

Curriculum Construction Paradigm of County-Level Higher Vocational Colleges Oriented Towards New Quality Productive Forces

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Abstract: Counties serve as a vital carrier of China's real economy. Running branch campuses in counties by municipal higher vocational colleges is a critical measure to remedy the shortage of talents and stimulate the driving force of county-level economy. Faced with industrial transformation brought by the development of new-quality productive forces, county-level higher vocational education is confronted with adaptability deficiencies including outdated teaching content, loose industry-education collaboration and rigid supporting elements. As the core carrier of talent cultivation in vocational education, curriculum acts as a key breakthrough to address the adaptability deficiency of county-level vocational education. From the perspectives of system view, development view and quality view, this paper constructs a trinity curriculum-construction paradigm of "county-level school-running-new-quality production-lifelong education". It establishes an integrated mechanism linking county-level school-running and curriculum construction through vertical point-surface coordination, realizes dynamic adaptation between curriculum and new-quality industrial technology via the integration of science-education and industry-education, and builds a curriculum education path for lifelong career development covering academic education and social training. It is expected to provide theoretical reference and practical ideas for county-level higher vocational colleges to adapt to new-quality productive forces and cultivate local new-quality industrial craftsmen.

Keywords: New-quality Productive Forces; County-level Higher Vocational Colleges; Curriculum Construction; Industry-education Integration; Adaptability of Vocational Education.

1. Introduction

Promoting the sinking of high-quality higher vocational education resources into county-level regions represents a significant initiative in the modern vocational education system, serving integrated urban-rural development and the real economy. The rapid evolution of new quality productive forces (NQPF) has driven technological iteration in county-level industries, imposing new requirements on talent cultivation in county-level vocational colleges—particularly regarding curriculum system development [1]. Existing research predominantly focuses on macro-level models of county-level vocational education [2-5], while systematic paradigm research on curricula adapting to NQPF remains insufficient. Accordingly, grounded in the practical context of county-level school operation, this paper explores pathways for curriculum development in county-level vocational colleges from three dimensions—structural, industrial, and humanistic—aimed at providing theoretical references for cultivating new-quality technical and skilled talents adapted to county-level development.

2. The Practical Logic of Curriculum Development in County-level Vocational Colleges from the Perspective of New Quality Productive Forces

2.1. The Imperative: From Municipal to County-Level—Branch Campus Extension and Industry-Education Synergy

County-level regions cover over 90% of China's territorial area and are home to 68% of its population. Identifying new breakthroughs and growth points for high-quality real economy development at the county level is broadly recognized as a national consensus. However, due to the siphoning effect of neighboring large cities, county-level real economy faces a structural mismatch in human resource supply, manifesting as "outflow of local talent" and "difficulty in attracting external talent." To secure long-term, stable talent support for county-level industries, developing county-level vocational education is pivotal. This entails two dimensions: first, *local adaptation*, aligning academic programs with county industries to achieve structural adaptation between vocational education and county economies; second, *local talent cultivation*, integrating secondary and higher vocational education to develop a large cohort of native talent rooted in their hometowns. To this end, the General Office of the Zhejiang Provincial Party Committee and Provincial Government issued the *Implementation Opinions on Accelerating the Development

of the Modern Vocational Education System*, explicitly proposing that high-level municipal vocational colleges should establish branch campuses in industrially developed, densely populated counties, thereby driving county-level vocational education upgrading through the downward flow of quality resources. Statistics indicate that over 200 vocational colleges now operate at the county level [6], adopting a "campus-to-district" relocation approach that responds to the practical needs of county-level industrial development and has formed a virtuous cycle of mutual reinforcement between county economies and vocational education.

2.2. The Predicament: From "Traditional" to "New Quality"—Industrial Transformation and Inadequate Vocational Education Adaptation

Throughout history, each stage of social development has corresponded to a distinct mode of productive forces. Over recent decades, China has relied primarily on traditional, input-driven productive forces to achieve rapid growth in comprehensive national strength and international competitiveness. At the present stage, a new round of technological revolution intersects with China's pursuit of high-quality economic development. Traditional productive forces have shown signs of unsustainability, necessitating the accelerated development of new quality productive forces commensurate with current-stage requirements. In December 2023, General Secretary Xi Jinping first proposed the concept of "new quality productive forces" during an inspection in Heilongjiang Province, and subsequently emphasized at the Central Economic Work Conference that NQPF should be regarded as the strategic pillar driving China's high-quality development. Despite the steady improvement in both the number and quality of county-level vocational colleges in recent years [7], a truly "new-quality" vocational education system adapted to NQPF has yet to be established. This inadequacy manifests in three dimensions: *industry-following* vocational education falls short in novelty within teaching content and training methods; *loosely coupled* field-level coordination falls short in substance regarding industry-education integration and science-education convergence; and *traditionally rigid* factor support falls short in capacity concerning teaching resources and training bases.

2.3. The Solution: From "Structure" to "Implementation"—Centering Talent Cultivation and Advancing Curriculum Adaptation

Vocational education encompasses vocational, educational, and societal dimensions, constituting a complex system compounded by educational, economic, and social factors. Its adaptability to county-level NQPF is embodied in the comprehensive adaptation of all school-running elements [8]. That is, as productive forces advance and leapfrog holistically, the center of gravity of the hierarchical structure of county-level vocational education continuously shifts upward, manifesting as systemic transformation. This systemic transformation must ultimately converge on curriculum reform and development [9]: first, aligning curricula with industrial transformation to achieve effective interaction between programs and industries at the "novelty" level;

second, strengthening multi-stakeholder participation through curricula to effectively control talent cultivation specifications at the "substance" level; and third, implementing updated curriculum development to provide effective support for the talent cultivation process at the "capacity" level. Using the curriculum as an entry point to proactively address disruptions from technological advancement, and enhancing the alignment between curricula and occupational skill requirements, constitutes the core mechanism for modern vocational education development and adaptability enhancement.

In summary, numerous vocational colleges have established county-level campuses, leveraging "local adaptation" and "local talent cultivation" as essential support for high-quality county-level economic development. Yet, in the formation of county-level NQPF, the adaptability of county-level vocational colleges remains a shared challenge [10]. As the core of modern vocational education reform, the curriculum system—its design, development pathways, and instructional implementation—directly determines the specifications and quality of new-quality talent cultivation, and thus the degree of adaptability of county-level vocational education. Therefore, empirically investigating curriculum development paradigms for county-level vocational education from the industrial perspective of NQPF formation can address the common challenge of insufficient adaptability. It constitutes a necessary step toward clarifying the scientific development pathway of county-level vocational education and fulfills the core requirements of the modern vocational education system.

3. A Three-Dimensional Curriculum Development Paradigm for County-level Vocational Colleges Oriented toward New Quality Productive Forces

3.1. Structural Adaptation: Integrating Micro and Macro Levels Vertically—Constructing an Integrated "County-level School Operation–Curriculum Development" Mechanism through a Systems Perspective

The establishment of vocational colleges at the county level represents a targeted service to county-level specialized industries and can be conceived as a system (the macro level). The curriculum, as the landing point of county-level vocational school operation and the smallest unit through which vocational education serves county industries, constitutes an element within that system (the micro level). Grounded in systems theory, an approach progressing from macro to micro and employing micro-level interventions to promote macro-level outcomes enables integrated empowerment between micro-level curriculum development and macro-level top-level design.

From macro to micro, county-level vocational colleges should converge diverse elements to promote curriculum development. In coordinating educational and instructional development, county-level vocational colleges should translate macro-level design into the micro-level curriculum: first, shifting the focus of "all-round education" to the curriculum. Supported by institutionalized second-level

management, colleges should innovatively develop "Three Aspect Education" implementation projects such as "Career Planning and Development of New-Quality Industrial Artisans," systematically planning and integrating them into

program curricula, and substantively enacting whole-person, whole-process, and all-dimensional education centered on the curriculum.

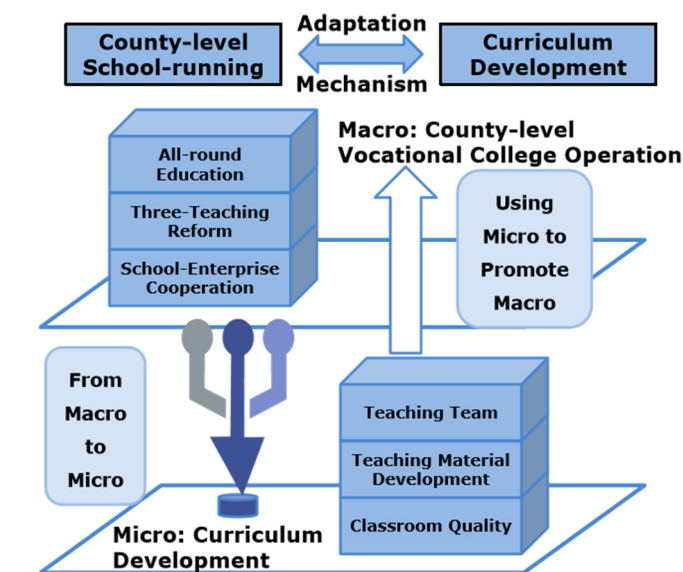


Fig 1. Structural Adaptation: Vertical Integration of Micro and Macro Levels

Second, concentrating the focus of the "Three-Teaching Reform" on the curriculum. Centered on core curricula most closely aligned with new quality productive forces, colleges should organize Three-Teaching Reform efforts, forging the adaptive development of such curricula into the "whetstone" for enhancing teacher quality, the "source" for innovating teaching material compilation, and the "testing ground" for reforming instructional methods. Third, directing the focus of school-enterprise cooperation to the curriculum. Colleges should organize joint development of curriculum projects, collaborative compilation of teaching materials, and co-construction of training bases, thereby transforming school-enterprise cooperation from an "extracurricular circulation" at the institutional operation level into an "internal integration" at the curriculum implementation level.

From micro to macro, program-level curriculum development should enhance institutional capacity by integrating various projects. Teachers constitute the primary force in county-level vocational school operation; aligned with the top-level design for county-level vocational campuses, colleges should enhance institutional capacity through the core actions of program-level curriculum development: first, building teaching innovation teams adapted to modularized curricula and strengthening institutional capacity through "teaching team development." Colleges should develop high-caliber, structured, and innovative teaching innovation teams, jointly constructing series of modular instructional units corresponding to production projects, and progressively integrating vocational skill certification standards into these modular units in a layered and progressive manner. Second, organizing curriculum and teaching material development responsive to new quality productive forces and strengthening institutional capacity through "quality teaching material development." Colleges should timely and effectively present new industrial technologies and skills within a given period in program curriculum teaching, developing vocational textbooks oriented toward technical cultivation, structured around work tasks, centered on practical training, and supported by

reconstructed knowledge. Third, advancing classroom quality improvement true to the essence of teaching and learning and strengthening institutional capacity through "integrated moral and technical cultivation." Relying on institutional frameworks and projects, colleges should foster an atmosphere dedicated to, and research on, classroom teaching reform, using the integration of posts, courses, competitions, and certifications as the standard to drive gradual accumulation and progressive advancement of quality improvement.

3.2. Industrial Adaptation: Horizontal Dynamic Alignment—Innovating the Deep Integration Model of "New-Quality Production–Curriculum Development" through a Developmental Perspective

The adaptation of vocational education curricula to county-level industrial development of new quality productive forces is inseparable from deep integration between county-level industries and vocational education, premised on enterprises and colleges being technologically peer-based and resource-complementary. Accordingly, operationalizing dynamic alignment between curricula and new-quality technologies through a developmental perspective requires first resolving the issue of "technological parity" and then establishing a model of "resource complementarity."

Science-education integration: leveraging technical service projects to transform new-quality production technologies into instructional practice. Regarding "technological parity," colleges should take enterprises' real technical service projects as carriers and organize the process of "collaborative mechanism establishment—new-quality technology accumulation—instructional transformation implementation," striving to integrate "science" and "technology" into vocational education. First, overlapping the consensus on the co-construction of science and education domains to build a collaborative mechanism that integrates scientific and technical efforts. Grounded in the functional

complementarity between higher education and research institutes' "basic research–applied transformation" and vocational colleges' "technical talent cultivation–applied technical service," colleges should overlap construction consensus, using specific enterprise projects as carriers to promote the establishment of normalized cooperation mechanisms among multiple stakeholders. Second, enhancing the collaborative development of diverse stakeholders to form original accumulation of common new-quality technologies. Based on normalized cooperation mechanisms, colleges should build industry-education consortia oriented toward emerging county-level industries,

focusing on the development needs of common new-quality technologies, and initially forming original technology accumulation through joint research, applied R&D, and achievement transformation. Third, following the practice-oriented work logic to implement instructional transformation of applied knowledge sequences. Focusing on the application of new-quality technologies to solve work-related problems, colleges should reconstruct and sequence the technical knowledge of research outputs according to work processes, specifying the knowledge and competency requirements for each module of typical work projects, as well as the corresponding theoretical and practical training hours.

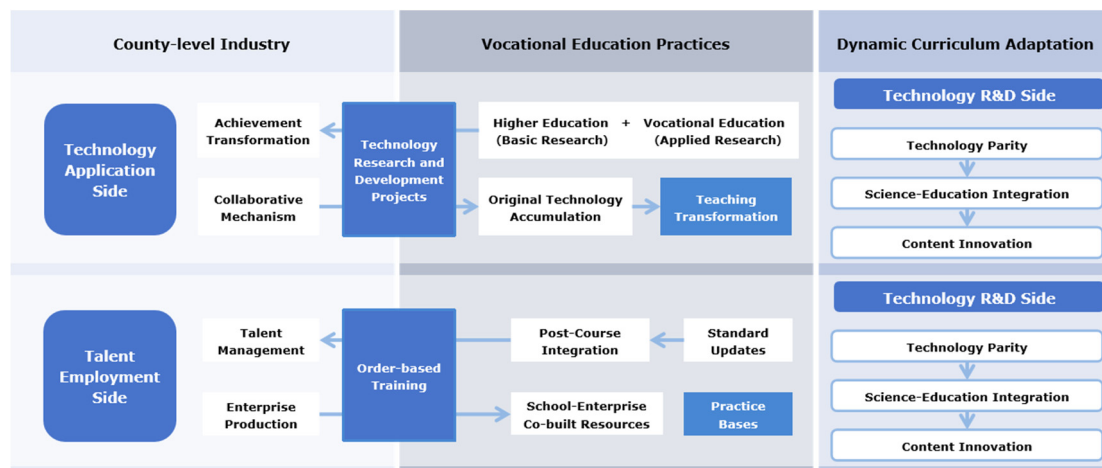


Fig 2. Industrial Adaptation: Horizontal Dynamic Alignment

Industry-education integration: leveraging order-based talent cultivation to transform on-campus teaching materials into production-oriented resources. Regarding "resource complementarity," colleges should take pre-employment and other order-based talent cultivation programs as carriers and organize the process of "post-course standard alignment—human resource collaborative development—joint construction of teaching resources," striving to integrate "industrial resources" into vocational education. First, tracking changes in job positions to strengthen post-course alignment through "standard updates." Aligned with development trends in new industrial forms and strategic emerging industries, colleges should timely adjust the positioning of program-level talent cultivation and update cultivation standards. Second, embedding into human resource management to form order-based cultivation through "dual-oriented direction." To address the talent-demand dilemma of county-level industries—"difficulty in retaining local talent" and "difficulty in attracting external talent"—colleges should embed enterprise human resource development and management into order-based models such as pre-employment programs, using contractual management and other approaches to explore high-quality and effective school-enterprise collaborative co-education. Third, benchmarking against production and R&D to promote resource construction through "efficiency enhancement." Colleges should identify shared interests between talent cultivation and enterprise production and R&D activities, advancing the construction of on-campus productive training bases through "relocating enterprises into campuses" and off-campus internship bases through "relocating colleges into enterprises." Based on the needs of "quasi-employee" cultivation, colleges should undertake production-oriented transformation of both hardware and software teaching

materials, with supporting development of teaching resources such as productive training projects.

3.3. Humanistic Adaptation: Empowering Career Development—Forging the Long-Term Cultivation Path of "Lifelong Education—Curriculum Development" through a Quality Perspective

The target of curriculum development adaptability is the learner; the ultimate measure of such adaptability must necessarily be the fit between the curriculum and the learner. Colleges should cater to two learner groups—on-campus academic education and off-campus social training—and develop highly adaptable curricula for this complex learner population.

Strengthening foundations and nurturing potential: developing academic education curricula that integrate "professional competence + lifelong learning ability." Curriculum adaptation must balance adaptation to the all-round development of individuals with adaptation to economic and social development, following the laws of education and teaching and the cognitive patterns of student growth, and respecting the mutual construction between technology and learners. First, scientific alignment following learning laws to strengthen the fit between curriculum development and professional competence cultivation. Colleges should "phenomenologically restore" the processes of county-level industrial positions into concrete operational workflows and work standards, design position-embedded learning tasks, and—addressing individual learner differences and diverse needs—construct a "learner-centered" teaching ecosystem, thereby adjusting and optimizing learning tasks to achieve optimal instructional outcomes. Second, moderately

forward-looking service for individual development to strengthen the fit between curriculum development and

learning ability cultivation.

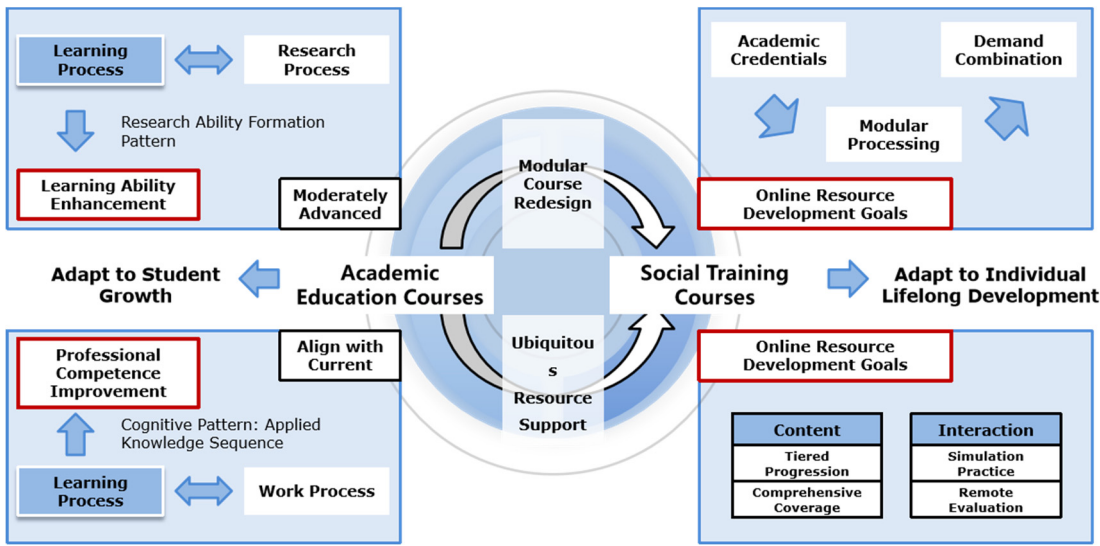


Fig 3. Curricular Adaptation: Temporal Orientation toward Lifelong Education

Drawing on the deep integration model of "new-quality production–curriculum development," colleges should deeply advance the instructional transformation of teachers' research projects, technical service projects, and innovation and entrepreneurship projects, integrating the elements of industrial transformation driven by NQPF development into curricula, and converting cutting-edge scientific and technological knowledge and real-world cases from industries, sectors, and enterprises into learning resources. Colleges should also forward-lookingly anticipate emerging industrial trends, update teaching content with moderate foresight, and enhance students' research thinking and their ability to independently solve technical problems through the integration of research processes and learning processes, thereby promoting the enhancement of lifelong learning ability.

Module reconstruction: developing social training curricula that combine "specialized customization + online ubiquitous support." Vocational social training is an extension built upon academic vocational education, and the integration and reconstruction of the two should be implemented. First, based on modular academic curricula, reconstructing and recombining vocational training courses. Relying on big data technologies to construct learning profiles of vocational trainees, and using knowledge graphs to build learning-status-based evaluation standards, colleges should thereby diagnose learners' foundational knowledge and target needs. Modules should be precisely selected, with content updated and matched according to training objectives and learning foundations to customize specialized training content. Second, providing ubiquitous support oriented toward training needs to drive adaptive reform of online teaching resources. Aligned with career development pathways, colleges should map learning pathway diagrams for online courses, classify content according to "foundation, core, and advanced" levels, and simultaneously construct virtual simulation-based online practice spaces, thereby advancing the universalization of social training.

4. Conclusion

Against the backdrop of NQPF-driven transformation and

upgrading of county-level industries, the extension of municipal-level vocational colleges into county regions has become an important pathway for serving the county-level real economy and cultivating local technical and skilled talent. As the core carrier of talent cultivation in vocational education, the curriculum directly determines the level of adaptation of county-level vocational colleges to NQPF. This paper constructs a curriculum development paradigm for county-level vocational colleges from three dimensions: structural adaptation, which uses a systems perspective to address the macro-micro relationship between institutional operation and curricula; industrial adaptation, which uses a developmental perspective to promote dynamic and deep integration between curricula and new-quality industrial technologies; and humanistic adaptation, which uses a quality perspective to serve both enrolled students and social learners in support of lifelong career growth. County-level vocational colleges pursuing curriculum reform should not operate in isolation by merely revising curriculum documents; instead, they must advance in an integrated manner through coordinated management systems, school-enterprise collaboration mechanisms, and teaching resource development. Future research should incorporate more field investigations of county-level school operation to continuously optimize the implementation guidelines for the curriculum paradigm, thereby fully realizing the value of vocational education in cultivating new-quality local craftsmen and empowering the development of county-level new quality productive forces.

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