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Model Innovation and Performance Evaluation of Higher Vocational Resources Sinking into Counties Under the Background of Common Prosperity Demonstration Zone in Zhejiang Province: An Empirical Analysis Based on County-Level Industrial Colleges Across the Province

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Abstract: As a demonstration zone for common prosperity, Zhejiang Province regards the sinking of higher vocational resources into counties as a key measure to address the "county-level talent shortage" and "urban-rural educational gap". Based on resource dependence theory and collaborative governance theory, this study adopts a mixed research method of "policy text analysis + survey of 88 county-level industrial colleges + in-depth interviews with 6 typical cases". It systematically sorts out the threefold dynamic mechanism of "policy-driven, market-oriented, and university-local symbiosis" for the sinking of higher vocational resources in Zhejiang, and refines three core models: "university-county symbiosis type", "industrial cluster embedded type", and "mountain-sea cooperation empowerment type". By constructing a four-dimensional performance system of "resource supply - talent training - industrial service - common prosperity", combined with the 2025 monitoring data from the Zhejiang Provincial Department of Education, the results show that the sinking practice has increased the proportion of "double-qualified" teachers in county-level secondary vocational schools by 30 percentage points, the local employment rate of graduates has reached 42%, and more than 2,300 technical problems have been solved for enterprises. The study finds that there are dilemmas such as unbalanced regional sinking, weakened collaborative mechanisms, and biased evaluation orientation in practice. Accordingly, it proposes a three-dimensional breakthrough path of "digital empowerment for balanced allocation", "interest linkage to strengthen collaboration", and "differentiated evaluation to guide quality", providing a "Zhejiang plan" for vocational education empowering county development under the background of common prosperity.

Keywords: Common prosperity; Higher vocational education; Resource sinking; County-level industrial college; Performance evaluation; Zhejiang

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1. Introduction

Zhejiang's county economy contributes more than 60% of the province's GDP and 55% of tax revenue. Thirty-three counties (cities, districts) have a GDP exceeding 100 billion yuan, accounting for 34.7% of the total number of counties (cities, districts) in the province, forming several highly competitive block-shaped industrial clusters. However, the industrial upgrading of counties is facing a severe bottleneck of skilled talents: data in 2024 shows that the gap of skilled talents in county-level manufacturing industry reaches 823,000, with gaps in advanced manufacturing, green petrochemical and other fields accounting for more than 65%. Eighty-three percent of small and medium-sized enterprises in counties face the dilemma of "being unable to recruit technical workers with a monthly salary of over 10,000 yuan" [1].

As a major province of vocational education, Zhejiang has 25 "Double High Plan" colleges and universities (ranking first in the country), but 78.6% of higher vocational colleges are concentrated in prefecture-level cities and above, forming a spatial mismatch with the talent needs of counties. In 2023, the Ministry of Education and the People's Government of Zhejiang Province jointly issued a relevant implementation plan, clearly proposing to "build about 50 county-level industrial colleges" and include the sinking of higher vocational resources into the core indicators of the construction of the common prosperity demonstration zone. Against this background, analyzing the model characteristics and performance laws of the sinking of higher vocational resources in Zhejiang is of great significance for improving the educational support system for common prosperity [2].

2. Dynamic mechanism of higher vocational resources sinking into counties in Zhejiang province: Coupling of three logics

The sinking of higher vocational resources in Zhejiang is a "coupling of three logics" formed by policy traction, market demand, and university-local symbiosis, among which the systematic design of policies is a unique national feature.

2.1. Policy-driven logic: Systematic design oriented by common prosperity

A three-level policy system of "provincial overall planning - municipal coordination - county implementation" has been constructed: at the provincial level, the *Guidelines for the Construction of County-Level Industrial Colleges* has been issued, clarifying the layout of "one county, one characteristic" and setting up a special fund of 200 million yuan per year; at the municipal level, the policy of "pairing Double High colleges with counties" has been implemented with subsidies; at the county level, the construction effect has been included in government assessment with a weight of 12%.

Policy tools have both "incentive + constraint" characteristics: industrial colleges with excellent assessments receive a reward of 3 million yuan, and the title evaluation of sinking teachers can replace 1 core paper; counties with unqualified assessments for two consecutive years will have their special vocational education funds reduced. Monitoring data in 2025 shows that the participation rate of higher vocational resource sinking in the province has increased from 45% in 2020 to 92%.

2.2. Market-oriented logic: Rigid demand for county-level industrial upgrading

Block-shaped industrial clusters form differentiated demand signals: counties along the eastern coast of Zhejiang focus on high-end manufacturing upgrading, counties in the western mountainous areas focus on characteristic industry cultivation, and counties in northern Zhejiang layout emerging industries, respectively spawning

corresponding industrial colleges. Surveys show that the "demand-supply ratio of skilled talents" of county-level enterprises reaches 1:5.2 (higher than 1:2.8 of urban enterprises), 85.7% of county-level enterprises are willing to provide training support, and some leading enterprises have donated equipment worth over 10 million yuan at a time.

2.3. University-local symbiosis logic: Two-way empowerment between higher vocational colleges and counties

Higher vocational colleges solve the bottleneck of school-running through sinking: after the sinking of Zhejiang Business and Technology Institute, the proportion of engineering majors increased from 31.6% to 52.5%, and it was approved as a national-level training base; Jinhua Polytechnic expanded its school-running space by 120 mu and added 1,500 new students annually.

Counties obtain endogenous development momentum: Ninghai Mould Industry College has shortened the technical transformation cycle and improved product qualification rate for local enterprises; Daishan Green Petrochemical Industry College has trained 420 graduates in the past 3 years, 40% of whom stay for local employment, driving an annual output value growth of 12%.

3. Operation models of higher vocational resources sinking into counties in Zhejiang province: Type division and adaptability analysis

Based on survey data, Zhejiang has formed three leading models, showing the characteristic of "adapting to local conditions" (see **Table 1**).

Table 1. Comparison of Three Operation Models of Higher Vocational Resources Sinking into Counties in Zhejiang Province (2025)

Model Type	Core Characteristics	Resource Input	Typical Cases	Regional Adaptability	Proportion
University-County Symbiosis Type	Government-enterprise-university "co-construction, co-management, sharing" and entity-based school-running	Government, enterprise, and university invest in a ratio of 3:4:3, with a single college investment exceeding 100 million yuan	Ninghai Mould College of Zhejiang Business and Technology Institute	Coastal counties with mature industrial clusters and strong financial strength	45.5%
Industrial Cluster Embedded Type	Relying on the "415X" advanced manufacturing cluster for targeted training	Enterprises lead equipment investment, accounting for over 60%	Daishan Petrochemical College of Zhejiang International Maritime Vocational and Technical College	Counties with major industrial platforms	31.8%
Mountain-Sea Cooperation Empowerment Type	Higher vocational colleges in developed areas pair with mountainous counties for digital empowerment	70% subsidized by provincial finance, 30% matched by counties	Jiande Intelligent Manufacturing Industry College of Hangzhou Vocational and Technical University, etc.	Mountainous counties with distinctive characteristic industries	22.7%

3.1. University-county symbiosis type: Benchmark model for coastal developed counties

Represented by the colleges co-built by Zhejiang Business and Technology Institute with Ninghai and Cixi, the core is "tripartite co-construction and operation with three agreements" [3]. The government, enterprises,

and universities have invested a total of 370 million yuan, and the income from technology achievement transformation is distributed in the ratio of "40% for the school + 40% for enterprises + 20% for the county". A total of nearly 10,000 graduates have been trained, 4,000 of whom stay for local employment (with a professional counterpart rate of 82%), driving the output value of Ninghai's mold industry cluster to increase from 18 billion yuan to 32 billion yuan, with the college's contribution rate reaching 35%.

3.2. Industrial cluster embedded type: Precise model for counties with major platforms

Embedded in major industrial platforms, enterprises deeply participate in school-running [4]: Zhejiang Petrochemical Co., Ltd. invested 120 million yuan to build a training base and implement "order-based training". Data in 2024 shows that the local employment rate of graduates reaches 40%, 32,000 person-times of skill training have been carried out, and the qualification rate of chemical products has been increased to 99.2%, which has been replicated and promoted in many places.

3.3. Mountain-sea cooperation empowerment type: Leapfrog model for mountainous counties

Relying on the "Mountain-Sea Cooperation Project", higher vocational colleges in developed areas pair with 26 mountainous counties, adopting a "digital + lightweight" model. Through the co-construction of industrial colleges by universities and local governments, hardware extends training resources, and software develops characteristic courses and implements the model of "live broadcast teaching + offline training" [5]. Hangzhou Vocational and Technical University cooperates with Jiande and Pinghu, and Jinhua Polytechnic cooperates with Pan'an and Wuyi, having trained more than 1,000 local technical talents. The local employment rate of graduates is as high as over 90%, solving the dilemma of "difficulty in recruiting workers and cultivating talents".

4. Performance evaluation and practical dilemmas of higher vocational resources sinking into counties in Zhejiang province

4.1. Performance evaluation: Quantitative presentation of four-dimensional effects

(1) Resource Supply Dimension: The proportion of "double-qualified" teachers in county-level secondary vocational schools has increased from 32% to 62%, the total value of training equipment has increased by an average of 78%, 1,200 integrated secondary and higher vocational courses have been co-built, and the credit recognition rate has reached 85%.

(2) Talent Training Dimension: 88 industrial colleges train more than 30,000 graduates annually, with a local employment rate of 42%. The scale of integrated secondary and higher vocational enrollment has increased from 42,000 to 70,000 (a growth rate of 66.7%).

(3) Industrial Service Dimension: A total of more than 2,300 technical services have been provided, 1,800 key technical problems have been solved, and more than 250,000 person-times of enterprise employee training have been carried out. The proportion of technical service income of industrial colleges in some areas has increased from 5% to 18%.

(4) Common Prosperity Dimension: The output value of characteristic industries in 20 mountainous counties has increased by an average of 15%, the salary of skilled talents has increased by 45%, the salary gap with coastal counties has narrowed by 12 percentage points, and the urban-rural gap in the enrollment rate of county-level higher vocational education has narrowed from 18% to 8%.

4.2. Practical dilemmas: In-depth analysis of structural contradictions

(1) Unbalanced Regional Sinking: There are significant gaps between coastal counties and mountainous counties in investment, teachers, technical services, etc [6]. 38.5% of mountainous counties report that "higher vocational high-quality teachers have low willingness to sink".

(2) Weakened Collaborative Mechanisms: Only 35% of enterprises deeply participate in talent training, some enterprises' training is a mere formality, and only 18.5% of county-level industry associations participate in the formulation of talent standards.

(3) Biased Evaluation Orientation: Assessments focus on quantitative indicators, ignoring qualitative indicators such as the quality of technical services and talent retention. 68.3% of higher vocational colleges indicate that "the effectiveness of technical services is not linked to assessments".

(4) Inadequate Guarantee System: Sinking teachers face triple pressures of life, commuting, and scientific research. 35.7% of industrial colleges in mountainous counties have not accessed the provincial vocational education resource sharing platform, and the utilization rate of virtual training equipment is less than 40%.

5. Breakthrough paths of higher vocational resources sinking into counties in Zhejiang province: Construction of a three-dimensional collaborative system

5.1. Digital empowerment: Solving the problem of regional imbalance

The imbalance in the distribution of regional educational resources is a key bottleneck hindering the balanced development of higher vocational education. There are significant differences in educational investment and teacher matching between developed coastal areas and underdeveloped inland areas. In this regard, effective measures should be taken. First, build the "Zhejiang Vocational Education" resource sinking platform, integrating high-quality courses and virtual training bases to open free of charge to mountainous counties. The "Zhejiang Vocational Education" platform is regarded as a key move to solve this problem [7]. The system integrates the core teaching content of 25 high-level vocational colleges in the province, including more than 1,200 integrated secondary and higher vocational courses, virtual simulation training bases, and technical service case libraries, and provides this technical support to remote mountainous industrial colleges free of charge. In addition, VR/AR is used to create immersive training scenes, breaking through the constraints of traditional hardware, enabling students to use local resources to achieve practical operations in fields such as intelligent manufacturing and green chemical industry, driving the utilization rate of training venues from less than 40% to more than 70%. A dynamic correction mechanism should also be established to timely adjust the curriculum framework according to changes in the local industrial structure, ensuring that resource supply can truly meet industry trends [8]. Second, establish a "Mountain-Sea Cooperation Vocational Education Special Fund". Combining financial guarantee and policy guidance, set up a provincial "Mountain-Sea Cooperation Vocational Education Special Fund" of 300 million yuan per year, specifically for the construction of digital infrastructure and teacher training in mountainous counties. Implement an incentive plan for on-campus teaching support, with a monthly subsidy of 2,000 yuan for participating teachers and additional points for cross-regional teaching quality title evaluation. Accelerate the upgrading and transformation of county-level network facilities, achieve full coverage of high-speed broadband in all industrial colleges, and open up channels for high-quality educational resources to flow to the grassroots [9].

5.2. Interest linkage: Strengthening the collaborative mechanism of multiple subjects

To solve the problem of low enterprise participation, it is necessary to establish a closer interest linkage mechanism, innovate the school-enterprise cooperation model, and promote the operation method of "equity incentive + achievement transformation". First, promote the "enterprise equity participation + achievement dividend" model. Guide enterprises to link up in capital and income distribution, and provide tax reductions and special subsidies to technical teams. The two-way talent flow policy is not perfect. It is suggested to strengthen the model of combining college teachers' practice in enterprises and enterprise experts' return to teaching, forming a win-win situation [10], and strive to increase the proportion of deep enterprise participation from the current about 35% to more than 60%. Second, strengthen the hub role of industry associations. It is necessary to strengthen the functional positioning of industry associations, implement the "industry talent demand white paper" system design to provide data support for professional settings, endow them with vocational qualification certification and teaching quality supervision functions, and build an industry-education integration platform relying on associations to integrate multiple resource elements to achieve collaborative innovation and development goals [11]. Third, establish a county-level "Industry-Education Integration Committee" and improve the governance structure to give industrial colleges autonomy in school-running. Establish a county-level "Industry-Education Integration Committee", composed of representatives from the government, universities, enterprises, and industry organizations, responsible for coordinating the construction planning, resource allocation, and interest distribution of industrial colleges. Endow industrial colleges with school-running autonomy, including personnel management rights and independent fund disposal rights [12].

5.3. Differentiated evaluation: Guiding the orientation of high-quality sinking

To address the current problem of "quantitative-oriented and one-size-fits-all" evaluation, a scientific evaluation system should be established. First, implement classified assessment. Set different indicators according to "coastal counties - mountainous counties - platform counties": coastal counties focus on technology transformation and industrial contribution, mountainous counties focus on local talent cultivation and narrowing the urban-rural gap, and platform counties focus on the qualification rate of order-based training and enterprise satisfaction [13]. Second, optimize the evaluation subjects and weights. Enterprises, students, and third-party institutions participate together, with the weight of enterprise satisfaction not less than 30%, forming a closed loop of "evaluation - incentive - improvement". Publicize performance rankings, reward excellent ones with 3 million yuan, and reduce funds for unqualified counties. Incorporate core indicators such as "local employment rate of graduates" and "proportion of technical service income" into assessments, conduct third-party evaluations every 3 years and publish reports, guiding the sinking practice to focus on quality and effectiveness [14].

6. Conclusion and outlook

(1) Core Conclusions: The sinking of higher vocational resources in Zhejiang has formed a threefold dynamic mechanism of "policy-driven - market-oriented - university-local symbiosis". The three models have achieved precise adaptation and obtained four-dimensional results, but they still face dilemmas such as unbalanced regions, weakened collaboration, and biased evaluation. It is necessary to promote the transformation of sinking from "scale expansion" to "quality improvement" through the three-dimensional collaboration of "digital empowerment, interest linkage, and differentiated evaluation" [15].

(2) Research Innovations: 1. Data innovation: based on the whole-domain data of 88 industrial colleges in

the province; 2. Model innovation: refining three types of sinking models with Zhejiang characteristics; 3. Mechanism innovation: analyzing the "policy-market-university-local" collaborative mechanism.

(3) Outlook: In the future, the sinking of higher vocational resources will show the trends of digitization, ecology, and standardization, and the Zhejiang model can provide a reference for common prosperity areas across the country. Future research can focus on topics such as "long-term mechanism of resource sinking in mountainous counties under the digital background" and "integration path between county-level industrial colleges and rural revitalization".

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