutually recognize outcomes. Teaching outputs, research findings and technical service achievements are not officially recognized and shared bilaterally by both sides. A regular system for co-building tech innovation projects, sharing training platforms, and exchanging talent hasn't taken shape yet, which seriously limits the deep integration of the four chains under the education-science-industry integration model.

2.4 Single evaluation system, lack of quantitative assessment mechanism

Currently, there are clear shortcomings in the dual-appointment assessment and evaluation system for talents between vocational colleges and enterprises, making it unable to meet the diverse development needs of integrated education, science, and technology. The existing assessment model is generally single and rigid, with the core evaluation focusing on basic teaching indicators like class hours, number of lectures, and student training

guidance, while completely ignoring key aspects such as scientific research and innovation, technical problem-solving, achievement transformation, industry services, and talent cultivation. The evaluation dimensions are one-sided and the standards are rough.

At the same time, the industry hasn't developed any quantitative tools to evaluate dual-employed staff between schools and companies. There's a lack of tiered and categorized assessment indicators, making it hard to accurately measure the overall performance value of dual-employed talent and how well the dual-appointment mechanism is working. The assessment results are seriously disconnected from key benefits like talent incentives, professional title evaluation, job promotions, and awards, so the guiding, motivating, and restraining effects of assessments can't be effectively realized. A single evaluation system ends up throwing off the work focus of dual-employed talent, reducing enthusiasm for research innovation and industry services, making it difficult to achieve the collaborative empowerment of education, scientific innovation, and industry.

2.5 Weak protection mechanisms, talent flow in both directions is blocked

The supporting system isn't well-developed and long-term support is lacking, which are the main reasons why there's a big barrier to talent moving between schools and companies. In terms of compensation, the salary standards for dual-appointment positions between schools and companies aren't consistent, the payment process isn't standardized, and there's a lack of special salary subsidies or performance bonuses. As a result, the work value of dual-employed talents isn't properly reflected, and their motivation and initiative are low. On the career development side, there are no policies linking things like cross-organization title evaluations, promotions, or awards, so career paths for company staff working part-time in schools and school staff working in companies are blocked. This leads to a weakened sense of belonging and professional identity.

Besides, there's not enough special funding for the dual-appointment work, so projects like school-enterprise cooperation research, training base construction, and talent development lack financial support. There's also a lack of risk control and policy supervision mechanisms, making it hard to fix problems in time during the dual-appointment process. Short-term and superficial cooperation is common, making it tough to build a sustainable system for talent to move back and forth.

3 Optimizing the dual-appointment mechanism for talents in schools and enterprises from the perspective of “teaching, research, and practice” integration

3.1 Collaborative empowerment: building a four-party interaction model to solve the problem of imbalanced demands

Focusing on the core requirements of integrating education, research, and industry development, we aim to break the pattern in which each entity operates in isolation and build a four-party collaborative governance mechanism coordinated by the government, led by schools, empowered by enterprises, and supported by research platforms, achieving win-win outcomes in education, research, industry, and talent. First, clarify the core responsibilities of each party and accurately match their development needs: vocational colleges focus on talent training, curriculum reform, and faculty development; enterprises focus on technological breakthroughs, results transformation, and industrial upgrading; and research platforms focus on innovation R&D and technology empowerment, forming a work pattern where everyone does their part and works together. Second, establish a regular communication mechanism, such as holding regular school-enterprise forums, project seminars, and work review meetings, to remove communication barriers, accurately align educational needs with industry innovation needs, and simultaneously promote teaching reform, research projects, and industry services.

At the same time, based on the needs of special fields like emergency safety, we optimize the approach to hiring dual-role talents, balance the tasks of teaching, research, and industry service, avoid the imbalance of focusing too much on teaching over research or on practice over innovation, promote the shift of all parties from “one-way cooperation” to “collaborative win-win”, and fully activate the efficiency of coordinated development among teaching, research, and personnel.

3.2 Improving the system: building a standardized framework to strengthen the operational foundation

Focusing on standardization and long-term effectiveness, we aim to build a comprehensive, systematic dual-appointment system between schools and enterprises to solve problems of fragmented policies and loose management. First, we improve the talent selection and appointment system. By combining the needs of professional education, enterprise innovation, and job responsibilities, we develop unified selection criteria for dual-appointed talents, clarifying four core requirements: educational qualifications, teaching ability, practical skills, and research capability. The entire process of application, review, appointment, and public announcement is standardized to ensure the quality of the dual-appointed talent pool. Second, we improve the position management system, detailing the responsibilities of dual-appointed personnel. For different types of positions, such as industry professors, technology vice general managers, and dual-part-time roles, we set differentiated quantitative requirements for teaching hours, research projects, technical services, and talent development, achieving clear role assignments and measurable management. Third, we establish a dynamic update and exit mechanism, carrying out annual evaluations and adjustments. Talents who underperform or fail to achieve results are adjusted or dismissed in a timely manner, while outstanding talents are renewed or given priority in honors, ensuring that dual-appointment work progresses in an orderly and standardized way. Through comprehensive system-building, we create a standardized, institutionalized dual-appointment operation system, providing institutional support for the integrated development of education, research, and industry collaboration.

3.3 Integration of science and education resources: breaking down resource barriers and achieving deep coupling of the four chains

Focusing on the deep integration of the education chain, industry chain, innovation chain, and talent chain, we aim to fully break down the barriers between schools and enterprises, building a development pattern of jointly creating, sharing, using, and transferring resources. On the one hand, this involves promoting the two-way conversion of teaching and research resources with industry resources. Vocational colleges, leveraging their faculty, courses, and research resources, provide companies with technical training, talent supply, and research support. On the other hand, companies open up their production scenarios, training equipment, industry projects, and technical teams to help schools optimize course systems, improve hands-on teaching, and enhance faculty practice skills, ensuring precise alignment between teaching and industry resources.

In addition, by relying on regional science and innovation platforms and industry colleges, they set up channels for sharing resources between schools and companies, regularly carry out joint research projects, turn technological achievements into practical applications, co-build training bases, and train talents together. They also establish a system for mutual recognition of results between schools and companies, including teaching, research, and technical service outcomes of dual-position staff in both evaluation systems, maximizing resource efficiency and completely solving the problem of fragmented and poorly coordinated science and education resources.

3.4 Evaluation system improvement: constructing a five-dimensional quantitative evaluation system for accurate performance measurement

Based on the integrated development of education, science, and technology professionals, we are building a quantitative evaluation system that covers five dimensions: collaborative operation among main bodies, institutional functioning, resource integration, educational outcomes, and development support, addressing the limitations of traditional single-focus evaluation methods. We break down the secondary and tertiary quantitative indicators to cover key areas like collaboration efficiency among stakeholders, level of institutional standardization, effectiveness of resource sharing, quality of talent development, results of research commercialization, effectiveness of industry services, and efficiency of incentives and support. Using the Analytic Hierarchy Process, we scientifically determine the weight of each indicator, forming a standardized evaluation system that is quantifiable, actionable, and assessable.

Establish a regular assessment system of “monthly reviews, quarterly retrospectives, and annual evaluations” to fully evaluate the performance of dual-hired talents and the effectiveness of the dual-hiring system. At the same time, strengthen the use of assessment results by directly linking scores to salary rewards, title evaluations, promotions, awards, and project applications, fully leveraging the motivational and restraining effects of assessments to boost the intrinsic drive of dual-hired talents and improve the quality and efficiency of the dual-hiring work.

3.5 Upgrading the protection mechanism: improving a multi-dimensional support system to build a solid long-term foundation

Focusing on the pain points of two-way talent flow, we aim to build a long-term support system integrating salary, professional titles, policies, funding, and risk management, completely breaking down the barriers to talent mobility. First, we optimize the salary incentive system by unifying the salary subsidy standards for dual-appointment between schools and enterprises, implementing diverse incentive policies such as performance rewards, profit-sharing, and equity incentives, significantly improving the pay for dual-appointed talent and reflecting the value of their work. Second, we smooth career development paths by overcoming barriers in cross-unit title evaluations, job promotions, and honors, making it clear that achievements of dual-appointed talent can be recognized in both directions and included in assessments, broadening career development opportunities and enhancing professional identity and sense of belonging. Third, we strengthen policy and funding support by detailing policy measures at provincial, municipal, school, and enterprise levels and setting up special funds for dual-appointment, focusing on talent subsidies, project development, practical training, and achievement rewards. Fourth, we establish a supervision and risk prevention mechanism coordinated by the government and industry associations to regularly monitor the implementation of dual-appointment, promptly rectify shortcomings, prevent formalistic cooperation, and ensure the long-term, high-quality operation of the dual-appointment mechanism between schools and enterprises.

4 Case verification: using the dual-appointment practice of Zhejiang College of Security Technology as an example

Zhejiang College of Security Technology, as the only public higher vocational college in Zhejiang Province focused on emergency safety, leverages the advantages of the regional emergency industry cluster, deeply cultivates the integration of industry and education, and promotes coordinated reforms in science and education. It is a pilot school for the dual-appointment reform of school-enterprise talent in Zhejiang. The college has long worked closely with local leading tech and innovation platforms and companies like the Wenzhou Smart Safety Collaborative Innovation Center and Stellar Holdings Group, focusing on training emergency safety professionals and meeting the needs of industrial technology upgrades. It fully implements the five-dimensional optimization mechanism outlined in this paper and carries out systematic dual-appointment reform practices with enterprises.

In practice, the school has set up a four-party collaborative governance team to coordinate all aspects of the dual-appointment work; introduced special management regulations to standardize the whole process of selection, performance, evaluation, and exit; built joint emergency safety training bases and innovation platforms to deeply integrate school and enterprise resources; launched a five-dimensional evaluation system to achieve precise assessment; and implemented support policies like salary subsidies, preferential titles, and achievement rewards to fully optimize the dual-appointment operation ecosystem.

After a long period of pilot operation, the reforms have shown significant results. First, the structure of the dual-teacher faculty team has been continuously optimized, the proportion of dual qualified teachers among its faculty has risen substantially. Industry experts from enterprises regularly come to schools to teach and guide practical training, fully upgrading teachers' practical and innovation abilities. Second, the collaboration between science and education has greatly improved. Schools and enterprises have jointly carried out multiple emergency safety technology projects and product development initiatives, with several research achievements successfully commercialized, effectively supporting the regional emergency industry upgrade. Third, the quality of talent

training has steadily increased, with students' practical skills, competition awards, and appointment rates continuously improving, accurately matching the talent needs of the regional industry. Fourth, the two-way flow of talent has become normalized, completely breaking down barriers between school-enterprise talent mobility, creating a good pattern of coordinated development in education, research, industry, and talent.

Practice has shown that the multi-level, systematic dual-appointment optimization mechanism built in this paper can effectively address the core issues of the current college-enterprise dual-appointment being too formal, fragmented, and unbalanced. It aligns with the operation rules of specialized vocational colleges and the needs of regional industrial development, and it is quite practical and easy to replicate.

5 Conclusion

The "education-science-talent" integrated strategy provides important guidance for modern vocational colleges in terms of school-enterprise cooperation, talent training, and scientific and technological innovation development. Establishing a long-term dual-appointment mechanism for school and enterprise talents is a key approach to deepen industry-education integration, build high-level dual-teacher teams, and promote regional industrial upgrades. This paper, based on the concept of coordinated development of education, science, and talent, aligns with the characteristics of Zhejiang's vocational colleges and local industries, and proposes optimization paths from five dimensions: main body coordination, system construction, resource integration, evaluation system, and safeguard mechanisms. It constructs a three-level collaborative operation framework at the micro, meso, and macro levels, and uses empirical cases to prove that the plan is feasible and effective. It addresses issues like one-way talent flow, separation of scientific and educational resources, and imbalance between talent training and innovation, forming a dual-appointment model for school-enterprise talent with promotion value. The experience of Zhejiang's dual-appointment reform can serve as a reference for vocational colleges nationwide in advancing the integration of education, science, and talent, and the fusion of industry and education talent. Going forward, it is necessary to closely follow the development needs of digital vocational education and new quality productive forces, continuously innovate operational and evaluation mechanisms, build digital talent sharing platforms, improve the collaborative ecosystem among governments, schools, and enterprises, fully unleash the value of coordinated empowerment from education, science, and talent, and support high-quality development in vocational education and regional industrial transformation.

References:

- [1] Hu Rongguang, Zhao Leilei. The Challenges and Possibilities of Digital Intelligence Empowering the Integrated Development of Educational Technology Talents: From the Perspective of Technological Phenomenology [J]. *Research in Teaching*, 2026, 49(4): 1-9.
- [2] Qin Zheng. The "Four-chain" Integration of Education Chain, Talent Chain, Industry Chain and Innovation Chain; Shandong Liming Vocational College of Science and Technology Builds the Largest Demonstration Zone for Health Care and Rehabilitation Industry-Education Integration[N]. *Jinan Daily*, 2025-4-28(1).
- [3] Li Botao. Research on the Optimization Path of the "Double-qualified" Teacher Training System in Higher Vocational Colleges under the Background of Industry-Education Integration[J]. *Guangdong Vocational Technical Education and Research*, 2026(2): 37-40.
- [4] Zhang Honglong, Chen Jiayuan. Construction of the Collaborative Mechanism for Building a "Double-qualified" Teacher Team in the Practice of Industry-Education Integration: From the Perspective of Two-way Flow of Talents Between Schools and Enterprises[J]. *Survey of Education*, 2026, 15(7): 67-70.
- [5] Su Mo, Wang Tianying. Research on the Dual-appointment Mechanism of School-Enterprise Cooperative Talents in Higher Vocational Colleges under the Coordinated Development of Beijing-Tianjin-Hebei[J]. *Industrial & Science Tribune*, 2017, 16(2): 252-253.